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AN INCHOATE THEORY OF DYADIC SOCIAL TRANSITION

AND

INTEGRAL TEST

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By

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ABSTRACT

An inchoate theory of dyadic social transaction based upon an organicist metaphysism was presented and empirically investigated. Although the theory did resolve the irrational biases of both personalogism and situationism, it did incorporate four personal trait dimensions (personality traits) pertaining to the psychological functioning of individual subjects in relation to stimulus persons in interpersonal situations. The four personal trait dimensions postulated by the theory were Inclusion-Exclusion, Dominance-Submission, Dependence-Independence, and Morality-Immorality.

Each of the four personal trait dimensions in the theory was conceived as consisting of a cognitive component representing the perception of the subject of the stimulus person, an emotional component describing the feeling of the subject in relation to the stimulus person, and a behavioral component pertaining to the behavior of the subject in relation to the stimulus person. Specifically, the personal trait dimensions of cognition-emotion-behavior were defined by their tripartite structure as Activity-Arousal-Inclusion (for Inclusion), Impotency-Control-Dominance (for Dominance), Pleasantness-Pleasure-Dependence (for Dependence), and Sublimity-Pleasure-Justice (for Morality).

The emotional components of Arousal, Control, and Pleasure were postulated as the three corresponding emotional dimensions established by Mehrabian and Russell (1974); the behavioral components of Inclusion, Dominance, and Dependence (or Affection) were postulated as the three behavioral dimensions in the interpersonal theory of behavior by Schutz (1958) which he has empirically supported; and the two cognitive components of Activity and Potency (vs. Impotency) were theoretically conceived as two dimensions by those same names found initially by Osgood and Suci (1955) in the judgments subjects make of signs of environmental objects, though those dimensions were reconceptualized within a different theoretical framework.

The two evaluative cognitive components of Pleasantness and Sublimity composing the personal trait dimensions of Dependence and Morality, respectively, were postulated to exist rather than the more general dimension of Evaluation found by Osgood and Suci (1955) when the judgments made by subjects were of other people rather than other objects more generally. The behavioral component of Justice-Injustice (or Altruism-Egotism) was conceived as being characterized by a subject behaving inclusively or exclusively, dominantly or submissively, or dependently or independently, contingent upon the situation and whether the subject was behaving fairly or unfairly in relation to the stimulus person. The personal trait dimension of Morality consisting of

Sublimity-Pleasure-Justice, therefore, was conceived as superordinate to the other three personal trait dimensions.

As an integral test of the theory of dyadic social transaction, an empirical investigation was conducted of the cognitive dimensions, emotional dimensions, behavioral dimensions, and personal trait dimensions accounting for the manner in which subjects perceive, feel, and behave in relation to stimulus persons in interpersonal situations. In that investigation, nine undergraduate females participated as subjects by completing a specially developed questionnaire assessing how they would likely perceive, feel, and behave in relation to stimulus persons depicted in various hypothetical social situations on a college or university campus. Each of the hypothesized homogeneous dimensions of cognition, emotion, and behavior constituting the hypothetisized personal trait dimensions postulated by the theory were represented by a set of variables in the form of bipolar adjectival rating scales, though the behavioral dimension of Justice was not represented by a unique set of variables because it was conceived as being a heterogeneous collection of the other variables.

The covariation of the different sets of variables of cognition, emotion, and behavior were factor analyzed <u>across situations for each subject and for a calculated hypothetically average subject</u>. For the cognitive

variables, only a two-factor solution generalized across the subjects. One of those factors was composed of variables representative of the two hypothesized cognitive factors of Pleasantness and Sublimity and was interpreted as Evaluation, and the other factor was composed of the variables reprsentative of the other two hypothesized cognitive factors of Activity and Potency and was interpreted as Dynamism. For a third of the subjects a three-factor solution of cognition consisting of factors interpreted as Dynamism and the two hypothesized factors of Pleasantness and Sublimity emerged, though for only two of those three subjects were their three-factor solutions phenotypically similar enough to be considered more objectively as identical.

For the emotional variables, the three hypothesized factors of Arousal, Control, and Pleasure emerged in a three-factor solution for the average subject and were found to generalize across the real subjects. Although those three factors met a criterion established for determining their generalizability, however, for two of the subjects, no emotional factor of Control was found.

For the behavioral variables, only for one of the nine subjects were as many as three behavioral factors found, and those three factors were interpreted as the three hypothesized homogeneous behavioral factors of Inclusion,

Dominance, and Dependence, though the factor of Dependence failed to meet a more objective criterion for its identification. For the average subject and the majority of the subjects, a two-factor solution of the behavioral variables was found to generalize with one of those factors identified as the hypothesized factor of Dominance and the other factor interpreted as Sociableness, consisting of variables representative of the two hypothesized factors of Inclusion and Dependence. Only a one-factor solution of the behavioral variables was generalizable across the sample of subjects, however, and the variables representative of the three hypothesized behavioral factors of Inclusion, Submission (vs. Dominance), and Dependence defined that factor, which was interpreted as Association-Dissociation. In retrospect, the failure of a behavioral factor of Justice or Altruism to emerge may possibly have been due to erroneously assuming it could be represented as a heterogeneous collection of variables representative of the other hypothesized homogeneous behavioral dimensions.

Two nomothetic models were conceived of the personal trait dimensions and their constituent components as warranted by the data. One model, the Common Model, equated the personal trait dimensions with the secondary factors underlying the set of primary factors of cognition, emotion, and behavior <u>common</u> to the subjects, as a set, and those common primary factors were the two cognitive factors of

Evaluation and Dynamism, the two emotional factors of Pleasure and Arousal, and the behavioral factor of Association. The other model, the Dominant Model, equated the personal trait dimensions with the secondary factors underlying the set of primary factors of cognition, emotion, and behavior dominant in the sample of subjects, though not necessarily generalizable, and the dominant primary factors of that model were the two cognitive factors of Evaluation and Dynamism, the three emotional factors of Pleasure, Arousal, and Control, and the two behavioral factors of Sociableness and Dominance.

Two personal trait dimensions were found for the Common Model which were themselves found to be common, and three personal trait dimensions were found for the Dominant Model which were themselves found to be dominant in the sample of subjects. In both of those models, a personal trait dimension interpreted as Emotionalism was found which was, at its opposite extreme, apparently organized by the emotional factor of Pleasure and characterized by the cognitive dimension of Evaluation and, in the Common Model, by the behavioral dimension of Association and, in the Dominant Model, by the behavioral dimension of Sociableness. Another personal trait dimension interpreted as Extroversion was found for both those models, and, in both models it was apparently organized by the emotional dimension of Arousal and characterized by the cognitive dimension of Dynamism.

For the Dominant Model, the third personal trait dimension found was interpreted as Dominance because it appeared organized by the emotional dimension of Control and was characterized by the behavioral dimension of Dominance and the opposite of the cognitive dimension of Dynamism, though Dynamism equally characterized the other personal trait dimension of Extroversion in the positive direction.

The three personal trait dimensions of Extroversion, Dominance, and Emotionalism often found in personality research also corresponded generally to the three personal trait dimensions commonly found in the domain of interpersonal relations. That is, the personal trait dimensions of Extroversion, Dominance, and Emotionalism were generally the same as the dimensions of Inclusion, Dominance, and Dependence, respectively, found in research in interpersonal relations, though Extroversion (or Inclusion) had no behavioral component and Emotionalism (in the opposite direction, Dependence or Affection) was ladden with moral perception.

Of the three dimensions of Emotionalism, Extroversion, and Dominance which were found, only the dimension of Emotionalism had both a tripartite structure of cognition-emotion-behavior and, according to a fairly rigorous criterion, was common to the subjects. If one then considers those dimensions which were dominant in the sample

(i.e., characterized the average subject and the majority of subjects), then the two resulting dimensions of Emotionalism and Dominance corresponded to the two-dimensional model of interpersonal relations advanced by Leary (1957) and more recently by Wiggins (1979).

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CHAPTER ONE

An Inchoate Social-Psychological Theory of Dyadic Social Transaction

A general systems theoretical perspective and a set of first principles culminating in an organicist metaphysism have been philosophically established previously by the author (Campbell, Note 1) for the construction of a social-psychological theory of dyadic social transaction. Without such a philosophical perspective to guide the construction of a psychological theory, any such theory constructed is more liable to be fundamentally in error, for as William James (1890/1981) stated: "It is astonishing what havoc is wrought in psychology by admitting at the outset apparently innocent suppositions, that nevertheless contain a flaw. The bad consequences develop themselves later on, and are irremediable, being woven through the whole texture of the work"(p. 219).

An inchoate social-psychological theory of dyadic social interaction (not transaction) previously developed by the author (Campbell, Note 2) epitomizes the problems that are encountered in theoretical construction when one neglects to establish first the broader philosophical perspective upon which the theory to be constructed will be based. In that previously developed theory, a mechanistic metaphysism and a

dualistic epistemology were implicitly presupposed by the author while developing the theory.

According to the theory, in an interpersonal situation consisting of a focal-stimulus person, an ambient-stimulus physical setting, and a person who is a potential respondent (the subject), electromagnetic waves or other physical media of sensation were presumed to emanate from the physical objects of focal-stimulus person and physical setting and impinge upon the sensory receptors of the potential respondent, the subject. The resulting afferent neural stimulation in the subject was then presumed to culminate in a sensation or a cognition of the physical-stimulus complex of focal-stimulus person and physical setting in the central nervous system, which would then arouse an emotion. The emotion, in turn, would then effect presumably some efferent neural stimulation which would culminate in a behavioral response.

Such a sequence of events constituting the first phase of a social interaction was then theoretically explained by positing the existence of mediating psycho-neurological structures within the person developed from past interactions between varying interpersonal situations and the genes of the person, with those structures then constituting a kind of ideal record of the past.[1] When brought into contact with the reality of an interpersonal

situation in the present (the "real"), those structures then presumably functioned to apprehend (act upon) the situation and effect an objectively observable behavioral response within the situation.

The previously developed theory of dyadic social interaction as described thus far is, then, patently mechanistic and dualistic and as such, it entails all the epistemological problems of a mechanistic theory. Yet, the point at which it most begins to lose credibility, even if one were to accept the legitimacy of the mechanistic (and dualistic) metaphysism which it implies, is at the commencement of the second phase of what it terms a social interaction.

According to the theory, during the first phase the dimensions accounting for the pertinent psychological structures within the person pertain to focal-stimulus persons and physical settings, which are termed social dimensions and setting dimensions, respectively. Those dimensions consist of the three traditional components of perception/cognition, emotion, and behavior, all three of which relate to focal-stimulus persons or physical settings depending upon the nature of the dimensions.

Following the termination of the first phase with the production of an observable behavior by the subject, however, the behavior is then presumed to undergo a

theoretical transformation in which it no longer functions as a "response" but begins functioning as a "stimulus." Consequently, a whole new class of dimensions termed "behavioral dimensions" is then required to account for the apprehension of the "behavioral stimulus" and the result that apprehension has upon the other structures in the person pertaining to focal-stimulus persons and physical settings (i.e., feedback). Yet, those behavioral dimensions, though necessary constructs for completing the theory, have little credibility regarding their correspondence to metaphysical reality.

In fact, if the previously developed social-psychological theory had been based upon an organicist metaphysism rather than a mechanistic one, then no such class of constructs as the behavioral dimensions would have been necessary. For sensation, emotion, and behavior are not separate, disconnected entities acting upon one another according to some temporal sequence, nor are they acted upon or do they act upon a physical situation. Rather, they are contemporaneous with one another and perhaps also with a particular physical situation. They are, more or less, continuous, although particular sensations, emotions, and behaviors may become salient within the experience of the person as an extentional and durational <u>event</u> within a patterning of such events, as in the psychological reflex-arc analogue. And, from an organicist perspective, a

psychological reflex-arc analogue has completed both phases of its circuit when the behavior has ceased being salient to the subject, meaning, therefore, that such a process would be completed within the first phase of the previously described theory, the second phase and its relevant constructs then being superfluous.

However, despite the fact that the previously developed social-psychological theory of dyadic social interaction is not as parsimonious and coherent as it might have been if it had been based upon an organicist rather than a mechanistic metaphysism (which would have made it a transactional rather than an interactional theory), it, nevertheless, represents a significant advancement in social-psychological theorization. It is, as far as the author knows, the first fully explicit social-psychological theory pertaining to a reasonably comprehensive class of natural phenomena which considers the person as a relatively open system. It contains nineteen postulates which integrate much research and theorization in the specialty areas of personality and social psychology, and it is fully expressed in 298 mathematical formulae (sets of which follow an algorithm in their generation), thus making it virtually a self-contained theoretical system, capable even of being simulated by a computer. Moreover, by making relativity simple theoretical extensions to it, it may have the potential of rationally and objectively guiding the provision and assessment of

human psychological services, thus serving to humanize the services provided by community mental health centers, for example (Campbell, Note 3). All in all, from the possibly prejudiced view of the author, the theory is quite impressive, as far as mechanistic theories go, when one considers the current state of social psychology.

Yet, the theory of dyadic social interaction which has been developed, is presently merely an inchoate theory. It is an "inchoate theory" in the sense that the constants of the formulae and the formulae themselves have yet to be empirically tested and the predictive value of the overall theory experimentally determined, which, among other things would suggest a revision or possibly a complete abandonment of the theory. Given that the theory is mechanistic, however, it is likely to remain inchoate, for it should be substituted by an organicist theory and then committed to the flames, though being contemplated in the meantime perhaps for its didactic relevance.

Presently, however, it is beyond the competence of the author, given present circumstances, to develop another theory based upon an organicist metaphysism to replace the previously developed mechanistic theory in as explicit a form as before. The previously developed mechanistic theory of dyadic social interaction will, therefore, be expected to serve, supplementarily, as a quasi-rationale for an

organicist theory of the same class of natural phenomena construed transactionally rather than interactionally, for there would be much overlap between the mechanistic theory and an organicist theory which the author would develop to replace it. The mechanistic theory, in fact, contains organicist features making it somewhat of a metaphysical hybrid, and, as noted previously, the first phase of the mechanistic theory can be construed from an organicist perspective as having encompassed both phases of a social transaction.

The explicitly developed organicist theory of dyadic social transaction envisioned in the future, will, however, be crudely outlined below. In so doing, though, the effort to present <u>completely</u> the basic features of the theory non-mechanistically will not be made because to do so using a language which is inherently mechanistic is too demanding. Instead, the author will explicity describe the theory from an organicist perspective only when it seems convenient or crucial to do so.

AN INCHOATE THEORY OF SOCIAL TRANSACTION

In an organicist theory of social transaction, the prototypical psychological process of the reflex-arc analogue would serve as the unit of anaysis, being, then, what is meant most globally by "a social transaction." The psychological process of the reflex-arc analogue would

begin, from a third-party (objective) perspective, when a person who was theoretically the subject began attending behaviorally to another person within a physical setting, that other person and physical setting would then theoretically constitute the focal-stimulus person and the ambient-stimulus physical setting, respectively. The third-party observer may then observe what he would describe as emotional behavior from the subject followed by locomotive or manipulative behavior by the person with regard to the focal-stimulus person within the physical setting. From the perspective of the third-party observer directly observing the behavior of the subject, then, the psychological process of the reflex-arc analogue as described would be one naturally occurring behavioral process (event) with phases within that global process being described as attentional, emotional, and environmentally manipulative or "responsive" (or "behavioral" in the narrow sense of that word).

From the perspective of the subject, however, the focal-stimulus person would first unconsciously or vaguely be felt, that is, be experienced emotionally though initially not experienced saliently. The changing emotion of the subject would then determine the nature of the following attentional behavior of the subject in relation to the focal-stimulus person, resulting then in the stimulus complex becoming more salient within the experience of the

subject, becoming then, in that sense, an object of sensation. The changing emotion experienced by the subject would "determine" the attentional behavior and therefore the sensation experienced by the subject in a predictive, orderly sense, however, not in the mechanistic sense of the latter attentional phase or "event of experience" following the former by causal necessity.

Continuing with the explanation, qualitative and quantitative changes in the emotion experienced saliently by the subject would precede and follow changes in the object of sensation as experienced by the subject, that object of sensation being, of course, the complex of focal-stimulus person and physical setting. For, in a sense, emotion would direct the attentional behavior and the emotion would covary with the resulting clarity of the sensed object. Such a phase, the sensation phase (or stimulus phase), would then correspond to the receptive (or passive) mode of consciousness (Hilgard, 1980) (cf. Aristotle's nutritive function of the soul).

Following the stabilization of the stimulus complex as a salient sensation within the experience of the subject, that is, following the completion of the sensation or stimulus phase--the emotion experienced would lead, then, to the subject behaving in an environmentally manipulative manner, as, for example, in approaching the focal-stimulus person

within the physical setting. While doing so, the gross bodily movement would become more salient within the subject's experience, while, simultaneously the sensation of the stimulus complex would vary accordingly, as would any emotional quality covarying with it. This phase, then, which may be referred to as a motor or response phase (or behavioral phase) corresponds to the expressive (or active) mode of consciousness (Hilgard, 1980).

The motor or response phase is completed when the sensation of the stimulus-complex and the emotion covarying with it stabilize or begin changing in a different manner, the circuit of the reflex-arc analogue then having been completed. For example, having attended to the focal-stumulus person within the physical setting and then having begun approaching that focal-stimulus person, the subject would terminate that behavioral process when the emotion experienced ceased becoming more euphoric or began becoming dysphoric. The subject might approach a warm friend, for example, but cease when he began to feel a loss of a sense of control, of having lost his personal space.

Within the experience of the subject, however, sensation, emotion, and behavior are contemporaneous with one another, though they vary in their relative salience according to a temporal pattern of emotion-sensation-emotion-behavior (followed by emotion beginning another circuit). The

sensation of the object must continue if the subject is to coordinate his behavior in relation to it, with emotion functioning as the organizing principle in that coordination.

Similarly, from the perspective of a third-party directly observing the process, the subject continues to attend behaviorally to the stimulus-complex while behaving manipulatively in relation to it. Emotion would be observed to characterize that overall behavioral process, and it would especially be seen to mediate the transition between the attentional behavior and the manipulative behavior.

The psychological process of the reflex-arc analogue as described above, however, only refers to what James (1890/1981) called the "sciousness" of the subject in a social transaction with a focal-stimulus person within an ambient-stimulus physical setting. For, in describing that circuit of emotion-sensation-emotion-behavior (followed by emotion commencing a new circuit), the behavior was described as environmentally manipulative or locomotive behavior which could be directly observed by a third-party as it was manifested exteriorly to the body of the subject within that subject's environment. Although from the perspective of the subject, such an environmental behavior would be primarily a physiological process interior to the boundary of the skin which was experienced (i.e., a psycho-

physiological process), it would, as described, only be experienced during the time of its occurrence.

Another class of behaviors, however, may occur within the psychological process of the reflex-arc analogue that also are physiological processes interior to the skin of the subject and are experienced by the subject but are not directly observable by a third party as being manifested in the environment of the subject exterior to the subject's skin. Such a class of behaviors would, from the perspective of the third-party directly observing the subject, be covert behaviors in contrast to the earlier characterized overt behaviors. They would also, therefore, be characterized as cognitive behaviors.

Cognitive behaviors would have the capacity of recovering or "reconstructing" past experiences such as sensations, emotions, and behavioral movements and be involved in complex psychophysiological processes. A cognitive behavior, might, for example, be a re-experiencing of a past sensation, a past reflex-arc analogue, or a stream of such past experiences, being in such an instance essentially what James (1890/1981) meant by the "stream of thought." Any such cognitive behavior would be a "cognition," analogous to the sensing of any object being a sensation or a perception.

With the existence of cognitive, covert behaviors occurring in the psychological process of the reflex-arc

analogue in some instances rather than overt behaviors, the subject in a social transaction with a focal-stimulus person within an ambient-stimulus physical setting may become, in a manner, "con-scious" of that transaction. The focal-stimulus person within the setting may become optimally sensed by the subject within the first phase of a reflex-arc analogue (the sensation phase), but rather than an overt behavioral phase then following, a covert, cognitive behavior or cognition may occur instead in which the stimulus-complex being sensed is, for a period of time, being re-experienced. In that manner, the subject at any abstract time instant in the continually changing present may be conscious of a sensation previously experienced. Sciousness and con-sciousness, therefore, would, technically, not both be <u>salient</u> in experience simultaneously, though a sensation and a cognition of it (i.e., a cognitive behavior retaining or recovering it), like a sensation and an overt behavior, would be contemporaneous.

Cognitive behaviors might also transform the quality of previously experienced sensations, and they might also, for example, covertly manipulate the objects of sensation as experienced. They might further involve substituting other previously experienced objects of sensation--symbols, for example--for other sensed objects and then manipulate those symbols to generate abstract thought. As another important

mode of cognition, a person may recreate a series of past experiences, his past stream of thought, and would be behaving in a manner James (1890/1981) called "spiritual," with that aspect of the life of a person constituting that person's "spiritual self."

At this junction, it would be useful to conceive not only of the single relex-arc analogue as described above, but also of a double reflex-arc analogue which would explicitly incorporate both overt behavior and covert behavior (cognitive behavior, cognition). Such a double reflex-arc analogue would involve two concatenated cycles in the form of emotion-sensation-emotion-cognition (cognitive behavior)-emotion-sensation-emotion-behavior (overt behavior), followed then by emotion commencing some other psychological circuit or double circuit. Such a cycle would appear to be commonplace, as, for example, in the instruction parents give to children when something makes them angry that they should count to ten before they do anything. Albert Ellis' (1973) rational emotive therapy also seeks to intercede rational cognitions in some more automatic single reflex-arc analogues or to replace a cognition in a double reflex-arc analogue with another cognition presumed to be more rational for the subject. Stoics, of course, emphasized such a process in controlling emotion with reasoning.

From the "objective" perspective of a third-party observer, the morphological body of the subject would serve as the body of reference for establishing a spatial-temporal reference system for the psychological process of the reflex-arc analogue. Although that overall behavioral event would vary spatially and temporally within the experience of the observing third-party and as such be inherently subjective, the extension and duration of that event as experienced by the third party would be coordinated with a four-dimensional reference system, such as, perhaps, terrestrial space and sidereal time, depending upon the nature of that behavioral event. The spatial-temporal reference system and the description of the behavioral event within it would then be objective to the extent that other third-party observers when considered independently would ultimately arrive at or be expected to arrive at the same spatial and temporal description of the event.

The psychological process of the reflex-arc analogue when considered directly from the objective perspective of a third party as ascertained above, would begin, therefore, at that point in the spatial-temporal framework occupied by the physical complex of stimulus person and setting when the subject began behaviorally attending to that physical complex. Only at that point, in fact, would that physical complex be functioning <u>as</u> a stimulus complex, for a physical object is not a stimulus until it actually does begin to be

followed by (to "evoke") a response. That psychological event would then end at that point in the spatial-temporal framework occupied by the physical complex of stimulus person and setting in which the subject ceased behaviorally attending to the physical complex, following any overt, environmentally manipulative or locomotive behavior by the subject, if any. The sensation and motor phases, as mediated and organized by emotion, would then be described within that overall process.

Notably, however, such a description, when held to a spatial-temporal frame of reference appropriate to the psychological process as it naturally occurs, is not constrained in any manner by the organ of the skin of the person which separates the morphological person, when considered as an <u>aspect</u> of personal existence, from its environment. That is, the psychological process occurs, in that sense, across person-environment. Or, stated differently, the psychological process is a <u>social transaction</u> between the physical complex of focal-stimulus person and ambient-stimulus physical setting and the subject. Such an analysis would, then, be consistent with what Bentley would consider a situational theory (not in the conventional sense) incorporating a behavioral space-time (Bentley, 1941a; 1954/1975b).

The psychological process of a reflex-arc analogue when considered from the directly observable, "objective" perspective of a third party, however, omits from direct consideration the experience of the subject. Physics may, in contrast to psychology, quite legitimately omit from consideration the experience of the physical objects of its study as they behave in nature, for its objects of study are not conscious beings. Psychology, however, studies physical objects which are living, conscious beings, and its primary subject matter is the experience of those conscious beings--i.e., their psychological functioning involving sensation, cognition, emotion, and behavior as integral parts of organic, experiential wholes. The third-party perspective of the behavior of those conscious beings as it is directly observed, therefore, is of psychological interest primarily only insofar as it is incorporated into an objective method for better understanding the experience of those beings. For psychology, most appropriately, is the science of personal existence, of ontos, not of overt behaviors per se, and, as such, it requires an ontological space-time (the term "behavior" may be extended to include the experiencing and re-experiencing of objects, emotions, and behaviors, but then it acquires a meaning unconventional to psychology and the other sciences).

Concerning oneself, then, primarily with the experience of a subject involved in a social transaction, paralleling

the "objective" perspective of a third-party presumed to exist and to be directly observing the psychological process of a reflex-arc analogue (e.g., a scientist) would also be the perspective of the subject himself as he is experiencing that process, i.e., as he is involved experientially in that event. The morphological body of the subject would again serve as the body of reference for establishing a spatial-temporal frame of reference. Analogous to the frame of reference established for the third-party in directly observing a reflex-arc analogue, the objects within the experience of the subject would be inherently spatial and durational, and the extension and duration of such phenomena as reported by the subject may be coordinated by the subject or the third-party to an "objective" spatial-temporal framework, as, for example, terrestrial space and sidereal time. The descriptions of the psychological event from both the perspectives of the subject and the third-party, then, would be parallel and may be compared in certain respects.

From the perspective of the subject, as from the perspective of a third-party observer, the psychological event of the reflex-arc analogue would begin at that point in the spatial-temporal frame of reference occupied by the physical complex of stimulus person and physical setting when the subject began behaviorally attending to that physical complex. The motor phase would then emerge at that point in the spatial-temporal frame of reference in which

the subject began to move in relation to the stimulus complex or to manipulate it overtly or covertly through thought. The psychological event would then cease at that point in the reference system occupied by the stimulus complex following the behavioral phase.

However, in contrast to the perspective of a third-party observer, from the perspective of the subject there would be a shifting boundary separating an interior region from an exterior region. The interior region would be what James (1890/1981) referred to as the "phenomenal self" or "pure ego" of the system of the person, not to be confused with the morphological body of the person. The exterior region antithetical to the phenomenal self would be the phenomenal world, containing within it, perhaps, the physical complex of stimulus person and physical setting as a complex object of sensation, i.e., as a phenomenal object.

The boundary separating the phenomenal self from the phenomenal world of the experiencing person would be delineated emotionally. The interior region of the phenomenal self would be characterized by feelings of pleasure and of an absence of a feeling of control or of helplessness. It would be felt as spatially and temporally continuous with what was most constant within the experience of the person, emanating from a kind of emotional core of existential being.

Beyond the interior region of the phenomenal self as characterized above would be the exterior region of the phenomenal world. Phenomenal objects within the phenomenal world would be characterized emotionally in various ways, such as being pleasing but controlling, but as long as they remained in the phenomenal world they would not be characterized emotionally in the same manner as they would be if they were to become part of the phenomenal self, i.e., to become incorporated into the more central existential being of the person.

In a social transaction, within the experience of the subject the boundary between the phenomenal self and the phenomenal world would be expected to shift with those two regions and any phenomenal objects therein, therefore, varying in a complementary manner. Such a shift in boundary may, in some instances, for example, be accompanied by a focal-stimulus person previously experienced as an object in the phenomenal world becoming part of the phenomenal self, being perhaps an instance of what Erich Fromm (1956) called "interpersonal fusion." The boundary separating the two regions of the phenomenal self and phenomenal world may, in fact, <u>really</u> vary throughout the spatial-temporal frame of reference within the <u>experience</u> of the subject, independently of the skin of the person, inasmuch as the phenomena of experience are considered <u>as they are experienced</u>. (It should not be forgotten that from the

perspective of the subject all the objects in the environment of the subject exist for that subject as they are experienced by that subject, not as they exist absolutely exterior to the skin of the person, though there is expected to be, of course, some correspondence.)

The phenomenal self of a person, however, can not itself be directly experienced by that person as an object of that person's experience, for during the ever changing present the phenomenal self is that person, when psychologically considered, experiencing nature, of which that person is a part. One would not, therefore, expect that person to experience directly an entity (or a distinctive aspect of nature) representative of himself experiencing phenomena of nature (i.e., to introspect the phenomenal self). The existence of the phenomenal self and the sensations accruing to it, rather, is established as a first principle in accordance with Woodbridge's (1936) argument: It does not have to be empirically observed or logically proven.

The existence of the phenomenal self, however, is indicated by a cognitive behavior in which a portion of the stream of thought or sciousness of the person is reflected upon. During such con-sciousness, the person would re-experience an object or event in the phenomenal world and an antithetical region within that experience which could be felt but not otherwise directly "sensed" as an entity (or

phenomenal object). That palpable void, then, would represent the previous existence of the phenomenal self of the person which at that present time is experienced as an aftermath of its previous existence, as the "faint echo" of the self, to use a phrase of James(1922). Additionally, the existence of the phenomenal self is indicated by the Gaffron phenomenon in perception with the shifting boundaries of the self (Deikman, 1971).

A psychological reflex-arc analogue of a subject constituting a social transaction is conceived physically (while ignoring its experiential nature) as a transaction between (across, actually) a morphological structure in the subject, itself a natural event in progress, and a physical event environing that structure, say, for example, the movement of a focal-stimulus person into a physical setting including the subject (though more generally the physical event may also be within the skin of a subject). The exact nature of a social transaction or of a psychological reflex-arc analogue more generally would then depend jointly upon the specific physical event environing the morphological structure--that particular physical event being of a class of physical events associated with the structure--and upon the precise state of the morphological structure at the time of the occurrence of the psychological process.

By the postulate that the social transaction or some other psychological process is jointly dependent upon the exact natures of a pertinent morphological structure and a relevant environing physical event, however, is meant simply that the inter-dependency is logically required (i.e., is a necessary condition) for the psychological process and that its exact nature is determined accordingly. The mathematical formula expressing the nature of that interdependency may, conceivably, be any of a number of general forms, such as additive or multiplicative.

Given that the morphological structure integral to a psychological process such as a social transaction is itself a natural event in progress--albeit of comparatively lengthy duration so as to conceive of it at times as a relatively permanent thing (occupying space but not within time)--and the physical events environing that structure are never completely similar and are ever changing, then the re-occurrence of that psychological process as a patterning of events (emotion-sensation-emotion-behavior) may be explained, inasmuch as the same developing morphological structure and class of related physical events are involved, while, yet, there would be expected to be some variability within that patterning of events. One would expect, then, some stability to the patterning of events over time, though also some orderly change, due to the peculiarity of the structure and to its growth, and, one would also expect some

apparent flux in the process due to the variability of the physical events.

GENESIS OF RELEVANT NEUROANATOMICAL STRUCTURES

The problem then arises as to how a morphological structure involved in a psychological process such as a social transaction develops. Traditionally, proposed resolutions to the problem have been classifiable as nativistic or empirical (the issue sometimes being referred to as the nature versus nurture controversy)--those two perspectives paralleling the compartmental (dualistic and mechanistic) epistemologies of rationalism and empiricism. Even the more nativistically oriented ethologists, however, are conceiving of those two extremes as typifying the opposite poles on a hypothetical continuum with psychological phenomena falling at various points in between (Hess, 1970).

Earlier in history, some more nativistically oriented theoreticians analogized the development of the neuroanatomical structures involved in psychological processes with the ripening of the immature sex cells to mature ones, conceived by biologists at that time as being genetically determined. Yet, from an ontological perspective, while the genetic subsystem of a person provides the organizing principle of any developing natural morphological structure, any such structure is jointly and

inextricably a function of both the genetic subsystem and the environmental system encompassing it--i.e., the genotype and environmental-type determined at the conception of the person are empirically meaningless when considered independently. And, it is now generally recognized, that a person needs more than the basic environmental necessities of food and shelter for psychological development, as exemplified by the stimulus-deprivation studies. A person does not simply develop to his full potential psychologically without the provision of environmental conditions, often required during specific periods of ontological development--e.g., by analogy, Harlow's study of affectionate behavior in infant rhesus macaques (Harlow, McGaugh & Thompson, 1971).

On the other hand, the empirical theories of psychological development emanating in modern times from the British School of Empiricism (see Robert Watson, 1971) are also theoretically inadequate in providing a full account, not only upon the same a priori grounds alluded to with regard to maturational theories (i.e., that, however the meaning of environment may be stipulated, it has no empirical meaning independently of the genotype), but also upon empirical grounds. Speaking of associationist learning theories, especially of the S-R conditioning theories, for example, Bower and Hilgard (1981), following a review of the literature on sensory preconditioning and cognitive mapping

concluded that "... organisms acquire knowledge about spatial layouts and event regularities in their world that is apparently not reducible to stimulus-response bonds" (p. 416). They then continued by stating the following general criticism of early behavioral learning theory:

> "The insistence that all knowledge is reducible to stimulus-response associations seems to have been a mistake promulgated by the earliest founders of behaviorist learning theory. In their zeal to be objective and to banish dreaded mentalistic "ideas" from psychological theorizing, the early behaviorists <u>operationalized</u> knowledge (the product of learning) in terms of behavioral responses. However, this identifies (confuses?) the knowledge a person has about some event with the performances (behaviors) he may use to indicate that knowledge. The basic problem is that conceptual knowledge seems not to be reducible to specific responses to specific stimuli" (pp. 416-417).

Bever, Fodor, and Garrett (1968) have observed that learning or <u>psychological developmental principles</u> may be evaluated experimentally, but they may also be evaluated philosophically in terms of their <u>formal</u> limitation. Given "any theoretical principles for psychological description," they state, "one may study the kinds of behavioral repertoires their operation can represent <u>in principle</u>" (p. 582). And, when various sets of theoretical principles are evaluated accordingly, those sets may be found to be hierarchically ordered according to the behavioral repertoires they are capable of subsuming, with those sets of principles lower in the hierarchy therefore existing formally as special cases of higher, more general sets of

principles. When associative learning princples are thus compared, as they observe, "there is an upper bound on the richness of the repertoires they are capable of explaining, and we can ask of any particular behavioral ability whether it lies above or below that bound." "The important point," they emphasize, "is that certain human abilities lie beyond the upper bound on <u>any</u> set of learning principles that could reasonably be called 'associative'" (p. 582).

As an example of a behavioral repertoire not explicable by associationistic principles (as specified by their Terminal Meta-Postulate which does not allow for the existence of empirically unrelated theoretical elements--i.e., abstract elements), Bever et al. (1968) consider what a subject does when "he learns to recognize mirror-image symmetry in figures without explicity marked contours" (p. 583). Those figures the subject learns to discriminate as possessing mirror-image symmetry cannot be explained without positing an abstract (non-empirical) element in the set of explanatory principles as a kind of hypothetical center around which each empirical element on the left of the character string is rotated to the right. And, thus, as they argue, "an organism that has learned the mirror-image language has learned a concept that cannot rest on the formation of associations between behavioral (empirical) elements" (p. 584). As they conclude their discussion:

> "This argument appears to us to provide a conclusive proof of the inadequacy of association for these kinds of natural behaviors. ...We have considered associationism to require certain constraints upon the formulation of learning principles. Theories that are more powerful than associationism are at least theories that have weaker constraints. Hence, any behavior that can be characterized by associative principles can *ipso facto* be characterized by the more powerful models. Such models should not, therefore, be considered as alternatives to associative models; rather, associative rules are simply special cases of the rules employed by more powerful theories. If the rules are allowed, you are allowed the associative rules, but not conversely. As Sol Saporta has put it, anything you can do with one hand tied behind your back, you can do with both hands free" (p. 585).

The neuroanatomical structures integral to psychological reflex-arc analogues such as social transactions do not, in general, simply mature by the action of the genes when given time and what are generally referred to as the material necessities of the body (food, water, shelter, etc.). Nor is the brain a *tabula rosa* upon which experience writes, with the engravings being the relevant neuroanatomical structures, as the empiricists since Locke have believed.

Another unacceptable explanation of the generation of the morphological structures involved in psychological processes such as reflex-arc analogues is to assert that they emerge from a complex *interaction* between the genes or the physiological body of a person and that person's environment. Such an explanation is commonplace in psychology. As stated by Hoyenga and Hoyenga (1979), for

example: "Most people today agree that biology and environment interact, and that an individual's behavior is a complex function of their current interaction and the outcome of their interaction in that person's past" (p. 7). Yet, such an explanation is actually a non-explanation when scrutinized, for it fails to explain the set of principles describing such a development, and it seems to be more of a result of a kind of irrational compromise between nativistic and empiricist theories. As Kohlberg (1969) observed:

> "The distinction between theories stressing the innate and theories stressing the acquired has often been thought of as a contrast in quantitative emphasis on hereditary biological factors as opposed to environmental stimulation factors in causing individual differences. When the problem is posed in such a fashion, one can be led to nothing but a piously eclectic 'interactionism' which asserts that all concrete behavior is quantitatively affected empirically by both hereditary and environmental factors. The theoretical issues are quite different, however. They are issues as to the <u>location of the principles</u> producing basic mental structure within or without the organism" {italics added} (p. 350).

In contrast to the mechanistic theories of nativism, empiricism, and interactionism (which posit either one entity "acting upon" another or two entities taking turns "acting upon" each other, i.e., inter-acting), an organicist metaphysical perspective would presume that the generation of a morphological structure integral to a psychological process was a result of a series of transactions between the genetic subsystem and the environment of the person, coordinated by the genotype in the genetic subsystem. Yet,

the genetic subsystem of the person cannot be identified simply as a relatively permanent entity residing at a single location within the body of the person, for it literally pervades the whole body. And the relevant environment of the genetic subsystem cannot simply be identified as that portion of terrestrial space exterior to the body of the person.

Each cell of the body possesses a set of 23 pairs of chromosomes which is essentially identical for each cell, and the universal or "ideal" set of chromosomes constitutes the genotype of the genetic subsystem of the person which is manifested in every cell of the person throughout life, beginning with the initial cell of the person at conception containing the "master genotype" and ending with the final state of the body of the person at death. Each chromosome, on the average, consists of approximately 3,000 genes, with each gene being in the form of a DNA molecule.

The genes provide the ultimate organizational principle for morphological development, though they do not <u>cause</u> development directly by themselves. Rather, in transactions with physical conditions within their immediate environments according to a set of principles, proteins are generated from them which are then involved in the structuring and functioning of other body cells or in transactions with other genes in the inducement or repression of other

proteins. In such a manner, the body develops structually and maintains itself.

Clearly, conceiving of a neuroanatomical structure as it is integrally involved in a psychological reflex-arc analogue is different than conceiving of its development, for the two conceptions occur at different hierarchical levels of reality. When a neuroanatomical structure is conceived as a necessary physical condition, as an integral aspect of a reflex-arc analogue, it is conceived as a static state or property of the person, for the object of theoretical interest is primarily the psychological reflex-arc analogue, not the development of the neuroanatomical structure necessary for its occurrence. Yet, the neuroanatomical structure necessary for the occurrence of a reflex-arc analogue, is, from a different, morphological perspective, an event in progress of theoretical interest itself, at least insofar as its development or structuring to a certain degree is a necessary condition for the occurrence of the reflex-arc analogue pertaining to it.

Generally, the physical conditions occasioning the occurrences of a psychological reflex-arc analogue are conceived as being exterior to the body of the person, in what is conventionally conceived as the environment of the person, though even earlier Watsonian behaviorism defined physical stimuli evoking responses as also sometimes

emanating viscerally (Watson, 1924/1930). The physical conditions necessary for the growth and maintenance of the neuroanatomical structure occasioning the occurrence of such a reflex-arc analogue, however, are those physical conditions within the immediate environment of the genes, and here that environment is more identifiable at the cellular level. In the development of the neuroanatomical structure involved in a psychological reflex-arc analogue, then, it would be expected that, to a greater or lesser extent, the structure's implementation in a psychological process would be directly or indirectly a necessity for changing the physical conditions immediately environing the genes which would occasion the systematic production of proteins necessary for the development and maintenance of the structure. When one further recognizes that such structures may be of an extremely refined nature, given, for example, that there are about a million billion neurons in the brain (10 to the fourteenth power) (Sagan, 1979), then such a process becomes more credible.

Seligman (1970) has marshalled forth considerable evidence from experiments consistent with the perspective presented above concerning the development of the morphological structures necessary for the occasioning of psychological reflex-arc analogues. Citing several prominent learning theorists who asserted that the nature of a stimulus to be associated with another stimulus or to a

response was arbitrary with regard to the laws of learning (the "assumption of equivalence of associability"), he showed, on the contrary, that animals varied according to their species with regard to the associations they could more easily learn to make. At one extreme, animals of a species could make some associations quite easily, sometimes, for example, following the single presentation of a stimulus to be conditioned to a response--a phenomenon corresponding to the more instinctive behaviors studied by ethologists. Such associations were presumed to be more "wired into" the animals of a species, as he put it, through the process of evolution, and those animals were then conceived as being inherently more biologically "prepared" to make such associations. Some other associations for members of a given species could be learned, given the presentation of a number of learning situations, but they were then considered less prepared or relatively "unprepared" to learn them. And, at another extreme, some associations could not be learned at all by the members of a species, and they were considered therefore "contraprepared" to learn them.

The associations members of a species could learn to make, then, were conceived to vary along a continuum from prepared, to unprepared, to contraprepared, with the ordering being somewhat peculiar to the nature of the species. Seligman cited, for example, an experiment in

which rats were X-irradiated while drinking saccharine-flavored water while lights were flashing and noise was being generated. The X-irradiation was previously known not to affect them until about an hour later, at which time they became sick. Later, the rats were found to avoid drinking saccharine-flavored water but not water accompanied by flashing lights and noise, thus demonstrating that the different physical stimuli were not equivalent in associability. Such a result, he believed, would be expected from the evolutionary history of rats in that the ability to learn the taste of unhealthy water would be more crucial for survival and the perpetuation of the species than to learn the noise and flashing lights accompanying unhealthy water which would be much less likely to occur in nature.

The implication of Seligman's conception of the differential "preparadeness" of a species to learn various associations is, of course, that the genotype of an organism inevitably provides the <u>organizing</u> principle for its psychological development. Such an implication is evident in the following statement by Seligman (1970) concerning the psychological development of humans:

> "By concentrating on events for which organisms have been relatively unprepared, the laws and models which general process learning theories have produced may not be applicable beyond the realm of arbitrary events, arbitrarily connected. This would not be an obstacle if all of human learning consisted of learning about arbitrary

> events. But it does not. Homo sapiens has an evolutionary history and a biological makeup which has made it relatively prepared to learn some things and relatively contraprepared to learn others. If learning varies with preparedness, it should not be surprising that the laws for unprepared association between events have not explained such phenomena as the learning of language or the acquisition of motives" (p. 414).

Cognitive developmental theorists, such as Piaget (1970) and Kohlberg (1969), have similarly postulated that human cognitive development, though requiring the existence of special environmental conditions, is structured by organismic factors, which must be assumed ultimately to mean that it is structured by an individual's genotype. In addition, however, they also postulate that the cognition or "mode of thought" corresponding to a developing underlying neuroanatomical or "cognitive" structure develops not only quantitatively but also qualitatively. The qualitative development of such a mode of thought they further theorize to follow an invariant sequence which is hierarchically arranged such that each "stage" in the sequence integrates the previous stages within it.

Qualitatively, each mode of thought corresponding to a developing underlying cognitive structure is conceived by cognitive-developmental theorists as a "structured whole." As Kohlberg (1969) explains this conception, "{a} given stage-response on a task does not just represent a specific response determined by knowledge and familiarity with that

task or tasks similar to it." "Rather," he states, "it represents an underlying thought-organization, e.g., 'the level of concrete organization,' which determines responses to tasks which are not manifestly similar" (pp. 352-353).

According to cognitive-developmental theorists, the qualitative changes in the modes of cognition which occur as the underlying neuroanatomical structure develops follow "an <u>invariant sequence</u>, order, or succession in individual development." And, although "cultural factors may speed up, slow down, or stop development, they do not change its sequence" (p. 352).

Furthermore, each cognitive-stage in development represents a higher-level hierarchical integration of lower-level stages of cognitive development. That is, "{s}tages form an order of increasingly differentiated and integrated structures to fulfill a common function. ... Accordingly higher stages displace (or rather reintegrate) the structures found at lower stages" (p. 353).

The theoretical perspectives presented above by Bever, Fodor, and Garrett (1968), Bower and Hilgard (1981), Kohlberg (1969), and Seligman (1970) are mechanistic; yet, the phenomena they attempt to explain, are, nevertheless, consistent with the organicist perspective presented earlier as to the origin of the morphological structure of a person necessary for the occasioning of a psychological reflex-arc

analogue, such as would be involved in a social transaction. To recapitulate that organicist perspective, the development of the neuroanatomical structure integral to a psychological reflex-arc analogue is conceived as resulting from a series of transactions between the genetic subsystem and the environment of the person, in accordance with a set of principles represented by the genotype within the genetic subsystem. Within such a theoretical context, the "genetic subsystem" would have as its components all of the genes throughout every cell in the body and the "environment" would be that area immediately environing the genes, conceived therefore more at the cellular level.

Accordingly, the activation of a developing neuroanatomical structure necessary for the occasioning of a psychological reflex-arc analogue might then be a necessary condition among others for eventually establishing those physical events immediately environing the genes necessary for the further development of that structure. The activation of that structure, however, would depend jointly upon the nature of the structure at the time of its activation and upon the nature of some more distal environmental event, such as, for example, an "exogenous" event involving the movement of some other person into the physical setting environing the body of the person. From a psychological and ontological perspective, though, the nature (or subjective reality) of such a distal

environmental event upon which the activation of the structure depended would depend upon or be relative to the nature of the structure prior to its activation. And, given that the nature of that structure, prior to its activation, developed as has been described in accordance with a set of genetic principles codified, so to speak, in the genotype, then the nature of the distal environmental event, ontologically, would be constrained by some genetic parameters which may be only abstractly conceived. Those genetic parameters, of course, would then be not only characteristic of the person and perhaps that person's level of development, but they would also be shared by other members of homo sapiens to a considerable extent as well.

Within such an organicist perspective as has been presented above, there would not be one entity acting upon another entity or two entities alternatively acting upon each other as in the mechanistic perspectives. Rather, an event would be conceived as a transaction occurring across two distinctive aspects of nature. A psychological reflex-arc analogue, for example, would be an event occasioned by a neuroanatomical structure necessary for such a psycho-physiological process to occur--that neuroanatomical structure itself being a natural event in progress--and a relevant physical event environing that pertinent neuroanatomical structure, being either endogenous (e.g., a visceral event) or exogenous (e.g., some physical event

exterior to the skin). The psychological event, then, would be a transaction of the neuroanatomical structure and the relevant physical structure environing it--that is, it would be an event occurring across both those two structures, across, for example, organism-environment. The movement of the environing structure may temporally precede the event, but it would not "elicit" or "initiate" it. Nor would such an event be "effected" by the neuroanatomical structure necessary for its occurrence (e.g., by some mental faculty). And nor would the event be an inter-action of the two structures.

Similarly, the development of the neuroanatomical structure necessary for the occasioning of a psychological reflex-arc analogue such as a social transaction would not be effected or "determined" by the action of the person's genes. Nor would it be effected or "determined" by physical events in the proximal environment of those genes. Rather, the generation of the structure would be conceived as resulting from a series of transactions between the genetic subsystem and its proximal environment, occurring according to a set of principles codified, in a sense, by the genotype of the person. The genetic subsystem would itself be an "open system," as Bertalanffy would use that term, and would itself change throughout ontogeny (as the cells in the body change). But any phase (or "event") in the growth or decay of a neuroanatomical structure would ultimately be traced as

originating from or failing to originate from a transaction occurring between (or across) the genetic structure during a particular interval of time and a physical event (a structure in motion such as a protein) in the proximal environment of that genetic structure. It would not be traced to the action of one or the other or to their interaction.

As for more remote physical events environing the genetic structure--as, for example, the movement of another person into the physical setting of the person (subject) occasioning a social transaction--such events would not directly "reinforce" or "condition" any neuroanatomical structure involved in a psychological transaction. As explained previously, however, they may be conceived, indirectly, as physical conditions or pre-requisites (not conditioners) for the maintenance or development of any neuroanatomical structure with which they are involved, for their involvement with such structures in psychological transactions may ultimately lead to changes in the physical conditions immediately environing the genes thus perhaps leading to the growth or decay of the neuroanatomical structures to which they are related.

The development and maintenance of a neuroanatomical structure integral to a psychological transaction and the occurrence of that psychological transaction involving the

neuroanatomical structure refer to two different hierarchical levels of reality, as previously stated. Therefore, if one is to consider only that level which super-ordinates the other, then the development and maintenance of the neuroanatomical structure, or the development of the person more generally, would be foremost, and that process would be presumed explicable as a continuing series of transactions between the genotype and ultimately the environmental-type of the person.

An important recognition of the organicist perspective of psychological development as presented above is that the part of nature environing the morphological body of the person cannot be simply conceived as shaping or determining the psychological nature of the person. Nor can that part of nature peculiar to the person and inherent in the person from conception to death--the genotype of the person--be simply thought of as determining the psychological nature of the person, with relative indifference to the environmental-type in which the person lives. Rather, from an ontological perspective, the environmental-type within which the person lives provides a series of physical conditions (not conditioners or reinforcers) which occasion a series of transactions with the genetic subsystem of the person, with those transactions organized, roughly speaking, by the genotype, which leads to the psychological development, as well as the overall development, of the person.

A psychological science, therefore, if it were correctly oriented, would endeavor to predict a psychological transaction or a series of such transactions, based upon the psychological development of that person up to that point in time and upon the presenting environmental condition, <u>with the exact nature of that environmental condition considered relative to the psychological development of the person</u>. All theories of learning, then, would become, through such greater specification, theories of personal, psychological development. The uniqueness of the genotype and the environmental-type of the individual would, of course, formally limit the accuracy of such predictions--a limit which science and society should generally respect--but given the similarities among genotypes and among environmental-types for humanity and for even more narrowly defined classes of people, such a science would then be possible.

From such a perspective, the role of professional educators, for example, would be, as Kohlberg (1981) has advocated, one of <u>facilitating</u> personal development in one or more of a number of pre-determined general areas, as well as evaluating student progress in accordance with standards deemed necessary by the educational institution (assuming the legitimacy of those standards). The educator would facilitate such personal development by strategically presenting special environmental conditions to students

calculated to further their personal development, relative to their level of development. The role of the educator would explicitly not be that of inculcating ideas into them nor be that of neglecting their educational environment under some misguided romantic notion that when left to themselves they would develop to their fullest potential.

Perhaps a good analogy for an educator or some other human developmental specialist would be that of a horticulturist. A horticulturist would not be apt to think that by providing a plant with special environmental conditions such as a particular soil, certain nutrients, and water it could be made to grow to its fullest potential; nor, of course, would he think it would do so without those physical conditions. Rather, he would likely conceive that by providing the plant with such physical conditions according to the species of the plant and the developmental status of the plant, he would be merely providing those environmental conditions which would facilitate the development of the plant to its fullest potential. And the relevance of those environmental conditions for facilitating (or inhibiting) the realization of the plant according to its potential he would understand to ultimately depend upon the genotype of that plant--not upon what generally works best for plants in general or plants of that species without regard to their stage of development.

In the inchoate theory of dyadic social transaction, as previously explained, a social transaction in the form of a psychological reflex-arc analogue is conceived as occurring in a dyadic interpersonal situation consisting of the subject, a focal-stimulus person, and an ambient-stimulus physical setting. The focal-stimulus person, for example, may be moving into the physical setting environing the subject, and that exogenous physical event in conjunction with some morphological structure in the subject functionally related to it may occasion a particular reflex-arc analogue. Or, as an alternative example, an endogenous physical event (a physiological event such as a hormonal change) environing a neuroanatomical structure necessary for the occurrence of a class of psychological reflex-arc analogues to which it is functionally related, in conjunction with that neuroanatomical structure, may occasion a particular reflex-arc analogue in which the subject might begin moving towards a focal-stimulus person environed in a physical setting.

Considering the former example in which the physical event preceding (not initiating) the social transaction is that of the focal-stimulus person moving into the physical setting environing the subject, from the perspective of the subject--that is, as experienced by the subject--three phases would be involved in the event. Emerging from a vaguely experienced emotion would be a sensational (or

perceptual) phase in which the physical complex of focal-stimulus person and physical setting would be becoming more clearly sensed as a phenomenal object within the phenomenal world of the subject. While sensation of that physical complex continued, the emotional quality covarying with it would then become salient within the experience of the subject, thus initiating an emotional phase. And while both sensation of that physical complex and a feeling of it continued, an environmental (manipulative, locomotive, overt) behavioral phase would later become salient in the subject's experience, as the subject's body began moving through its environment or began manipulating the physical complex, thus anteceding a change in the sensation of that physical complex and the feeling of it and thus completing the circuit of the psychological reflex-arc analogue. Therefore, although sensation, emotion, and behavior (or perceptual, emotional, and overt behavior) would be overlapping or more or less contemporaneous, they would become salient as events or phases within the experience of the subject in the temporal sequence of sensation-emotion-behavior, with emotion further presumed to precede and follow that sequence.

Similarly, considering the same hypothetical example of a social transaction from the perspective of an "objective" third-party (e.g., a behavioral scientist) directly observing such an event, that is, from the reported

experience of that third-party, three phases corresponding to the three phases occurring within the subject's experience would be reported. Although the behavior of the subject would be perceived by the third party as being continuous throughout the event, the event would be reported as being initiated with an attentional behavioral phase, corresponding to the sensational phase within the experience of the subject. While that attentional-behavioral experience continued, the third party would later report an environmental (locomotive, manipulative, overt) behavioral phase being initiated, with an emotional behavioral phase having been initiated between (i.e., mediating) the two. Although the third party would report attentional, emotional, and environmental behavior as having been overlapping and more or less continuous, therefore, the social transaction in the form of the simple refex-arc analogue would be reported as a temporal patterning of events (phases of behavior) in the sequence of attention-emotion-behavior, corresponding, of course, to the sequence of events occurring in the subject's experience of sensation-emotion-behavior.

In the hypothetical example of the social transaction involving the simple psychological reflex-arc analogue, however, from the perspective of the subject, which is the perspective primarily of interest in psychology, the subject would not be con-scious of his experiencing of the social

transaction, for it did not include any cognition as previously described and would therefore be only an example of what James (1890/1981) called "sciousness." If, instead, the psychological reflex-arc analogue which eventuated had a cognitive behavior (covert behavior, cognition) instead of the environmental behavior (overt behavior), then the subject could become con-scious of the sensation and emotion experienced. And, if that reflex-arc analogue of sensation-emotion-cognition (cognitive, covert behavior) were followed by another reflex-arc analogue of sensation-emotion-behavior (environmental overt behavior), then the previously discussed double reflex-arc analogue would occur in the form of sensation-emotion-cognition (covert behavior)-emotion-behavior (overt behavior), with that sequence presumably preceded and followed by emotion. Such a psychological process may be reported by the subject, and a third-party may infer its existence when, for example: the subject is observed to become attentive to some physical event, displays emotional behavior, for a period of time does <u>not</u> behave overtly, the emotional behavior then changes or subsides, and, finally, an overt behavior is manifested which is not commensurate or congruent with the initially displayed emotion.

In the occurrence of a double reflex-arc analogue as it pertains to dyadic social transaction, rather than considering two social transactions to have occurred, the

whole process may be conceived more simply as a single more complex social transaction. Given the double reflex-arc analogue of sensation-emotion-cognition(covert behavior)-emotion-behavior (overt behavior), the emotion experienced between sensation and cognition may be ignored for a more consciousness-oriented psychological theory (being left, then, to some depth psychology) or presumed generally to be congruent with and reflected in the emotion experienced between cognition and behavior. And the experiential categories of sensation and cognition may be considered as more specific categories of experience within the more general category of cognition more broadly conceived. For a cognitive behavior may covertly manipulate an object of sensation as it is experienced, thereby changing the sensation of it. Such a conception is consistent with cognitive-developmental theories, as exemplified by the following assumption stated by Kohlberg (1969):

> "Cognitive structures are always structures (schemata) of <u>action</u>. While cognitive activities move from the sensorimotor to the symbolic to verbal-propositional modes, the organization of these modes is always an organization of actions upon objects" (p. 348).

Conceiving of the category of cognition more broadly so as to encompass sensation is also congruent with some other psychological constructions. As Hilgard (1980) has observed, for example, in his discussion of various

theoretical conceptions within the general area of cognitive psychology: "Cognition is a generic term used to designate all processes involved in knowing. Hence it covers everything from perception to reasoning" (p. 6).

From the above discussion, therefore, from the perspective of the subject, both a single reflex-arc analogue and a double reflex-arc analogue may be conceived as exemplifications of a simple social transaction and a complex social transaction, respectively, and both types of transactions may be conceived as being experienced by the subject according to a common basic prototypical temporal patterning of events in the form of cognition(perception/cognition)-emotion-behavior(overt behavior). From the perspective of the third-party observer, a corresponding simplification would then also occur in which the temporal sequence of attention (corresponding to perception/cognition)-emotion-behavior (overt behavior) would be presumed to characterize both simple and complex social transactions.

Moreover, although the conclusion that a prototypical sequence of experiential events in the form of cognition(sensation/cognition)-emotion-behavior is based upon a discussion employing a hypothetical social transaction <u>preceded</u> by an <u>exogenous</u> physical event, the same conclusion would have been obtained if the hypothetical

example of a social transaction used in the discussion had been preceded by an endogenous physical event. In the other hypothetical example of a social transaction given prior to the beginning of that discussion but not used within it, an endogenous physical (physiological) event such as a hormonal change environing a neuroanatomical structure integral to the occasioning of the psychological reflex-arc analogue constituting that social transaction was conceived as preceding that event. Following such an endogenous physical event, it was theoretically conceived that the neuroanatomical structure functionally related to a physical complex of focal-stimulus person and environing physical setting, in conjunction with that physical complex, would occasion a social transaction in the form of a reflex-arc analogue occurring across those two structures. An obvious example might be that of sexual behavior in which a change in the sexual hormones of the subject may be followed by an emotional arousal leading to a cognition of the whereabouts of a sexual partner, followed by emotion, followed by locomotive behavior leading to the eventual sensing of that partner within an environing physical situation and so forth. The initial cognition(of partner and setting)-emotion(e.g., desire)-behavior(locomotion into the setting with the partner) preceded by the vaguely experienced emotion, would conform to the model of a social transaction as previously concluded. Learning theorists

would refer to such behavior as exemplifying incentive learning.

Postulating that simple and complex social transactions, whether preceded by an endogenous or an exogenous physical event, are experienced by the subject as consisting of the three distinctive aspects of cognition, emotion, and conation and that they are experienced in that temporal order is, of course, not inconsistent with some mechanistic theorization which may be traced to antiquity. Hilgard (1980) within the context of reviewing the psychology of cognition, has concluded that such a psychology, even when broadly conceived, "like behaviorism, is not a complete psychology" (p. 6). "The ancient classification of psychological processes as comprising cognition, affection, and conation," he has asserted, "can serve as a reminder that there is something more" (p. 6). An example of a theoretical construct of contemporary psychology which does, in fact, incorporate all three aspects of psychological processes (cognition, affection, and behavior), according to most psychologists, is the "attitude" (e.g., Chein, 1951; Freedman, Carlsmith & Sears, 1978; Kramer, 1949; Smith, 1947), though the temporal ordering of those three aspects within that process is generally left unspecified.

McDougall (1908/1921), however, earlier in this century, not only postulated that cognition, emotion, and conation

were distinctive aspects of all psychological processes, "even the most purely instinctive," but also that they necessarily occurred in the temporal order of cognition-emotion-conation due to the general neurophysiology of animals as it was involved presumably in such processes. While implicity employing a mechanistic metaphysical perspective, despite his belief to the contrary, he reasoned that even the more instinctive processes involved cognition, emotion, and conation and in that temporal order, for those "psychical" aspects and their temporal order must correspond to the temporal changes in the "physical" (neurophysiological) aspects of those processes (which he conceived of mechanistically): That is, afferent neural stimulation from an external object (corresponding to perception/cognition) was presumably followed by stimulation of the central nervous system (corresponding to emotion) which was then presumably followed by efferent neural stimulation (corresponding to conation). As he presented his argument:

> "There is every reason to believe that even the most purely instinctive action is the outcome of a distinctly mental process, one which is incapable of being described in purely mechanical terms, because it is a psycho-physical process, involving psychical as well as physical changes, and one which like every other mental process, has, and can only be fully described in terms of, the three aspects of all mental processes--the cognitive, the affective, and the conative aspects; that is to say, every instance of instinctive behavior involves a knowing of some thing or object, a feeling in regard to it, and a striving towards or away from that object" (1908/1921, p. 27).

Prior to McDougall, Auguste Compte (1851/1875, Vol. 1), in his theory of logical positivism, had similarly postulated that cognition, emotion, and conation were involved in psychological processes and that they must be conceived as occurring in that order. For, as he explained his position: "The truth is, and it is important to recognize it, that Thoughts must be systematized before Feelings, Feelings before Actions" (p. 16).

From the discussion thus far, then, it may be concluded that social transactions involving a subject and a physical complex of focal-stimulus person and ambient-stimulus physical setting are single or double psychological reflex-arc analogues occasioned by a particular morphological structure within the subject and a particular structure of the physical complex of stimulus person and setting, with the physical event preceding such a psychological process being either endogenous or exogenous. Furthermore, such social transactions, regardless of whether they are single or double reflex-arc analogues, are psychological processes which may be conceived most generally as being experienced by the subject as consisting of the three distinctive phases of cognition(sensation/cognition), emotion, and behavior (overt behavior), which occur in that order. In contrast to a mechanistic perspective, however, although cognition, emotion, and behavior become salient within the experience of the subject at different times, excluding from

consideration their varying dominance within the subject's experience, they are conceived as overlapping and being more or less contemporaneous with one another.

PREDICTION OF THE REFLEX-ARC ANALOGUE

An important task, therefore, for the theory of dyadic social transaction being developed, is to predict the occurrence of a social transaction as it has been conceived to be. To do so, the physical structure of focal-stimulus person and ambient-stimulus physical setting would first have to be considered a synthesis of a number of more general components. Correspondingly, the neuroanatomical structure of the subject involved in the transaction would then have to be considered as a synthesis also of more general components. For, without a reduced set of more general categories of natural phenomena, objective prediction, scientific or otherwise, would be impossible.

An obvious problem emerges, however, in that the neuroanatomical structure involved in a social transaction may not be directly observed. Nor, consequently, may the neuroanatomical components composing that structure be observed, as component structures. Such a problem, however, is not peculiar to psychology, for in biology, a morphological characteristic may be inferred as being guided in its development by a particular genetic structure composed of a particular combination of genes, with the

genetic structure and its constituent genes not having ever been observed.

The problem may be simply resolved, however, by recognizing that if the general components of the physical structures of combinations of stimulus person and setting are indeed integral to particular social transactions, then neuroanatomical structures corresponding to those general components of those physical structures would be presumed to exist. Those neuroanatomical structures could then be theoretically conceived as the general neuroanatomical components from which all the particular neuroanatomical structures involved in social transactions are composed. Although those general neurological components could still not be observed and their relevant properties directly assessed, each time a general physical component in the interpersonal situation was involved in a social transaction the neuroanatomical component corresponding to it would be presumed to be involved. By then using the presence or absence of general components of interpersonal situations as indices for the involvement of general neuroanatomical components corresponding to them, the involvement of those general neuroanatomical components may then be abstracted and represented according to the dimensions characterizing those transactions. That is, a general neuroanatomical component structure could be represented abstractly as a profile point in a k-dimensional coordinate system where the

coordinates were the general dimensions characterizing social transactions.

From an ontological perspective, those general neuroanatomical structural components from which all the neuroanatomical structures occasioning social transactions were composed would, as discussed previously, actually be events in progress, but their duration would be lengthy enough that they could be considered as relatively enduring structural components within the open, organic system of the person in relation to the social transactions within which they would be involved. Changes in the general physical components of interpersonal situations corresponding to the general neuroanatomical components, to the extent they were reflected in the psychological functioning of the subject, would correspond to changes in the general neuroanatomical components to which they were related.

From an ontological perspective, changes in the general physical components of interpersonal situations as ascertained from some other "objective" perspective such as from direct observation by a third party, would not be of primary interest. From a scientific perspective, a scientific observer of a social transaction would only have to assume that the physical complex of stimulus person and setting he believed to be involved in a social transaction was identical to the one experienced by the subject in that

transaction. The exact nature of the physical complex, from an ontological perspective, would be "relative" to the subject, that is, as experienced by the subject, not as experienced by any third party, and, as such, it would correspond to the nature of the neuroanatomical components of the subject involved in the experience.

Considering, now, an analysis of the physical complexes of combinations of a focal-stimulus person and an ambient-stimulus physical setting involved in social transactions, the first general physical components which are suggested are, of course, the two major components of the focal-stimulus person and the ambient-stimulus physical setting. The component of the focal-stimulus person, however, may be further analyzed as composed of a subcomponent identified as the social role of the focal-stimulus person and of another subcomponent identified as what might be referred to as the personhood of the focal-stimulus person--that is, the focal-stimulus person considered as a person distinctly of any social role. Finally, the subcomponents of the social role and the personhood of the focal-stimulus person component and the component of the ambient-stimulus physical setting may be further analyzed into the two constituents of specificity and generality. That is, the role, personhood, and setting may be identified generally as representatives of classes of roles, personhoods, and settings, respectively (with the members of each class considered interchangeable),

and specifically as particular members of those classes, with each member considered according to its uniqueness.

Corresponding to the hierarchical analysis of the general physical components constituting a physical complex of focal-stimulus person and ambient-stimulus physical setting would be a hierarchically arranged set of general neuroanatomical components represented abstractly as profiles on the underlying dimensions descriptive of social transactions (i.e., as profile points in a k-dimensional coordinate system where the axes are the latent dimensions accounting for social transactions). Each general neuroanatomical component structure, then, would be represented as a profile on a set of dimensions consisting of a set of the dimensions accounting for cognition, a set of the dimensions underlying emotion, and a set of the dimensions characterizing behavior--as cognition, emotion, and behavior are experienced by subjects during social transactions.

Inasmuch, however, that the profile points representative of a general neuroanatomical component as it occurred in a population of subjects covaried relatively independently among the dimensions within each subset (of cognition, emotion, or behavior) but not necessarily among the dimensions from different subsets, as would be expected (given that dimensions within subsets would be empirically

derived such that they were relatively independent and that the qualities of cognition, emotion, and behavior in a transaction would be expected to be correlated), then such profile points could instead be more preferably represented by a reduced set of composite dimensions formed as mathematical combinations of the subsets of cognitive, emotional, and behavioral dimensions. Each such dimension consisting of the three components of cognition, emotion, and behavior, then, could also be conceived as a statistically independent or relatively independent factor accounting for the involvement of the relevant general anatomical structure in social transactions. Such a theoretical conception would be metaphysically permissible in a transactional analysis (though not an actional or inter-actional one) in that, although cognition, emotion, and behavior are experienced most saliently by the subject at different times during the process, they are ongoing and organically related.

In social transactions, therefore, corresponding to the physical components of the hierarchical structure of the physical complex of a focal-stimulus person and an ambient-stimulus physical setting would be a set of general neuroanatomical components hierarchically arranged to form the neuroanatomical structure within the subject involved in the social transaction, with each general neuroanatomical component abstractly represented by a set of dimensions

consisting of the three components of cognition, emotion, and behavior: The set of dimensions representing the general neuroanatomical structural components corresponding to the focal-stimulus person may be referred to as the social dimensions, and the set of dimensions representing the general neuroanatomical structural components corresponding to the physical setting may be referred to as the setting dimensions. The general neuroanatomical subcomponents corresponding to the subcomponents of the personhood and social role of the focal-stimulus person would each be represented by a set of dimensions, with the set corresponding to the personhood referred to as personal dimensions and the set corresponding to the social role termed the role dimensions. And, finally, the general neuroanatomical components (lower-order components) corresponding to the specificity and generality constituents (components of subcomponents) of personhood, role, and setting, would be represented by sets of dimensions referred to as attitudinal dimensions and traits, respectively, qualified by the physical component to which they corresponded. That is, there would be personal attitudinal dimensions and traits, role attitudinal dimensions and traits, and setting attitudinal dimensions and traits.

The inclusion of attitudinal dimensions and trait dimensions representative of two different types of general neuroanatomical structural components into the theory

incorporates the two important forms of learning of discrimination and generalization postulated by conventional learning theorists, which one would also expect to be necessary for effective psychological functioning from an ethological perspective. Furthermore, it also happens to be consistent with Gordon Allport's (1961) assertion that both attitudinal and trait constructs are necessary for a theoretical understanding of personality:

> "Both attitude and trait are indispensable concepts in psychology. Between them they cover the principle types of disposition with which the psychology of personality deals" (p. 348).

From such a theoretical perspective, sets of dimensions at a lower-hierarchical level may be synthesized to generate a set of dimensions occurring at a higher-level. That is, the personal attitudinal dimensions and trait dimensions may synthesize to form the personal dimensions, and, analogously, the role attitudinal dimensions and trait dimensions and the setting attitudinal dimensions and trait dimensions may synthesize to form role dimensions and setting dimensions, respectively. The personal and role dimensions may then synthesize to form the social dimensions, and, finally, the social dimensions and the setting dimensions may synthesize to form an overall dimension of cognition-emotion-behavior as representative of the social transaction, which, also, would be used in

representing the particular neuroanatomical structure involved in that transaction.

Given the attitudinal and trait profiles of a subject abstractly representative of general neuroanatomical component structures within the subject corresponding to the personhood and role of focal-stimulus persons and to the physical settings within the theoretically delimited domain, then a social transaction involving the subject and a particular combination of stimulus person and setting may be predicted. Those profiles, prior to that prediction, may be empirically inferred from a previous sampling of social transactions, using, perhaps, a statistical-mathematical procedure such as factor analysis.

A theoretical issue pertinent to the inchoate theory of social transactions as presented thus far, however, is whether or not the psychological dimensions used in the theory should be nomothetic or idiographic. An idiographic approach to social-psychological theorizing, however, like those approaches advocated by Allport (1937; 1961; 1962) and Mischel (1973), logically presupposes <u>not</u> a scientific theory pertaining to a population of individuals but rather potentially a separate scientific theory for each individual. Although it may be legitimate to develop a science peculiar to a particular individual, if the science of social psychology is not to be conceived as the

cummulative aggregation of the sciences peculiar to the endless stream of individuals, then, to be a general science, it must be based upon nomothetic rather than idiographic dimensions for distinguishing the individuals involved.

It is, in fact, as Thurstone (1947) observed, inherent in the very nature of a science to develop constructs and laws which generalize from particular to particular for the class of phenomena it seeks to explain, though some informaton is, of course, lost through that process of generalization. A scientific theory in which the number of constructs is as great as the class of phenomena it purports to explain, provides, from a scientific perspective, no explanation at all and is, rather than a science, a pseudo-science.

A set of scientific constructs, however, may be applied to a class of natural phenomena too broad and variegated to be of adequate predictive value, and psychological research has suggested that the dimensions employed in a theory of social transactions should pertain to a particular subenvironment such as home, work, or school and the inhabiting population, rather than to the global environment and the population at large (though from such subenvironments it may be extrapolated to the global environment, albeit with a loss of prediction). Pervin (1977), for example, has demonstrated the importance of

developing psychological dimensions which would be restricted in their generalizability to standard subenvironments.

Pervin (1977) had a number of college students review their daily life over the previous six months and list those situations that were of some importance to them, with the word "situation" defined in the study as "involving a specific place, in most cases involving specific people, a specific time, and specific activities" (p. 376). They were then asked to describe each situation, how they felt in the situation, and what they did in the situation. Pervin then conducted three factor analyses for each individual by factoring variables descriptive of the situations, factoring variables of emotions experienced in the situations, and factoring variables of behaviors enacted in the situations, with each factoring done across the situations the individual listed.

In factoring the variables descriptive of situations across situations for each individual, he found that the factors which were derived--i.e., situational factors--were each characterized (loaded) by a class of situations recognizable intuitively as a subenvironment such as school, work, and home, and, although the situations listed by the subjects varied qualitatively and quantitatively (from 23-56), the general nature of the *a priori* subenvironments

which characterized the factors for each subject were generally standard (common) for all subjects. Although a situational factor (a general dimension representing common differences among situations) is not a type inasmuch as more than one component mode of a mixed multivariate distribution, indicative of a type (Wolfe, 1970), may possibly reside on a dimension (Boltz, 1972). Pervin's finding of classes of situations loading situational factors which were recognizable as a priori subenvironments which were standard across subjects is at least suggestive that such subenvironmental types are empirically meaningful.

Additionally, following the factoring of emotions and of behaviors for each subject over each subject's listed situations, Pervin (1977) found that for each subject the emotional factors and the behavioral factors derived tended to vary across situations according to the standard, a priori subenvironment to which the situations belonged. Moreover, the covariation of the emotional and behavioral factors across situations depended upon (statistically interacted with) the standard a priori subenvironment with which the situations were associated (empirically, with the situational factors). In other words, if a psychological dimension is defined as consisting of cognitive, emotional, and behavioral components, Pervin found that the emotional and behavioral components of a global dimension vary according to a priori subenvironments. As he concluded, for

example, from the results of an analysis of data collected from one subject: "Whereas in situations at home similar feelings are associated with different behaviors, in situations at work different feelings are associated with similar behaviors. The relationships among situation characteristics, feelings, and behaviors are indeed complex" (p. 379). Or, as he said of another subject, " ... feelings of warmth and support with friends {from his subenvironment of friends} and feelings of anxiety with authority figures {in his school subenvironment} both were associated with friendly, sociable behaviors" (p. 382).

Pervin's (1977) research, therefore, suggests that, most especially and at least in addition to global dimensions, more specific dimensions need to be defined relative to a particular *a priori* subenvironment and restricted theoretically to that subenvironment. Although Pervin's research dealt with dimensions which were not necessarily nomothetic, at least in their particular situational manifestations, his conclusion that the covariation of the emotional and behavioral components of a dimension depend upon *a priori* subenvironments would most likely hold for nomothetic dimensions as well.

The research by Pervin (1977) also raises the theoretical issue as to which of the three components of a psychological dimension should be used as the foundation for its

construction. For, given that the cognitive, emotional, and behavioral components of psychological dimensions may generalize across a priori subenvironments though their covariation and hence their composition into dimensions depends upon such subenvironments, it therefore becomes necessary to identify which of the three components of a dimension should serve initially to define it. If instead all three components were to be used without preference given to one in defining a dimension, then there would be no means of theoretically integrating dimensions in different subenvironments based upon a common element, say, as for example, when two dimensions from different subenvironments both have generically the same behavioral component of social dominance but differ in their emotional components (perhaps anxiety in one and exhilaration in the other). It therefore becomes important to identify a dimension initially upon one of its three types of components and then determine the nature of the other components accordingly.

In his discussion of the psychological process of the instinct, McDougall (1908/1921) believed that in the sequence of cognition-emotion-behavior of the instinctual process that it was the emotional component which was the most stable and least environmentally modifiable. The behavioral component, in contrast, he held to be quite modifiable by environmental circumstances for higher life forms, and in man the cognitive component was the most

malleable of all. Pervin (1977) has simililarly given central importance to the emotional component of a dimension in organizing the perception of situations and the behaviors occurring within them:

> "{O}ne can note that at times the distinctions among situation traits, feelings, and behaviors are blurred. In fact, this is common to all the subjects that have been tested. What is striking is how the same word can be applied to the situation, to the self experiencing the situation, and to the self behaving in the situation. This is particularly true with affectively toned words and may be suggestive of the important role of affects in influencing how we organize and perceive situations as well as how we behave in them" (p. 380).

> "Along with their possible role as organizers of perceptions of situations, affects may serve as the intervening link between situations and behavior. A similar view has been expressed by Mehrabian and Russell (1974) in relation to their studies of environment and behavior. One possibility, for example, is that behavior in a situation reflects the individual's efforts to express certain affects within the context of the perception of certain rewards and punishments for alternative behaviors. Feeling inhibited or the sense of acting a facade, would then be expressive of the sense of acting in accord with the receipt of rewards or avoidance of punishments instead of acting in accord with one's affects. Feeling uninhibited and 'one's self' would be expressive of the situation where one is free to disregard the rewards and punishments in the situation because they are minimal or because they are perceived to be compatible with expressions of feelings" (p. 384).

Auguste Compte (1851/1875, Vol. 1) had much earlier come to a conclusion similar to that of Pervin as to the organizational function served by emotion in the

psychological functioning of the individual. In discussing his theory of logical positivism, for example, he stated:

> "The necessity of assigning with exact truth the place occupied by the intellect and by the heart in the organization of human nature and of society, leads to the decision that Affectation must be the central point of the synthesis" (p. 11).

Although emotion does serve an important function in organizing the perceptual/cognitive and behavioral components of psychological reflex-arc analogues as well as serving as an intervening link between those two components in those processes, emotions, as Mehrabian and Russell (1974) have shown, can be represented as composites with only three underlying dimensions. Yet, there are more than three dimensions in any set of psychological dimensions (e.g., traits) if those dimensions are identified primarily by their cognitive or behavioral component, as will be shown later, thus eliminating the emotional component as the basis of identifying psychological dimensions. Left, therefore, between choosing the cognitive component or the behavioral component as the primary component upon which to identify a psychological dimension, the cognitive component should be chosen for a number of reasons.

First, if there is greater cognitive complexity than behavioral complexity, as McDougall (1908/1921) had suggested is the case of the more instinctual processes and which on a priori grounds we may assume likely to be true of

psychological processes generally, then more distinctive cognitive components (factors) would exist than behavioral components. Such a condition, therefore, would indicate the cognitive component as the primary basis upon which to identify a psychological dimension, for if the behavioral component were used as the initial basis of identifying a psychological dimension, there would likely not be enough dimensions to account for the multiplicity of cognitive components.

Secondly, one might expect a greater constancy of cognitive and emotional components of a dimension across subenvironments than of emotional and behavioral components, given that radically different behaviors are often manifestations of the same motive (cognition-emotion combination), depending upon the situation. For example, potentially ingratiating behavior and dominating behavior often stem from the same motivation.

Thirdly, inevitably, it is the cognitive component of a trait which provides the basis for psychologically interpreting the constructual significance of the behaviors comprising the behavioral component. A set of behaviors, for example, are not manifestations of social dominance from the perspective of the direct observation of some third-party observer, but rather from the perspective of the individuals comprising the population to which the

theoretical construct pertains, as ascertained by an "objective" third-party observer (though an observer who perhaps uses those individuals as mediums for observation). A behavior typically emitted by a population of females, for example, may be perceived by a male observer as a manifestation of social dependence whereas to the females the behavior might be thought of as being perceived that way even though they may intend it to be a manifestation of social dominance, i.e., as a means of controlling males (e.g., seduction).

Finally, as psychological reflex-arc analogues such as social transactions have been explained, although emotion plays an organizational and mediational role in those processes, it is the emerging cognition (sensation/cognition) within the experience of the individual which seems most to identify its beginning and which serves as the "guiding light," so to speak, for the following behavioral phase. The behavioral phase and any transitional emotional phase preceding it are subordinated to the nature of the continuing but changing cognition, with that cognition, presumably, related to objects in the world (or to the cosmos more generally). In spite of Compte's assertion that emotion serves an important synthesizing function in psychological processes as alluded to previously, Compte (1851/1875, Vol. 1) had also come to a similar realization concerning the primacy of cognition in

theoretical construction when he stated: "The truth is, and it is important to recognize it, that Thoughts must be systematized before Feelings, Feelings before Actions" (p. 16).

PSYCHOLOGICAL DIMENSIONS OF SOCIAL TRANSACTIONS

Having considered the preliminary theoretical issues above pertaining to the psychological dimensions to be incorporated into the inchoate theory of dyadic social transaction, those dimensions may now be specified. Accordingly, for the sets of dimensions corresponding to the ambient-stimulus physical settings--the setting attitudinal dimensions, the setting trait dimensions, and the setting dimensions proper (as fusions of corresponding pairs of attitudinal and trait dimensions of settings)--two prototypic dimensions will be postulated for each set: According to the quality of their cognitive component, those two prototypic dimensions will be described as formality versus informality (formality) and constraint versus nonrestraint (constraint), with those two dimensions presumed to correspond to research conducted by Adamopoulos (1982).

For the sets of dimensions relating to the focal-stimulus persons--the personal attitudinal dimensions, the personal trait dimensions, the personal dimensions proper (fusions of personal attitudinal dimensions and traits), the role

attitudinal dimensions, the role trait dimensions, the role dimensions proper (fusions of role attitudinal dimensions and traits), and the social dimensions (fusions of corresponding pairs of personal and role dimensions)--four dimensions will be postulated. Given their theoretical quality, they will be described and labelled as: Inclusion versus exclusion (inclusion), dominance versus submission (dominance), dependence versus independence (dependence), and morality versus immorality (morality). The first three of those dimensions, however--that is, inclusion, dominance, and dependence--will be of a different theoretical nature than the dimension of morality. For purposes of discussion, therefore, for reasons which will be provided later, those three dimensions of inclusion, dominance, and dependence will be referred to collectively as the more "mammalian" dimensions, in contrast with the dimension of morality which may at times be referred to as the more "human" dimension. The three more mammalian dimensions are believed to be congruent with the theorization of Horney (1945), Erikson (1950/1963), Schutz (1958), and Adamopoulos (1982), and the more human dimension of morality is believed to be consistent with the theorization and research by Kohlberg (1969; 1981).

With regard to the cognitive component of the three more mammalian dimensions corresponding to focal-stimulus persons within some subenvironment such as a school or work place,

the cognitive component serving as the fundamental basis for the identification of each of those dimensions would be homogeneous. That is, it would correspond qualitatively to a dimension found empirically to underlie the cognitions of subjects occurring during social transactions in relation to focal-stimulus persons. Inasmuch as a disproportionately large number of such cognitions relating to a focal-stimulus person could be described with a single dimension (as would be the case, if, for example, the dimensions were factor analytically derived and a simple structure were found), then a single homogeneous dimension could be used to define the cognitive component of one of the mammalian dimensions. Similarly, the other empirically derived cognitive dimensions would define cognitive components of the other mammalian dimensions, so no information would be lost. Yet, the homogeneity of the cognitive component of each of the more mammalian dimensions would provide a conceptual unitariness to each of those dimensions, making it also then possible to abstract them for specialized study if so desired.

The cognitive components of the three more mammalian dimensions would likely have a considerable correspondence to the three dimensions found by Osgood and Suci (1955) in their psycholinguistic factor-analytic study of the meaning of words. In their seminal study, 100 undergraduates rated 20 concepts according to 50 adjectival bipolar scales. A

correlation matrix of the 50 bipolar adjectival scales was then calculated by correlating pairs of those scales across subjects and concepts, and the correlation matrix then factor analyzed by the centroid method. Four factors were extracted, with the last factor accounting for less than 2% of the variance and appearing to be an error factor. The four factors were then orthogonally rotated to simple structure, and the first three substantive factors were interpreted as activity, potency, and evaluation (with the smallest fourth factor having few loadings and making little sense as would be expected of an error factor).

Those three semantic dimensions found by Osgood and Suci (1955), then, may have a close correspondence to the cognitive components of the more mammalian dimensions. For, inclusion in a social situation may correspond to the activity-level perceived by the subject as characterizing social involvement with the stimulus person. Similarly, the semantic dimension of potency may correspond to the perceived dominance of the focal-stimulus person, and the semantic dimension of evaluation (goodness) may correspond to the perceived dependability (or, trust, warmth, benevolence, or affectionate nature) of the focal-stimulus person.

For the emotional component of all the psychological dimensions incorporated in the theory of social transaction,

including the three more mammalian types of dimensions, the emotional component would be heterogeneous in nature, or, at least may be heterogeneous in nature, and would be represented as an additive function of three underlying emotional dimensions: arousal, control versus helplessness (control), and pleasure versus displeasure (pleasure). Mehrabian and Russell (1974), in developing their emotional mediational theory to serve as a means of integrating the diverse findings of environmental psychology, have found that all emotional descriptions to environmental situations, as represented by a semantic-differential type of questionnaire, can be commonly represented by three factor-analytically derived underlying emotional dimensions which they have interpreted as arousal, dominance vs. submission, and pleasure vs. displeasure, though their dimension of dominance vs. submission will be referred to here as control vs. helplessness to prevent later confusion. Those three underlying emotional dimensions (factors) of arousal, control vs. helplessness, and pleasure vs. displeasure they have found generally to correspond roughly as counterparts to (emotional reactions to) the three dimensions underlying perceptions of objects as described by the Semantic Differential found factor-analytically by Osgood and his associates (Osgood, 1957; Osgood & Suci, 1955; Osgood, Suci & Tannenbaum, 1957), those dimensions being activity, potency, and evaluation (goodness), as previously stated.

Emotional arousal has a well known neurological component (Hebb, 1955), and although there are different areas in the brain which when active may influence arousal independently from one another following experimental stimulation, they tend actuarially to vary together in natural life and can be generally regarded as comprising a single psycho-physiological dimension. It is also well known that pleasure has a neurological component (Olds, 1956), and although a specific neurological component for control (dominance) has not yet been found, except inasmuch as rage can be considered a partial manifestation of control (Bard, 1934), Mehrabian and Russell (1974) believe such a neurological foundation exists. And, given the importance of behavioral dominance in the evolution of animal species (Hediger, 1964), it is perhaps quite likely that an emotionally related neurologically area has arisen corresponding to behavioral dominance--power for the sake of power. All three emotional dimensions can also be found to be reliably and validly inferred as distinct dimensions from direct observations of behavior (Mehrabian & Russell, 1974).

Mehrabian and Russell (1974) have also found that theoretically important emotions as measured by well-known scales can be represented as an additive function of the three underlying emotional dimensions of arousal, control (dominance) vs. helplessness (submission), and pleasure vs. displeasure, as measured by a 27-item semantic-differential

type of questionnaire. Anxiety, for example, as measured by the Taylor Manifest Anxiety Scale (Taylor, 1953) can be represented as a linear combination of high arousal, high displeasure, and low control (high helplessness). Anger may be represented as consisting of high arousal, high displeasure, and high control. And depression (simple depression) may be considered a composite emotion of low arousal, high displeasure, and high helplessness (low control).

Empirical evidence in support of the three more mammalian types of dimensions which have been postulated--inclusion, dominance, and dependence--is difficult to relate to those psychological dimensions, inasmuch as researchers and theoreticians have variously identified and defined such dimensions according to different components--cognition, emotion, or behavior--or according to all three components simultaneously, and for other reasons as well. Nevertheless, a strong case can be made in favor of the aforementioned dimensions.

Adamopoulos (1982), for example, had male and female college students report their estimated likelihood they would enact each of a number of socially relevant behaviors in a number of hypothetical social situations on a college campus (a school subenvironment) involving varying ambient-stimulus physical settings and focal-stimulus persons

varying both in their social roles and in what has been referred to as their personhood, independent of their social roles. He then conducted a three-way factor analysis for both male subjects and female subjects by averaging responses within each sex group and factoring the behavioral variables over focal-stimulus persons, over roles of focal-stimulus persons, and over situations. His findings indicated that the three prototypical dimensions of inclusion, dominance, and dependence (though calling them by somewhat different names) were both necessary and sufficient to account for common individual differences in behaviors likely to be emitted according to the varying focal-stimulus persons as persons _per se_ and also according to the varying social roles of the focal-stimulus persons. And, his findings also indicated that the dimensions of formality and constraint were both necessary and sufficient to account for common differences in social behavior likely to occur within the context of the varying physical settings while, in a sense, holding the focal-stimulus persons constant. Moreover, all the personal, role, and setting dimensions were found empirically to be qualitatively the same for both sexes.

Horney (1945), to the author's knowledge, was the first to develop a psychological theory based upon the three personal traits of inclusion vs. exclusion, dominance vs. submission, and dependence vs. independence, though she

referred to them by various more pejorative labels, particularly as the attitudes (actually traits as used here) of "moving-away-from-people" (inclusion vs. exclusion), "moving-against-people" (dominance), and "moving-toward-people" (dependence). She developed her theory of the structure of personality or, more accurately, of the structure of what she purportedly heuristically referred to as the "neurotic personality," based upon information acquired through the psychoanalytic method. And though her subjects were her clients in psychotherapy, she vaguely conceived that the same three dimensions were applicable to those persons who had not acquired the social role of psychotherapy client and were therefore considered "normal."

According to Horney (1945), the difference between those personalities she considered more neurotic and those relatively free from neurosis (more normal) was that the more neurotic persons were more compulsively driven by the dysphoric emotions of anger and anxiety which could alternatively reinforce each other through a vicious cyclical process whereas those personalities which were relatively free from neurosis were motivated behaviorally by noncompulsive, euphoric emotions: There was a difference, she asserted, between a person climbing a tree to escape a bear and a person climbing a tree to experience the actualization of his abilities. Implicitly, then, she clearly conceived of the universality of the three more

mammalian dimensions of personality and yet that they were often associated with different emotions.

In Horney's (1945) theorizing, though her theory pertains to what she believed to be a heuristic distinction between the neurotic and normal personality, she ultimately explains the essence of the emotional-behavioral traits of the neurotic personality (in contrast to the emotional-behavioral traits of the normal personality) in terms of their cognitive components, though as ascertainable sometimes only through the method of psychoanalysis due to the varying self-awareness of her subjects (clients). She did, then, in a sense, identify and define her traits most fundamentally by their cognitive components, though she implicity had two theories of personality--one for those considered neurotic and the other for those considered normal--rather than one theory.

The three more mammalian dimensions of dependence, dominance, and inclusion also correspond roughly to the first three <u>social modalities</u> in Erik Erikson's (1950/1963) psychosocial theory of development. According to Erikson, the ego has five rudimentary modes of responding to its environment: a) passive incorporation, b) active incorporation, c) retention, d) elimination, and e) intrusion. As biological maturation progresses from the oral, anal, and genital zones of the body, as in Freud's

psychosexual stage of development (the oral, anal, and phallic stages), the modes are differentially emphasized, with a particular mode or combination of modes becoming superordinate and especially enhanced in normal development for each body zone as it becomes the focus of attention.

At each stage of psychosexual development, society, as represented mainly by the parents in earlier development, may impose some regulations upon the child's (or person's) psychosexual behavior which then leads to a conflict between the child and the parents. The conflict is resolved successfully when the conflicting behavior of the child becomes mutually regulated by both child and parents, thus furthering the child's psychosexual development. The ego disposition that is then instilled in the child is then generalized to other interpersonal situations, presumably, and is then referred to as a "social modality," which when acquired, furthers the child's "psychosocial development."

The first social modality developed by the child is that of <u>trust</u> (corresponding to the trait of dependency or reliance) which results from the successful mutual regulation of nursing behavior during the oral stage, involving primarily the incorporative modes. The second modality, <u>autonomy</u>, develops during the anal stage following a successful mutual regulation of excretory behavior and involves primarily the retentive and to a lesser extent the

eliminative modes. The third social modality is that of *initiative* which develops during the phallic stage following the successful mutual regulation of masturbatory-like behavior involving primarily the intrusive mode. The first three social modalities of trust, autonomy, and initiative, then, correspond generally to the three traits of dependency, dominance, and inclusion advanced here. Freud (1933/1965), it will be recalled, similarly incorporated what were referred to as the "oral" and "anal" characters in his later theorizing, corresponding conceptually somewhat to the dimensions of dependence and dominance, though they referred to what he considered unhealthy personalities, and he gave increasingly greater importance to the "ego dispositions," which Horney's (1945) theory later emphasized.

Similarly, William Schutz (1958/1966) has developed one of the more explicit social-psychological theories originating initially from a psychoanalytic perspective which incorporates generally the same three dimensions of inclusion, dominance, and dependence, though referring to them as inclusion, control, and affection, respectively. Schutz has presented an interesting and rather compelling *a priori* argument on behalf of those three traits by arguing that they are necessarily involved sequentially in the establishment and deterioration of an interpersonal relationship:

> "Every interpersonal relation follows the same general developmental sequence. It starts with inclusion behavior, is followed by control behavior and, finally, affection behavior. This cycle may recur. When the relation approaches termination it reverses direction, and the investment from the relation is withdrawn in the order affection, control, and inclusive behavior" (p. 200).

Schutz (1958/1966) has conducted an empirical study utilizing cluster analysis and concluded that the three dimensions corresponding to inclusion, dominance, and dependence are both <u>necessary</u> <u>and</u> <u>sufficient</u> to account for interpersonal behavior. Although he purportedly identified those dimensions by their behavioral components, he asserted that they are based upon three social needs every one has: 1) the need to be included socially, 2) the need to obtain some control in social situations, and 3) the need for affection.

In passing, it might be further noted that the three-factor theory of interpersonal relations advanced here appears to subsume Robert Carson's (1969) "interactional constructs" of personality. His constructs of dominance and affiliation omit only the factor of the entrance or exit of social situations in which dominance and affiliation may occur--that is, the factor of inclusion vs. exclusion.

<u>Although the dimensions of inclusion, dominance, and dependence have been discussed and have been implicitly or explicitly assumed to be sufficient in accounting for</u>

interpersonal behavior by a number of the previously discussed theorists (Adamopoulos, 1982; Horney, 1945; Schutz, 1958/1966), it is necessary to postulate the additional dimension of morality vs. immorality. Although from the perspective of a third-party observer observing the behavior of an individual directly in an interpersonal situation, it would appear that any behavior emitted by the individual can ostensibly be dimensionalized along the three dimensions of inclusion, dominance, and dependence as the earlier a priori argument by Schutz (1958/1966) professes, from the perspective of the individual a fourth dimension of morality is generally needed. In other words, although it might appear that all interpersonal behavior can be classified as stemming from the cognitive components of inclusion, dominance, and dependence, in reality, from the perspective of the subject, a fourth cognitive component is often required, and it is the nature of the cognition commencing the psychological process eventuating in the behavior which serves primarily to characterize that behavior, not the allegedly intrinsic nature of the behavior itself as perceived directly by some third-party observer.

The more human psychological dimension of morality versus immorality, however, is of a different theoretical order than the more mammalian dimensions of inclusion vs. exclusion, dominance vs. submission, and dependence vs. independence. For the psychological dimension of morality

subordinates the dimensions of inclusion, dominance, and dependence. In explaining its theoretical role in the theory of dyadic social transaction, though, it is necessary to do so while re-emphasizing the organicist perspective of that theory.

Although the conception of there being neuroanatomical structures common to a population of subjects which may be represented by the psychological dimensions of inclusion, dominance, and dependence has a strong tendency to be misinterpreted in a mechanistic manner, the conception, as previously explained, is organicist and transactional. A subject does not function psychologically in a social situation in a manner described as inclusive, dominant, or dependent because of the existence of any neuroanatomical structures within the skin of the subject, that is, such neuroanatomical structures do not determine or influence the psychological functioning of the subject, strictly speaking. Rather, the psychological functioning of the subject in social situations involves such neuroanatomical structures, as it also jointly involves the corresponding component structures of the physical complex of focal-stimulus person and ambient-stimulus physical setting. A social transaction involving the subject in the form of a psychological reflex-arc analogue is a social-psychological event occassioned by those two sets of structures, with that event occurring across subject-situation.

Furthermore, from an ontological perspective, at a higher-level of hierarchical reality in which the ontogenetic development of the subject is psychologically considered, social transactions in the form of reflex-arc analogues are only constituent events in a more or less ongoing series of such events constituting the stream of thought (experience or consciousness) and the existential being of the subject throughout the life of that subject. Moreover, the neuroanatomical structural components involved in those social transactions are, in fact, themselves physical events in progress during the ontogeny of the subject, as are also the physical complexes of stimulus person and physical setting corresponding to them, though in a space-time peculiar to them.

The ontogenetic development of the neuroanatomical component structures, as previously explained, depends jointly upon their continually changing present level of development and the presence of particular environmental conditions. The presence of some environmental conditions may occassion social transactions to which they are related which would involve the neuroanatomical structures necessary for those transactions, and the activation of those neuroanatomical structures may be a necessary condition for their further development. It is the genotype of the subject, however, which organizes or serves as the coordinating or organizing principle for the development of

those neuroanatomical structures, even though from a naturalistic assumption of utter determinism it is presumed that the subject inherits a particular environment at birth (family, culture, etc.) just as the subject inherits a particular genotype (development being jointly a function of genotype and environmental-type, though as organized by genotype).

It should be remembered, however, that although the genotype of an individual is, as a whole pattern, unique, it generally has considerable similarity to other members of the human species, being, in fact, generally more similar than dissimilar based upon evolutionary considerations. And, moreover, given the emergence of the human species from the order of nature, the genotype of the individual, as an organizing principle of individual development, must have considerable correspondence to the reality of nature and therefore be ultimately the organizing principle (ontogentically) of what poets and philosophers have called "common sense" or "universal reason" (not to be confused with vulgar uses of those terms).

Considering, now, the actual course of development of the common neuroanatomical structural components represented by the psychological dimensions of inclusion-exclusion, dominance-submission, and dependence-independence, those neuroanatomical structures, as all other morphological

structures, may be presumed to become more differentiated and organized and, consequently, more integrated as they develop. During early development, for example, a person would develop neuroanatomical structures differentiated and organized enough that in some social situations the psychological functioning of the person would be described as dependent while in others it would be described as independent, according to the nature of the situations. Similarly, the neuroanatomical structures represented by the other two dimensions of dominance-submission and inclusion-exclusion would also become more differentiated and organized, more integrated structures, and the social-psychological functioning would be characterized, perhaps, as being more "flexible" and "adaptable" or being more "situation specific."

The greater differentiation and organization characterizing the ontogenetic development of the common neuroanatomical structural components represented by the psychological dimensions of inclusion-exclusion, dominance-submission, and dependence-independence, however, may be one of two radically different types. For, paralleling the development of the neuroanatomical structures represented by the three more mammalian dimensions of inclusion, dominance, and dependence would be the development of a neuroanatomical structure represented by the more human psychological dimension of morality versus immorality which would

subordinate the development of the other neuroanatomical structures to it.

Abstractly considered, such a neuroanatomical structure as it is represented by the dimension of morality versus immorality would be characterized at one extreme by individuals described by others as altruistic and at the other extreme by individuals described as egoistic. Individuals characterized as consistently more altruistic in their social transactions would be similar in the nature of their inconsistencies on the other three dimensions of inclusion, dominance, and dependence in various situations. Analogously, individuals characterized as consistently more egoistic would be similar in the nature of their inconsistencies on the three more mammalian dimensions. The two hypothetical groups, however, would differ with each other in the nature of their inconsistencies on the three mammalian dimensions, depending upon whether they were more altruistic or more egoistic in various situations. Such a conception, has been based upon a similar conception developed by Fromm (1964), though he used psychological dimensions he labelled as narcissim, nihilism, mother fixation, and biophilia (vs. necrophilia) corresponding to the dimensions of inclusion, dominance, dependence, and morality, respectively (with those two sets obviously being highly similar in meaning).

Although as noted earlier, Schutz (1958/1966) provided a strong a priori argument in support of the three bipolar psychological dimensions of inclusion-exclusion, dominance-submission, and dependence-independence in theoretically explaining the establishing and terminating of social relationships--from a person-centered perspective, it is difficult not to expand that a priori argument to include the bipolar dimension of morality vs. immorality. That is, it is difficult not to conceive of moral considerations as not being a factor as to whether or not one would include oneself within or exclude oneself from a social situation, and, if once within a social situation, whether one would behave dominantly or submissively and/or dependently (perhaps more affectionately) or independently. If, for example, a guiding moral principle of social behavior is a self interest in both one's welfare and that of others, including those one is not socially involved with at the moment but may in some way nevertheless be affected, then such a principle would influence one's choice of how one chooses to respond on the remaining three behavioral polarities. For as the Talmudic saying asked rhetorically:

> "If I am not for myself, who shall be for me?
> If I am for myself only, what am I?
> If not now--when?"

The dimension of morality, it should be noted, appears to have a psychological importance regnant to that of the other dimensions of inclusion, dominance, and dependence within

the early history of social psychology. The other three dimensions are quite common to all mammals whereas the dimension of morality is more peculiarly human, at least as it is identified as relying more greatly upon cognition. Compte (1852/1875, Vol. 2, p. 357), it will be recalled from an earlier quotation, labelled the discipline of social psychology (or psychology) initially as "La Morale," indicating the importance he gave to the moral aspects of the discipline, and he conceived of the discipline as a synthesis of the vegetative and animal functions of man as understood from biology with the moral and intellectual functions of man as known from sociology--a science, or course, pertaining only to man. Ross (1908/1920), author of one of the first two textbooks on social psychology, it will also be recalled from an earlier discussion, though conceiving of social psychology as studying the social factors creating uniformity in the behavior of individuals, believed the ethical value or moral purpose of the new discipline was then to remove such factors to enable people to freely express their latent individuality. The author of the other textbook on social psychology appearing in that same year, William McDougall (1908/1921), also placed great importance, actually the greatest importance, upon the dimension of morality. Arguing that the socially relevant aspects of the psychological functioning of the individual mind must first be developed as a preliminary for the new

discipline of social psychology--he went even further by stating:

> "It may even be contended that it deals with the fundamental problem of social psychology. For social psychology has to show how, given the native propensities and capacities of the individual human mind, all the complex mental life of societies is shaped by them and in turn reacts upon the course of their development and operation in the individual. And of this task the primary and most essential part is the showing how the life of highly organised societies, involving as it does high moral qualities of character and conduct on the part of the great mass of men, is at all possible to creatures that have been evolved from the animal world, whose nature bears so many of the marks of this animal origin, and whose principal springs of activity are essentially similar to those of the higher animals. For, as Dr. Rashdall well says, 'the raw material, so to speak, of virtue and vice is the same--i.e., desires which in themselves, abstracted from their relation to the higher self, are not either moral or immoral but simply non-moral.' That is to say, the fundamental problem of social psychology is the moralisation of the individual by the society into which he is born as a creature in which the non-moral and purely egoistic tendencies are so much stronger than any altruistic tendencies" (pp. 15-16).

In a more contemporaneous review of research and theory in the speciality area of personality, Loevinger and Knoll (1983) asserted that the psychological dimension of moral development was "the central dimension" of personality. In other theoretical contexts, essentially that same dimension, which has been referred to here as morality vs. immorality, has played a central role and been variously called self-realization vs. self-aggrangizement (Sarnoff, 1966), the syndrome of growth vs. the syndrome of decay, being vs.

having, biophilia vs. necrophilia, and the life-orientation vs. the death orientation (Fromm, 1941; 1964).

The dimension of morality requires intelligence, though it is distinct from it. The ability to put oneself in the place of another requires that one has achieved a more formal-level of intellectual development, and the criterion of discerning the morality of behavior obviously indicates a spatio-temporal perspective beyond that of the immediacy of a particular concrete situation. As Piaget (1932) concluded many years ago from his experiments on the moral judgment of the child: "...{t}he notions of justice and solidarity develop correlatively as a function of the mental age of the child." It should be noted in passing, however, that although intelligence is required for morality and hence the two are statistically correlated, morality is not required for intelligence (or required as much), at least intelligence as academically conceived as opposed to Socratic wisdom (Socrates, it is recalled, asserted knowledge equals virtue, though the nature of contemporary education is such that it is commonly acknowledged that the acquisition of an academic education has little or nothing to do with making one more virtuous).

Assuming an individual were somewhat morally or life oriented, Immanuel Kant stated a cognitive criterion which he thought universally valid for discerning the ethical

value of behavior. Unmodified, Kant's moral criterion, the Categorical Imperative, is unconditional: That is, it holds regardless of the circumstances or persons involved. What is wrong for one is wrong for all, and thus the Categorical Imperative becomes a kind of philosophical formulation of the Golden Rule: "Do unto others as you would have them do unto you." Kant (see Sahakian & Sahakian, 1966) gives the following hypothetical example to illustrate the employment of his criterion:

> "May I, for instance, under the pressure of circumstances, make a promise which I have no intention of keeping? The question is not, whether it is prudent to make a false promise, but whether it is morally right. To enable me to answer this question shortly and conclusively, the best way is for me to ask myself whether it would satisfy me that the principle to extricate myself from embarrassment by giving a false promise should have the force of universal law, applying to others as well as myself. And I see at once that, while I can certainly will the lie, I cannot will that lying should be a universal law. If lying were universal, there would properly speaking, be no promise whatever. I might say that I intended to do a certain thing at some future time, but nobody would believe me, or if he did at the moment trust to my promise, he would afterwards pay me back in may own coin. My principle proves to be self-destructive, as soon as it is taken as a universal law" (p. 46).

Although Kant's criterion is useful in determining what behaviors are immoral, amoral (morally neutral), or moral, it represents an oversimplification in that often the realizable alternatives are of one sort, though varying in moral value, and an individual must sometimes choose, for example, between the lesser of two evils, as in perhaps some

cases of self defense. Kant's criterion, therefore, can be modified such that the dimension of morality refers to the individual's likelihood of enacting the more moral behaviors, thereby becoming a principle of a more situational morality.

Although an extreme level of moral development may be characterized ostensibly as being more universal than situational, from a developmental perspective, a universal morality may be considered logically as a special case of a situational morality--i.e., as a special case in which an individual is able and does realize more ostensibly ideal moral behaviors, but to achieve such a level of moral development the individual must pass through levels which are ostensibly more characteristic of a situational morality. From an ontological perspective, however, what is ideally moral will be seen to be dependent upon one's level of moral development, not from some third-party perspective as directly observed.

Kant's Categorical Imperative, especially when not modified as above, if employed througout an individual's life would probably eventually lead to a stage six level of moral decision making in Kohlberg's (1981) cognitive-developmental theory of moral development, assuming, according to that theory, that the individual progressed through all the cognitive stages of development in Piaget's

(1970) theory. According to Kohlberg (1981), in consistency with what was stated earlier, cognitive development is a necessary but insufficient condition for moral development in social decision making. The individual, he states, must first attain a given level of cognitive development before attaining a particular level of moral development, for the cognitive decision-making for such a level requires a certain advancement in intelligence.

According to Kohlberg (1981), an individual may advance through six stages of cognitive-moral development corresponding to the six Piagetian cognitive stages of development, those six moral stages being: 1) the punishment and obedience orientation, 2) the instrumental relativist orientation (instrumental exchange), 3) the interpersonal concordance orientation (interpersonal conformity), 4) the society maintaining orientation (social system and conscience maintenance), 5) the social contract orientation (prior rights and social control), and 6) the universal ethical principle orientation.

In Kohlberg's (1981) theory, the first two of those stages are categorized as sub-stages of a more general stage or "level" referred to as the "preconventional level," and the two next stages (3 & 4) are categorized as being of a "conventional level," while the last two stages (5 & 6) are of a "postconventional, autonomous, or principled level."

The preconventional, conventional, and postconventional (principled) levels correspond to the Piagetian cognitive-developmental levels of sensori-motor, concrete, and formal (or verbal-propositional), respectively.

Kohlberg (1981) has shown that older individuals tend to exemplify his later stages of moral development in their moral decision-making, and, moreover, he has shown that they tend to do so regardless of their culture. In a longitudinal study in America, he has also shown that individuals do in fact progress through the stages of moral decision making in his theory, though, of 30 subjects reported, none advanced to the last stage and only two advanced fully to the fifth stage (there were also much missing data reported in that study). Additionally, though his research provides substantial empirical support that individual's progress through such modes of thinking, it does not provide empirical evidence that those modes of moral cognition are indeed "the stages" of moral development, inasmuch as his methodology was not appropriate to permit such a determination.

With regard to Kohlberg's theory, it is important to observe that earlier in his theorizing, Kohlberg (1969) asserted that there was "... a fundamental unity of personality organization and development termed the ego, or the self" (p. 349). While there were "various strands of

social development," he further explained, such as "psychosexual development, moral development, etc.," those strands were "... united by their common reference to a single concept of self in a single social world" {emphases original} (p. 349). In accordance with that conception, he emphasized that cognitive development and functioning and emotional development and functioning were not "distinct realms," but, rather, they were "parallel" to each other, in that they represented "different perspectives and contexts in defining structural change" (p. 349).

More recently, however, Kohlberg (1981) has largely abandoned his theoretical concern for the "fundamental unity of personality," the self or ego, and he has asserted that moral cognition is sufficient to account for the enactment of morally relevant behavior without regard to any emotion which may be involved. Yet, common experience and some experimental evidence (Milgram, 1963; 1974) suggests that there is often considerable incongruence between what may be verbally said or thought about a moral issue and what is actually done about it, with emotion being an important mediating variable between the two. And, also, as is sometimes the case, as Shakespeare's tragic Hamlet said of himself, "The native hue of resolution/ Is sicklied o'er with the pale cast of thought." All three aspects of cognition, emotion, and behavior of the prototypical psychological dimensions of morality vs. immorality,

therefore, need to be considered as an organic whole, as postulated earlier, and one must not exclude from consideration the role of the phenomenal self, for, as Emerson (1981b) observed, "It is a law of our nature that great thoughts come from the heart" (p. 545).

In fact, with regard to the emotional life of an individual, if the level of moral decision making of the individual--i.e., the sophistication of that individual's moral cognition--had no corresponding positive value for the individual and perhaps were even a source of discontent, then, from the perspective of the individual it would be in vain. If it were accompanied solely by discontent, then it might even seem sensible to revert to a less sophisticated, lower level of moral cognition. John Stuart Mill (1863/1957), however, has provided a fascinating, empirically meaningful argument for the experiencing of pleasures of a more sublime nature when a higher level of cognition is exercised and a marked preference not to forsake them even when experiencing adversity:

> "If I am asked what I mean by difference of quality in pleasure, or what makes one pleasure more valuable than another, merely as a pleasure, except its being greater in amount, there is but one possible answer. Of two pleasures, if there be one to which all or almost all who have experience of both give a decided preference, irrespective of any feeling of moral obligation to prefer it, that is the more desirable pleasure. If one of the two is, by those who are competently acquainted with both, placed so far above the other that they prefer it, even though knowing it to be attended with a greater amount of

> discontent, and would not resign it for any quantity of the other pleasure which their nature is capable of, we are justified in ascribing to the preferred enjoyment a superiority in quality, so far outweighing quantity as to render it, in comparison, of small account.
>
> "Now it is an unquestionable fact that those who are equally acquainted with, and equally capable of appreciating and enjoying both, do give a most marked preference to the manner of existence which employs their higher faculties. Few human creatures would consent to be changed into any of the lower animals, for a promise of the fullest allowance of a beast's pleasures; no intelligent human being would consent to be a fool, no instructed person would be an ignoramus, no person of feeling and conscience would be selfish and base, even though they should be persuaded that the fool, the dunce, or the rascal is better satisfied with his lot than they are with theirs ... A being of higher faculties requires more to make him happy, is capable probably of more acute suffering, and is certainly accessible to it at more points, than one of an inferior type; but in spite of these liabilities, he can never really wish to sink into what he feels to be a lower grade of existence ... It is better to be a human being dissatistied than a pig satisfied; better to be Socrates dissatisfied than a fool satisfied. And if the fool, or the pig, is of a different opinion, it is because they only know their own side of the question. The other party to the comparison knows both sides" (p. 44).

The cognition an individual experiences in a social situation and the feeling accompanying it, however, are insufficient to maintain or enhance the psychological functioning of the individual on the moral dimension if not also accompanied, to some extent at least, by appropriate overt behavior. Bruno Bettelheim (1979), in his book the <u>Informed Heart</u>, reported that in a NAZI concentration camp during Wold War II, prisoners who began to believe they had

no behavioral control over their environment nor ever would, including eventually leaving it, even when provided with just enough material necessities to keep them physically alive, began to stop behaving in any self-directed manner at all. Following the termination of self-directed behavior, he reported that the prisoners then lost their emotional life and then their attention to their environment. Soon after, he stated that they died physically, though, psychologically, they had begun dying when they had lost hope and quit initiating behavior and had become one of the "walking dead." After six years, he reported, prisoners would generally have deteriorated psychologically beyond hope of ever returning to normalcy, and some prisoners, therefore, would often plan to commit suicide by that time if not rescued or released before.

If the psychological dimension of morality is representative of a neuroanatomical structural growth in the individual which involves itself in psychological reflex-arc analogues, then an expectation of that structure to involve itself in a social transaction, as it would have at an earlier stage of its growth in which it was less differentiated and organized, or to involve itself only partially by deleting one of its phases such as overt behavior, seems unreasonable. For, only if some deterioration or decay of that growth occurred would one expect such modification in its normal functioning. Moral

regression or a regression in the life orientation of an individual, therefore, would be biological deterioration, and learning that an environment which does not enable an individual to function psychologically at some minimal level of complexity results inevitably in a dying process and perhaps even the complete death of that individual as in the concentration camp prisoners reported by Bettleheim (1979) should therefore not be so surprising. The alternatives, then, would possibly be further moral development by the individual or environmental change or both, though neither personal nor environmental change may necessarily be realizable or effective enough in any particular instance.

FREEDOM AND SOCIAL JUSTICE

The moral development of the individual is not only not in vain from the perspective of the individual involved as indicated by the discussion above; however, it is also not in vain from the perspective of society. For, although the moral development of the individual is in the self-interest of the individual in that it involves, literally, as will be shown, the realization of the phenomenal self of the individual--the genuine freedom or liberation of what is most fundamentally a part of that individual--it is also in the self-interests, generally, of members of society, because the more morally developed person is also the more socially just person. And social justice, as Socrates

(Plato, B.C./1957) stated, is important in society because without it people fight and hate one another:

> SOCRATES: "The explanation is, I suppose, Thrasymachus, that injustice and hatred make men quarrel and fight with one another, while justice makes them friendly and of one mind. Is that not the case" (p. 37)?

Although a scientific perspective of human psychology necessarily precludes the concept of absolute free will (as it is conceived conventionally as a supernatural phenomenon, though it may be approached), the concept of free will should not erroneously be equated with the concept of freedom or its synonym, liberty. Freedom, despite the philosophy of individuals like Skinner (1972), is not at all necessarily incompatible with the naturalistic perspective of determinism. "Free will" means to choose intuitively to act without influence from biological or environmental factors, or, at least, without being influenced by those factors to such an extent as to make the exercise of a presumed supernatural will ineffective in action, if not also in thought and emotion. "Freedom" and "liberty," on the other hand, refer to an absence of environmental constraints and the presence of environmental opportunities for the individual in accordance with the inherent nature of that individual. They are concepts applicable not only to men, but to other life forms as well. Just as an eagle, for

example, needs the freedom from some environmental constraints and the freedom to pursue certain environmental opportunities peculiar to its species and peculiar to itself as a particular eagle, according to its uniquely determined genetic structure, so too does a human being.

Harold J. Laski (1970) has historically traced the concept of liberty back to the time of the ancient Greeks, though undoubtedly the concept was known intuitively, though perhaps ineffably, myriad millenia before. He states that, as the funeral oration of Pericles makes abundantly clear, the early Greeks had conceived of two general notions about liberty--the first being the protection of the group from attack and the second being the desire of the group to realize itself as fully as possible. He goes on to state that: "In such an organic society the concept of individual liberty was virtually unknown. But when the city-state was absorbed by the idea of empire, new elements came into play. Stoicism especially, gave birth to the idea of the individual and made his <u>self-realization</u> the main objective of human endeavor" {italics added} (p. 48).

Based upon his historical analysis of the concept of liberty, Lasky (1970) provides the following definition of liberty, from which we can discern the conception of it being an <u>emotionally harmonious equilibrium of personality</u> effected through the absence of deleterious environmental

constraints and the presence of salubrious environmental opportunities:

> "Liberty may be defined as the affirmation by an individual or group of his or its essence. It seems to require the presence of three factors. It seeks in the first place a certain harmonious balance of personality; it requires on the negative side the absence of restraint upon the exercise of that affirmation; and it demands on the positive the organization of opportunities for the exercise of a continuous initiative. The problem of liberty has always been the prevention of those restraints, upon the one hand, that men at any given period are not prepared to tolerate and, upon the other, the organization of the opportunities the denial of which result in that sense of frustration which when widely felt leads to imminent or actual disorder" (p. 51).

Liberty, or freedom, then, is conceived not as a luxury, but as a necessary condition for the fullest realization of human life. Besides the conception of liberty indicating the necessity of certain environmental conditions--what the framers of the U.S. Constitution referred to as the inalienable rights of the individual to "life, liberty, and the pursuit of happiness"--it also provides the basis for discerning social justice within society. "A just society," wrote Ivan Illich (1973), "would be one in which liberty for one person is constrained only by the demands created by equal liberty for another" {type emphasis added} (p. 44).

The most common account for the development of justice in social and societal arrangements is the social contract view with its most ardent proponent being that of Hobbes (1618/1968). Hobbes believed that humans behaved

egoistically by nature and therefore entered into a social contract enforceable by a higher power--a Leviathan--in order to curtail themselves from injuring one another. The social contract view, however, was made explicit much earlier in history. In Glaucon's dialogue with Socrates concerning the origin of justice as related by Plato (B.C./1957), for example, Glaucon is purported to have stated:

> "By nature, men say, to do injustice is good, to suffer it evil, but there is more evil in suffering injustice than there is good in inflicting it. Therefore when men act unjustly towards one another, and thus experience both the doing and the suffering, those amongst them who are unable to compass the one and escape the other, came to this opinion: that it is more profitable that they should mutually agree neither to inflict injustice nor to suffer it. Hence men began to establish laws and covenants with one another, and they called what law prescribed lawful and just. This, then, is the origin and nature of justice. It is a mean between the best--doing injustice with impunity--and the worst--suffering injustice without possibility of requital. Thus justice, being a mean between those extremes, is looked upon with favor, not because it is good, but because the inability to inflict injustice makes if invaluable. For no one who had the power to inflict the injustice and was anything of a man would ever make a contract of mutual abstention from injustice with any one else" (p. 45).

But what is good for the group, is not necessarily good for the individual, and Adeimantus, Glaucon's brother, continued the dialogue with Socrates by asking if it is better to be unjust though <u>appearing</u> to be just--what Thrasymachus had earler in the dialogue referred to as the

"perfectly unjust man" and the ideal of a public administrator--or if it is better to be truly just, and, as Aeschylus had said, "... to desire not to seem but to be good." Adeimantus then puts forth the following argument on behalf of appearing just while being unjust, a position later to be propounded by Nicholas Machiavelli (1516?/1958) during the Renaissance:

> "What must a man be, and what paths must he take, if he would live the best possible life? Naturally he will say to himself in the words of Pindar. 'Shall I by justice or by crooked wiles ascend the higher wall and so fortify myself for life? For what do men say? If I am just, unless for life? For what do men say? If I am just unless I also seem just, I gain no advantage, but manifest toil and pains. But if I am unjust and have acquired the appearance of justice, a heavenly life, they say, is mine. Well, then, since seeming, as the wise men show me, does violence even to truth and is the lord of happiness, I must turn to it with all my heart. Therefore--court of my house of life I must adorn with the presentiment of virtue, but behind the walls I shall hide the crafty subtle Reynard whom that wise Archilochus loved. 'But,' someone says, "it is not easy to be bad and never be found out.' No, we answer, and nothing else that is great is easy. Still, if we would be happy, this is the path we must follow. The tracks of the argument point this way. That we may not be found out, we shall organize clubs and fellowships, and there are masters of persuasion who impart the wisdom of the public assembly and of the law courts. By their help, persuasion and force will be our weapons, and we shall pay no penality for our aggrandizement" (p. 53).

Of such men, Adeimantus argues, "... the first to attain to power is the first to practice injustice to the measure of his ability" (p. 55) (.cf Action's adage: "Power tends to corrupt and absolute power corrupts absolutely"). He

goes on to assert that the central cause of such an attitude is that the issue of whether justice or injustice provides its possessor with the greatest amount of personal power, with the social reputation of the thoroughly unjust man and the thoroughly just man abstracted from the issue, has never been resolved: "But what each does of itself by the power of its own nature, when dwelling in the heart of him who possesses it, hidden from gods and men alike: that no one has ever thoroughly considered either in poetry or in prose: nor shown that injustice is the greatest of evils that the soul contains within herself, and justice the greatest good" (p. 55). He goes on to state that if a cogent argument on behalf of the greater intrinsic value of being just to being unjust had been advanced earlier during his youth, then they would not all be watching their neighbors to prevent them from committing injustices because: "Each man would himself be his own best guard, in his fear lest by doing unjustly he should have portion with the greatest evils" (p. 55).

In response to the argument of whether being just is intrinsically more or less rewarding than being unjust, Socrates argues by analogy on behalf of justice. He does so first by analogizing the individual to the city and attributing justice to each: "Justice, we say, is the attribute of an individual, but also of a whole city, is it not? (p. 58)" And then he goes on to demonstrate that if it is advantageous for the members of the city to treat one

another justly for the betterment of the city, the progress of the overall collective group, then it must therefore likewise be necessary for the psychological functioning of the individual. According to this view, the unjust person would be either fixated in human development, or, worse, be deteriorating; whereas, the just person would be maintaining or enhancing his individual development. Evil, then, would be born of ignorance, for a knowledgeable person, one knowledgeable of himself and others, would never knowingly harm himself through evil actions such as cheating, lying, or stealing, and hence the Socratic formula that "knowledge equals virtue" and the admonishment to "know thyself," later to become the central tenet of Freudian psychoanalysis, would be true.

> Shylark: "Know thyself and to thine own self be true, and thou shalt not be false to any man."
>
> ---Shakespeare
> <u>Hamlet</u>

Socrates, however, in making his argument on behalf of the intrinsic superiority of behaving justly to behaving unjustly commits what in logic is know as the "fallacy of division"--that is, in reasoning erroneously that what holds true for the whole also holds true for its parts. Whereas the city is undoubtedly benefitted by just men and hindered by unjust men, a particular unjust man (or perhaps even a class of unjust men) is not necessarily hindered by behaving unjustly and may even be helped, if by behaving unjustly he

obtains greater intrapersonal harmony, for a limited time at least, by avoiding legitimate social constraints and obtaining illicit opportunities. Even then, however, the intrapersonal harmony obtainable is limited by such a level of development or social orientation. Or, for another example, the individual desiring to be more just, may even have less intrapersonal harmony if he exceeds his capacity or in his exceeding justice in relation to others is inordinately exploited or punished.

Moreover, as Aristotle (B.C./1984a) later observed, justice is not an attribute of the individual in the same way as it is an attribute of a social group as Socrates apparently assumed. As an attribute of the individual it refers to the internal <u>disposition</u> of one to relate toward others in such a manner as to maintain or enhance their freedom (or "liberty") while also equitably doing so for oneself. In contrast, as an attribute of a group, it refers to a general condition of the group, to the pattern of interpersonal relationships, not to the relating of one entity in regard to another. The phenomenon which Socrates referred to as exemplifying justice within the individual therefore was actually that which was previously defined by Laski as "freedom" or "liberty," and the analogy used in Socrates' argument was therefore erroneously between the condition of social justice within the group and the condition of liberty within the individual.

To the extent, however, that the development of individual freedom is contingent upon the development of freedom of others--that is, that the maintenance or enhancement of the intrapersonal harmony of the individual is effected by facilitating or permitting the maintenance or enhancement of the intrapersonal harmony in others through the appropriate elimination of constraints and the provision of opportunities (the manifestation of the life orientation)--then to that extent can the individual disposition to behave justly toward others be considered an indicator of an individual's level of freedom. Ralph Waldo Emerson (19th Century/ 1984b) had noted this relation between liberty and justice when in writing in protest of the fugitive slave law in 19th Century America he stated:

> "For I suppose that liberty is an accurate index, in men and nations, of general progress. The theory of personal liberty must always appeal to the most refined communities and to the men of the rarest perception and of delicate moral sense. For there are rights which rest on the finest sense of justice, and, with every degree of civility, it will be more truly felt and defined. A barbarous tribe of good stock will, by means of their best heads, secure substantial liberty. But where there is any weakness in a race, and it becomes in a degree matter of concession and protection from their stronger neighbors, the incompatibility and offensiveness of the wrong will of course be most evident to the most cultivated. For it is--is it not?--the essence of courtesy, of politeness, of religion, of love, to prefer another, to postpone oneself, to protect another from oneself. That is the distinction of the gentleman, to defend the weak and redress the injured, as it is of the savage and the brutal to usurp and use others" (p. 548).

The relinquishment of the genuine personal disposition to treat others justly, then, necessarily entails a loss of personal liberty, accompanied, of course, by a corresponding decrease of justice within society, all of which may be collectively referred to as a loss of humanity. Coercion from the social or physical environments upon an individual to regress morally, would then be expected to meet with the same frustration as would the capture of a wild animal within its ecological niche and its subsequent encagement.

It should also be made more explicit that the conception of liberty as intrapersonal harmony (or a harmonious state of personality) obtained through the absence of certain constraints and the presence of certain opportunities does not mean the indiscriminant absence of all constraints or the presence of all possible opportunities. It would only mean the absence of those constraints inhibiting and the the presence of those opportunities facilitating the development of a harmonious (or integrated) personality.

For the condition of liberty to be realized, the presence of some constraints and the absence of some opportunities would even be expected for the development and perhaps maintenance of an integrated personality, just as the <u>rational</u> authority of parents must guide the development of the child and the <u>rational</u> authority of a social group must guide the development of its members. As A. S. Neill (1960)

has stated in qualifying his defense of the free school: "Freedom does not mean license."

The concepts of liberty and social justice, with the concept of genuine liberty subsuming the personal disposition to behave justly toward others, leads us then naturally to Erikson's concept of mutual regulation. Erikson, as is well known, complemented Freud's theory of psychosexual development with a collateral theory of psychosocial development, besides adding later developmental stages and making certain modifications.

According to Erikson's (1950/1963) theory, at each stage of psychosexual development, society, as mainly represented by the parents, may impose some regulations upon the child's psychosexual behavior thus leading to conflict between the child and his parents. The conflict is then resolved by achieving mutual regulation of the behavior by child and parents, an "attitude" or "trait" which when generalized--cognitively, emotionally, and behaviorally--to other interpersonal situations becomes referred to as a "social modality." For example, a "normal" or just resolution at the oral stage centered at the body zone of the mouth and emphasizing the development and regulation of the incorporative modes results in the social modality of trust in the child's ego. Similarly, "mutual regulation"--the proper ratio of child to parental regulation--achieved

during the anal stage (i.e., focusing on the body zone of the anus and emphasizing the development and mutual regulation of the retentive and elimination modes) results in the social modality of autonomy. And, in the same manner, achieved mutual regulation focused at the bodily zone of the genitalia, especially the penis in the male and the clitoris in the female, emphasizing the development and mutual regulation of the intrusive mode, results in the social modality of initiative.

Erikson's theoretical focus, then, is upon the results of the degree of mutual regulation achieved by the child and the parents over the child's initially more maturationally determined behaviors in the ego (personality) development of the child, with the social modalities of the child's ego acquired within the context of an alternating series of social transactions involving the child and parents. Further implied in such a theoretical conception of ego development are the concepts of liberty and social justice as can be comprehended more clearly from Erikson's (1950/1963) statement of the task confronting a clinical child psychologist:

> "I would say it is our task to re-establish a mutuality of functioning between the child patient and his parents so that instead of a number of fruitless, painful, and destrucive attempts at controlling one another, a mutual regulation is established which restores self-control in both child and parents" (p. 68).

The clinical goal of the clinical child psychologist, then, according to Erikson, is essentially the establishment of greater liberty in both parties through the greater development of the internal dispositions to behave more justly in each: Greater personal liberty through greater social justice. Both parties, consequently, then also become more life oriented.

DOMINANCE

Permeating discussions concerning personal liberty, social justice, and morality is the social-psychological dimension of dominance versus submission. It may even more broadly be conceived, in some instances, as encompassing the other two more mammalian dimensions of inclusion vs. exclusion and dependence vs. independence. Following the conquest of a principality or the overthrow of a government, for example, those who have gained political control, as Machiavelli (1516?/1958) had advised, will often persecute those who they believe threaten their control by excluding them--i.e., by "scattering," imprisoning, or killing them--as Orwell (1952) observed during the Spanish Civil War. As for the dimension of dependence vs. independence, extremely dominant and irrational authority has always sought to make those subjected to it dependent upon it while avoiding any behavioral dependency upon those they dominate or upon any other party--that is, by avoiding any mutual regulation,

counter-control, or accountability. Thibaut and Kelley (1959), for example, stress that in social relations power is obtained by acquiring control over the behavioral consequences of others.

When dominance-submission is then more broadly conceived so as to encompass inclusion-exclusion and dependence-independence, it may, then, be seen as the fundamental ethical problem of social conflicts in general. In the above quotation by Erikson (1950/1963), for example, the task of a clinical child psychologist, as Erikson conceived it, was to establish a more moral, mutually regulatory process between the child and his parents so as to end the "... fruitless, painful, and destructive attempts at controlling one another" and restore "self-control" in both child and parents. Weininger (1975) has explicitly stressed the importance of the issue of dominance in the development of better family relations, stating:

> "Most people who have worked with disturbed children, especially those who work in family therapy, recognize that in the complicated dynamics of the troubled family the question of dominance--who has it, why, and how it is used, to what degree, and for what purposes--is a central question which must be carefully unravelled if the family is to readjust and develop better human relations" (p. 4).

Social dominance, or as that dimension of behavior is called at its opposite end, social submission, is manifested pervasively throughout society. Stanley Milgram (1974)

expressed the social salience and significance of dominance and submission when he stated:

> "Obedience is as basic an element in the structure of social life as one can point to. Some system of authority is a requirement of all communal living, and it is only the man dwelling in isolation who is not forced to respond, through defiance or submission, to the commands of others. Obedience, as a determinant of behavior, is of particular relevance to our time. It has been reliably established that from 1933 to 1945 millions of innocent people were systematically slaughtered on command. Gas chambers were built, death camps were guarded, daily quotas of corpses were produced with the same efficiency as the manufacture of appliances. These inhumane policies may have originated in the mind of a single person, but they could only have been carried out on a massive scale if a very large number of people obeyed orders.
>
> Obedience is the psychological mechanism that links individual action to political purpose. It is the dispositional cement that binds men to systems of authority. Facts of recent history and observation in daily life suggest that for many people obedience may be a deeply ingrained behavior tendency, indeed, a prepotent impulse overriding training in ethics, sympathy, and moral conduct" {emphasis added} (p. 1).

In a transaction involving a dominant person and a submissive person affecting a third party, it is quite easy to perceive that many such transactions do not comply with Kant's Categorical Imperative, for example, and the life orientation more generally, which are indicative of the dimension of morality. In Stanley Milgram's (1974) experimental paradigm, for example, the authoritative figure--the experimenter--requested "experimental subjects" to assume the role of a teacher and to deliver apparently

extremely dangerous levels of electrical shock to another person who had assumed the role of a student, upon instances of the student failing to learn the task. The experimental subject (teacher) was expected to do so even despite the student's expressions of agony. (The learner, or victim, was actually a confederate of the experimenter who only pretended he was being shocked.)

What is less clearly perceived, however, is that the two moral criteria also apply to the dominant and submissive persons with regard to their orientations toward each other (Fromm, 1941). For example, in a series of interpersonal social transactions in which the behavior both of the dominant person and the submissive person is motivated primarily by euphoric emotion, that is, in a sado-masochistic relationship (with the term "sado-masochism" not being limited here to a sexual relationship), neither would consider it good if they were to behave toward the other person as they would in turn wish to be treated, in contradiction to Kant's philosophical Golden Rule. Additionally, their social transactions would, in the words of a Skinnerian theorist, positively reinforce their interpersonal behavioral tendency toward either dominance or submission, respectively, thus maintaining if not enhancing the distance between them on the dimension of dominance vs. submission. Both, then, would be dependent upon external criteria to guide their behavior, and they

would not have acquired the more mature internal criteria distinguishing man from most other mammals--that is, the development of a more cognitively sophisticated dimension of morality serving to influence emotions and behaviors in various situations according to moral principles such as Kant's Categorical Imperative and the Life Orientation.

Although morality may influence interpersonal behavior for the long-term improvement of oneself and others, one should not, however, overestimate its current level of influence. Milgram (1974), who began his studies on obedience to authority believing that to a considerable extent, individuals were relatively autonomous beings, following the results of his experiments concluded the following:

> "The behavior revealed in the experiments reported here is normal human behavior but revealed under conditions that show with particular clarity the danger to human survival inherent in our make-up. And what is it we have seen? Not aggression, for there is no anger, vindictiveness, or hatred in those who shocked the victim. Men do become angry; they do act hatefully and explode in rage against others. But not here. Something far more dangerous is revealed: the capacity for man to abandon his humanity, indeed, the inevitability that he does so, as he merges his unique personality into larger institutional structures. ... This is a fatal flaw nature has designed into us, and which in the long run gives our species only a modest chance of survival. ... Each individual possesses a conscience which to a greater or lesser degree serves to restrain the unimpeded flow of impulses destructive to others. But when he merges his person into an organizational structure, a new creature replaces autonomous man, unhindered by the limitations of

> individual morality, freed of humane inhibition, mindful only of the sanctions of authority.
>
> The results, as seen and felt in the laboratory, are to this author disturbing. They raise the possibility that human nature, or--more specifically--the kind of character produced in American democratic society, cannot be counted on to insulate its citizens from brutality and inhumane treatment at the direction of malevolent authority. A substantial proportion of people do what they are told to do, irrespective of the content of the act and without limitations of conscience, so long as they perceive that the command comes from a legitimate authority (italics added)" (pp. 188-189).

Although it is patently obvious from the foregoing discussion that indiscriminant social dominance and, its opposite, social submission are, for adults, at least, immoral psychological tendencies and that the personality trait of morality is generally (though not always) insufficient to counteract them (when moral character is pitted against modern social organizations), morality can be substantially enhanced by removing a conceptual obstacle preventing its further development. That is, by conceiving of a moral alternative to authoritarianism (Adorno, Frenkel-Brunswick, Levinson & Sanford, 1950) other than the also undesirable (and ultimately immoral) prospect of no authority at all--that alternative being the distinction between rational authority based upon competence and irrational authority in which competence is considered irrelevant or not considered at all. As Erich Fromm (1947) has stated:

> "So much confusion exists with regard to this concept {authority} because it is widely believed that we are confronted with the alternative of having dictatorial, irrational authority or of having no authority at all. This alternative, however, is fallacious. The real problem is what kind of authority we are to have. When we speak of authority do we mean rational or irrational authority? Rational authority has its source in competence. The person whose authority is respected functions competently in the task with which he is entrusted by those who conferred it upon him. He need not intimidate them nor arouse their admiration by magic qualities; as long as and to the extent to which he is competently helping, instead of exploiting, his authority is based on rational grounds and does not call for irrational awe. Rational authority not only permits but requires constant scrutiny and criticism of those subjected to it; it is always temporary, its acceptance depending on its performance. The source of irrational authority, on the other hand, is always power over people. This power can be physical or mental, it can be realistic or only relative in terms of the anxiety and helplessness of the person submitting to this authority. Power on the one side, fear on the other, are always the buttresses on which irrational authority is built. Criticism of the authority is not only not required but forbidden. Rational authority is based upon the equality of both authority and subject, which differ only with respect to the degree of knowledge or skill in a particular field. Irrational authority is by its very nature based upon inequality, implying difference in value" {emphasis added} (p. 19).

Not only may rational and irrational authority be distinguished primarily by the static concept of competence, but they may also be distinguished dynamically, and it is perhaps in this regard that the two moral criteria alluded to previously become most salient: the modification of Kant's Categorical Imperative and the Life Orientation. In a rational superordinate-subordinate relationship--for

example, the kind of relationship that should exist between a parent and a child or between a teacher and a student--as the degree of competence separating the two individuals in the relationship decreases, so does the authority of the superordinate over the subordinate. In an irrational superordinate-subordinate relationship, however, the authority of the superordinate over the subordinate is either maintained or enhanced, regardless or independently of changes in the differences between the two persons in competence. As one example, as the more general competence of the child develops, the less authority the parent exerts over the child or the child bestows upon the parent. Or, for another example, the more relevant competence the student has developed under the authority of the teacher, the less authority the teacher exerts over the student and the student bestows upon the teacher. Fromm (1941) provides an interesting psychoanalytic distinction between a rational superordinate-subordinate relationship and an irrational one of exploitation by the superordinate:

> "In the first, elements of love, admiration, or gratitude are prevalent. The authority is at the same time an example with which one wants to identify one's self partially or totally. In the second situation, resentment or hostility will arise against the exploiter, subordination to whom is against one's own interests. But often, as in the case of a slave, this hatred would only lead to conflicts which would subject the slave to suffering without a chance of winning. Therefore, the tendency will usually be to repress the feeling of hatred and sometimes even to replace it by a feeling of blind admiration. This has two functions: 1) to remove the painful and dangerous

feeling of hatred, and 2) to soften the feeling of humiliation. If the person who rules over me is so wonderful or perfect, then I should not be ashamed of obeying him. I cannot be his equal because he is so much stronger, wiser, better, and so on, than I am. As a result, in the inhibiting kind of authority, the element either of hatred or of irrational overestimation and admiration of the authority will tend to increase. In the rational kind of authority, it will tend to decrease in direct proportion to the degree in which the person subjected to the authority becomes stronger and thereby more similar to the authority" (p. 188).

CHAPTER TWO

A Theory of Moral Development

From the preceding discussion, the groundwork has been laid for a more complete integration of the inchoate theory of dyadic social transaction. Although in much of that discussion which has immediately preceded, the conceptions were often explicitly mechanistic and generally consistent with an implicit mechanistic perspective for purposes of expositional expediency, those conceptions were generally, nevertheless, latently supportive of an organicist perspective of the topics discussed. The following presentation of the inchoate theory of dyadic social transaction in its most integrated form, however, will have to rely more fully upon an enduring organicist metaphysical perspective on the part of the reader, even when the author, for expediency, does not make that perspective explicit and seems to suggest instead a mechanistic perspective.

In the theory of dyadic social transaction as it has thus far been developed, as will be recalled, the subject is a member of a population inhabiting a naturally occurring subenvironment such as a home, a school, a work place, etc., and the theory concerns itself, initially at least, only with the social-psychological functioning of that subject within that subenvironment. According to the theory, in

relation to the subject, all other individuals inhabiting the subenvironment are termed focal-stimulus persons which may be further identified according to the social role they fulfill and their personhood more generally, and all physical settings within the subenvironment in which a social transaction involving the subject and a focal-stimulus person may occur are termed ambient-stimulus physical settings.

The subject is then postulated to possess two neuroanatomical structural components corresponding to the social role of each focal-stimulus person, two neuroanatomical structural components corresponding to the personhood of each focal-stimulus person, and two neuroanatomical structural components corresponding to each ambient-stimulus physical setting. For each of those pairs of neuroanatomical structural components, one would correspond to the <u>specificity</u> of the social role, personhood, or physical setting, which ever the case might be, and would be termed an "attitude," and the other would correspond to the <u>generality</u> of the social role, personhood, or physical setting and would be termed a "trait composite," like a stereotype.

Each of the neuroanatomical structural components pertaining to a focal-stimulus person would be presumed capable of being represented by a general class of

nomothetic dimensions consisting of the dimensions of inclusion-exclusion, dominance-submission, dependence-independence, and morality-immorality. The neuroanatomical structural components corresponding to an ambient-stimulus physical setting would, analogously, be presumed amenable to representation by a general class of dimensions consisting of the dimensions of formality-informality and constraint-nonconstraint. There would, therefore, corresponding to any social transaction involving the subject, be the following sets of dimensions representative of the neuroanatomical component structures involved in the event: attitudinal dimensions and trait dimensions (inclusion, dominance, dependence, and morality, for both sets) for both the role and the personhood of the focal-stimulus person and attitudinal dimensions and trait dimensions (formality and constraint) for the ambient-stimulus physical setting.

Each of the dimensions, whether attitudinal or trait, consists of the three organically inter-related components of cognition, emotion, and behavior. The cognitive component of each dimension is qualitatively identified with a dimension found to underlie cognitions related to focal-stimulus persons or to ambient-stimulus settings, depending upon which the psychological dimension is related. Analogously, the behavioral component of a psychological dimension is identified qualitatively with an underlying behavioral dimension. Although the cognitive and behavioral

components of a psychological dimension are then homogeneous, however, the emotional component is permitted to be heterogeneous. For each psychological dimension, it is represented qualitatively as an additive combination of the three underlying emotional dimensions of arousal, control, and pleasure.

In a social-transaction involving a subject and the physical complex of a focal-stimulus person and ambient-stimulus physical setting, the qualitatively corresponding pairs of role attitudinal and trait dimensions would synthesize to form more general dimensions called, simply, "role dimensions." Simultaneously and in an analogous manner, corresponding pairs of personal attitudinal and trait dimensions would synthesize to form more general "personal dimensions." Qualitatively corresponding pairs of general role and attitudinal dimensions would then synthesize to form "social dimensions." In such syntheses, for two corresponding pairs of psychological dimensions, say, $A = C' + rE_1' + rE_2' + rE_3' + B'$ and $T = C'' + rE_1'' + rE_2'' + rE_3'' + B''$--where "A" is an attitudinal dimension; "T" is a trait dimension; "C" is a cognitive component; "E_1", "E_2", and "E_3" are subcomponents of an emotional component; "B" is a behavioral component; the single prime refers to the attitudinal dimension; the double prime refers to the trait dimension; the units are standardized; and the "r" is the

standardized regression weight--then the following multiplicative mathematical model may be a promising one:

$$C = r\ C'\ C'' + \text{Error} \qquad \text{(Eq. 1)}$$

$$E = r\ E_1'\ E_1'' + \text{Error} \qquad \text{(Eq. 2)}$$

$$E = r\ E_2'\ E_2'' + \text{Error} \qquad \text{(Eq. 3)}$$

$$E = r\ E_3'\ E_3'' + \text{Error} \qquad \text{(Eq. 4)}$$

$$B = r\ B'\ B'' + \text{Error} \qquad \text{(Eq. 5)}$$

Just as the general role and personal dimensions would be synthesized from corresponding pairs of attitudinal and trait dimensions, so also would the more general setting dimensions be synthesized from corresponding pairs of setting attitudinal and trait dimensions. To account for the social transaction, then, each setting dimension might be synthesized with each of the social dimensions, with, for example, the overt behavior of the social transaction represented by the following equation, which, notably, assumes a <u>statistical</u> interaction (not dynamic interaction) between social dimensions, subscripts 1-4, and setting dimensions, subscripts 1 and 2 (an analogous equation would exist for cognition, but the equation for emotion would be somewhat different and more lengthy):

$$Y = r\ B_1 B_5 + r\ B_2 B_5 + r\ B_3 B_5 + r\ B_4\ B_5 \qquad \text{(Eq. 6)}$$
$$+ r\ B_1 B_6 + r\ B_2 B_6 + r\ B_3 B_6 + r\ B_4 B_6$$

A social transaction involving the subject and a physical complex of focal-stimulus person and ambient-stimulus

physical setting is an event occurring within the spatial-temporal frame of reference in which the focal-stimulus person serves as the body of reference. The event begins at that abstract point in that space-time which the focal-stimulus person passes through when the subject begins to become cognizant of that stimulus person. The focal-stimulus person then begins to become an object within the phenomenal world of the subject, with the physical setting environing the stimulus person becoming the context of that human object within that phenomenal world. The event then ends at that abstact point in the space-time of the subject which the focal-stimulus person passes through in which the subject is no longer cognizant of the stimulus person (or another social cognition begins to predominate), which would then follow any overt behavior of the subject in relation to the person which might occur.

The spatial-temporal framework of the subject may be coordinated with some other "objective" spatial-temporal framework such as, perhaps, terrestrial space and sidereal time, though while continuing to use the subject as the body of reference for that coordinate system. The subject may then report his experiencing of the social transaction, and an "objective" third party may describe it as it is reported within the objective spatial-temporal frame of reference or the subject may do so himself. Additionally, the objective third party may observe the external manifestation of the

social transaction directly and describe the event as a natural phenomenon, using the same objective spatial-temporal frame of reference in the description and thus partially corroborating the reported experience of the subject.

A social transaction, as it will be recalled, is a single or double psychological reflex-arc analogue in which the physical object in which the subject is involved is another person, i.e., a focal-stimulus person. Whether the event is preceded (not initiated) by an endogenous or an exogenous physical event (e.g., hormonal change or motion of focal-stimulus person), it is an event occurring across the physical complex of stimulus person and setting and a neuroanatomical structure within (or across) the subject, occurring, therefore, within the interpersonal situation. As the event is experienced by the subject, it consists of the three phases of cognition, emotion, and behavior, and as it is observed directly by a third party, it similarly consists of the three phases of attention, emotion, and behavior.

Although in a social transaction cognition, emotion, and behavior become salient within the experience of the subject in the temporal order of cognition-emotion-behavior, they are overlapping temporal phases and are more or less contemporaneous with one another. In the case of the single

psychological reflex-arc analogue, the physical complex is vaguely experienced emotionally prior to beginning to sense it. As the subject continues to attend behaviorally to the physical complex the subject's sensation of it corresondingly changes as does the emotion covarying with it. When the sensation of the physical complex has stabilized and the emotion has done so also or has changed in quality, the emotion may then become salient in the subject's experience and be followed by overt behavior which would then become most salient. A similar explantion applies to the psychological double reflex-arc analogue in the form of sensation-emotion-cognition-emotion-behavior, but because the cognitive behavior is not overt and concerns the object sensed, sensation is subsumed by cognition and the emotion that would mediate the two then theoretically ignored or considered reflected in the emotion mediating the cognition and overt behavior, thus leaving the phases cognition(perception/cognition)-emotion-behavior.

Emotion plays a special role in psychological reflex-arc analogues such as social transactions. Not only does it provide the organizational principle for the generation and coordination of the cognition and the behavior involved in a social transaction, but it also provides the basis for distinguishing a region within the experience of the subject which is felt as pleasing and within control and as being

that which is most peculiarly the subject--that region being the phenomenal self of the subject.

The region of the phenomenal self of the subject, as it is experienced in a social transaction, is experienced as being interior to the subject and as being antithetical to a region within the phenomenal world of the subject felt as being exterior. Its existence is established on the basis of it being a first principle, for the subject cannot observe it directly himself because such an introspection is not rationally viable, though the subject can re-experience the region of the phenomenal self from past sensations, transactions, or segments of the stream of thought and feel it, though not sense it otherwise by any of the five sense modalities (which function to sense objects of nature by the subject). Its existence is evidenced by the Gaffron phenomenon in perceptual investigations in which a boundary separating various sensations and feelings from others (interiority vs. exteriority) is often found to shift during certain psychological processes. It is important to emphasize in regard to the phenomenal self, though, that its boundary is not that of the skin of the person and that it may feasibly shrink to a near nothingness or, within experience, encompass a region of the phenomenal world extending far beyond the boundary of the skin, to a harvest moon for lovers, for example. As a physical event in

nature, too, it may reach interstellar proportions, if kept within its natural space-time.

The phenomenal self of the individual, however, is not something which starts and stops with distinct psychological events such as social transactions; rather it is continuous, forming the core or nucleus in the existential being of the individual. Worldly sensations, in a sense, coalesce around it. If it is not also an immortal soul of the individual, then it is at least the individual's natural soul. As the stoic philosopher and Roman emperor Marcus Aurelius (A.D./1964) described it in perhaps its most perfected form:

> "The soul attains her perfectly rounded form when she is neither straining out after something nor shrinking back into herself; neither disseminating herself piecemeal nor yet sinking down in collapse; but is bathed in a radiance which reveals to her the world and herself in their true colours" (p. 170).

Social transactions, as stated previously, are occasionings of a neuroanatomical structure within a subject and a physical complex of focal-stimulus person and ambient-stimulus physical setting. The physical complex is presumed analyzable into the two obvious major components of focal-stimulus person and ambient-stimulus physical setting, and the major component of focal-stimulus person is further presumed analyzable into the two subcomponents of the social role of the focal-stimulus person and the personhood of the focal-stimulus person, with the personhood of that focal-

stimulus person considered independently of that person's social role. The two subcomponents of the role and the personhood of the focal-stimulus person, together comprising the major component of the focal-stimulus person, and the major componet of the ambient-stimulus physical setting each have a specific aspect and a general aspect--that is, a uniqueness as a distincitive member of a class and a commonness as a representative of a class of phenomena (.cf Emerson's: "Nature is a sea of forms radically alike and even unique."). Corresponding to those components, subcomponents, and elements (specificity and generality) in the physical complex of stimulus person and setting are neuroanatomical structural components, subcomponents, and elements (attitudes or trait composites) similarly hierarchically arranged forming the neuroanatomical structure involved in the social transaction.

In fact, from an ontological perspective (the perspective of the subject), the physical complex and its postulated hierarchical organization as has been described only exist for the subject if the corresponding neuroanatomical structure and its hierarchical organization exists within the body of the subject. From a third-party, theoretical perspective, those two hierarchically organized sets of structures (neuroanatomical and physical complex) are presumed to exist, but the exact nature of the social

transaction is determined by the neuroanatomical structure, with its hierarchical arrangement.

Although the exact nature of the neuroanatomical structural components, subcomponents, and elements (attitude or trait composite) comprising the neuroanatomical structure involved in a social transaction may not be directly observed and assessed, they may be represented as profiles on a set of psychological dimensions or, equivalently, as profile points in a coordinate space where the axes are psychological dimensions. As has been stated, a common set of such dimensions exist for representing the component, subcomponent, and elements (attitude and trait composite) of the focal-stimulus person, those psychological dimensions being inclusion-exclusion, dominance-submission, dependence-independence, and morality-immorality. Analogously, a common set of dimensions exist for representing the component and elements of the ambient-stimulus physical setting--those dimensions being formality-informmality and constraint-nonconstraint.

Most basically, a theoretical explanation of a social transaction would begin at the hierarchical level in which the neuroanatomical structural elements (components) of attitudes and trait composites corresponding to the role and personhood of the stimulus person and to the physical setting were presumed to be involved. Higher order

neuroanatomical structural components could then be considered syntheses of those most basic neuroanatomical structural elements. And because the same set of dimensions would be used to represent the hierarchical organization of the neuroanatomical structure related to the stimulus person and the same set would be similarly used to represent the hierarchical organization of the neuroanatomical structure related to the physical setting, then theoretical discussions may concern themselves more generally with those two common prototypical sets of dimensions--that is, inclusion, dominance, dependence, and morality pertaining to stimulus persons and formality and constraint pertaining to physical settings.

As they are involved in social transactions, the neuroanatomical structures with their hierarchically organized components (components, subcomponents, and elements) within a population of subjects are only structures when considered within a relatively brief period of time in human development, perhaps, in some instances, to as brief a time as the duration of a single social transaction. They are only considered <u>as a structure</u>, in fact, <u>for the theoretical purpose of explaining one or more</u> social transactions in the life of a subject. More realistically (truthfully, naturally), they are events in progress within the ontogeny of the subject. They are growths, developments of some kind, which become, as all

morphological structures, more differentiated and correspondingly organized and therefore integrated in their development or may instead deteriorate to a lesser disintegrated condition.

Such neuroanatomical structures and their components when considered developmentally require the existence of particular environing physical conditions--endogenously as well as exogenously, perhaps--which would include such things as nutrition for their development and so forth. But they would also generally require physical conditions environing the body of the individual which would occasion their activation, which would then lead to physical conditions necessary for their development. What exact physical conditions would be required for their development would depend upon their current level or stage of development and upon the genotype of the individual involved. It would be, in fact, the genotype of the individual which would organize the development of such structures.

> "A man's genius, the quality that differences him from every other, the susceptibility to one class of influences, the selection of what is fit for him, the rejection of what is unfit, determines for him the character of the universe. A man is a method, a progressive arrangement; a selecting principle, gathering his like to him wherever he goes. He takes only his own out of the multiplicity that sweeps and circles round him" (19th Century/1981e, p. 165).
>
> --Emerson
> Spiritual Laws

The growth of the neuroanatomical structural components within a subject which are involved in social transactions and which correspond to focal-stimulus persons progresses along one of two possible but radically different paths of development, represented psychologically by the two opposite extremities of the bipolar dimension of morality versus immorality. In both courses of development, the structures become more differentiated and correspondingly, to some degree at least, more organized and consequently more integrated. As both of those courses of development are represented on the psychological dimensions of the more mammalian dimensions of inclusion-exclusion, dominance-submission, dependence-independence, and the more human dimension of morality-immorality--the subject, from an initial position of amorality (moral neutrality) at birth (or earlier, perhaps), becomes relatively consistent on the dimensions of dependency, dominance, and inclusion in certain classes of situations and then becomes increasingly inconsistent on those dimensions. But the developing inconsistency along those three dimensions is in accordance with either a moral orientation or an immoral orientation. For, as the subject becomes less consistent on the three mammalian dimensions in various situations, the subject becomes more consistent on the more human dimension of morality-immorality. Developmentally, then, as well as in more contemporaneous psychological functioning, the

dimension of morality-immorality subordinates the other dimensions. As Marcus Aurelius (A.D./1964) explained such a psychological development in the moral direction:

> "Your every separate action should contribute towards an integrated life; and if each of them, so far as it can, does its part to this end, be satisfied; for that is something which nobody can pervert. 'There will be interferences from without,' you say? Even so, they will not affect the justice, prudence, and reasonableness of your intentions. 'No, but some kind of practical action may be prevented.' Perhaps; Yet if you submit to the frustration with a good grace, and are sensible enough to accept what offers itself instead, you can substitute some alternative course which will be equally consistent with the integration we are speaking of" (p. 128).

Lest the above quotation by Aurelius, however, be misconstrued as a universal ethic of unqualified behavioral "flexibility" in opposition to unqualified behavioral "rigidity," it should be noted that he also considered the maintenance and enhancement of personal integrity a necessary condition for mortal life:

> "Let no one have the right to say truthfully that you are without integrity or goodness; should any think such thoughts, see that they are without foundation. This all depends upon your self, for who else can hinder you from attaining goodness and integrity? If you cannot live so, you need only resolve to live no longer; for in that case not even reason itself could require your continuance" (p. 161).

The Roman historian Titus Livius (B.C./1885) provides an example of an historical personage, in contrast to Marcus Aurelius, who was extremely immorally oriented in his psychological development. In his detailed description of

the Second Punic War which the Carthaginians under the command of Hannibal waged upon the Romans, Titus Livius reported that prior to the war and before Hannibal had obtained command of the military, the general of the military at that time, Hasdrubal, requested that Hannibal, after entering manhood, immediately begin military training under him in preparation for eventually assuming command. The Barcine faction of the Carthaginian Senate politically supported such a request, but Hanno, the leader of the opposite faction stated: "I am of the opinion that this youth should be kept at home, and taught, under the restraint of the laws and the authority of magistrates, to live on an equal footing with the rest of the citizens, lest at some time or other this small fire should kindle a vast conflagration" (p. 10). But, as Livius reports, although "a few, and nearly every one of the highest merit, concurred with Hanno ... as usually happens, the more numerous party prevailed over the better" (p. 10). And, as Hanno had feared, " ... from the day on which {Hannibal had been} declared general, as if Italy had been decreed to him as his province, and the war with Rome committed to him, thinking there should be no delay ... he resolved to make war on the Saguntines" (p. 11), thus beginning the war with the Romans by deliberabely violating a treaty.

In the military service of Hannibal under the leadership of Hasdrubal prior to assuming command, Titus Livius

describes a highly authoritarian personality when characterizing Hannibal. He describes Hannibal as being both destructively obedient (submissive) and destructively commanding (dominant) depending upon the situation in accordance with the eventual acquisition of military power. In his description of Hannibal, he also notably characterizes Hannibal as being uninterested in the pleasures of life, as being apparently only interested in a sadistic exercise of social control and, one might expect in addition, in an alleviation of anxiety by authoritarianism. As Livius describes Hannibal during his military training under Hasdrubal:

> "There never was a genius more fitted for the two most opposite duties of obeying and commanding; so that you could not easily decide whether he were dearer to the general or to the army: and neither did Hasdrubal prefer giving the command to any other, when any thing was to be done with courage and activity; nor did the soldiers feel more confidence and boldness under any other leader. His fearlessness in encountering dangers, and his prudence when in the midst of them, were extreme. His body could not be exhausted, nor his mind subdued, by any toil. He could alike endure either heat or cold. The quantity of his food and drink was determined by the wants of nature, and not by pleasure. The seasons of his sleeping and waking were distinguished neither by day nor night. The time that remained after the transaction of business was given to repose; but that repose was neither invited by a soft bed nor by quiet. Many have seen him, wrapped in a militray cloak, lying on the ground amid watches and outposts of the soldiers. His dress was not at all superior to that of his equals: his arms and his horses were conspicuous. He was at once by far the first of the cavalry and infantry; and, foremost to advance to the charge, was last to leave the engagement. Excessive vices counterbalanced these high virtues of the hero;

> inhuman cruelty, more than Punic perfidy, no truth, no reverence for things sacred, no fear of the gods, no respect for oaths, no sense of religion. With a character thus made up of virtue and vices, he served for three years under the command of Hasdrubal, without neglecting any thing which ought to be done or seen by one who was to become a great general" {italics added}" (p. 11).

Although the neuroanatomical structural components involved in social transactions become increasingly more integrated whether the subject develops morally or immorally, a moral course of development, psychologically, eventuates in a greater realization of the self and of the rest of nature whereas the opposite is true for an immoral course of development. For, as explained previously, the phenomenal self, is in continuous existence throughout the life of a subject, and in complex psychological processes such as double reflex-arc analogues as in some social transactions and in re-generations of the stream of thought more generally, the subject becomes, to some degree at least, conscious of his phenomenal self.

The nature of the subject's phenomenal self and the subject's awareness of it, however, varies along the psychological dimension of morality versus immorality. For, in congruence with John S. Mill's empirical argument presented previously, an employment of the "higher faculties" of the subject in accordance with a moral development, is accompanied by a more sublime pleasure characterizing the phenomenal self--that is, a pleasure

which if not more intense, is more pervasive, enduring, and perhaps more frequently re-experienced (e.g., by being more accessible). In contrast, complex psychological functioning characteristic of immoral development involves baser pleasures which characterize the phenomenal self, and, although those pleasures may be, though not necessarily, more intense than pleasures characterizing more moral psychological functioning, they are less pervasively felt, less enduring, and less capable of being re-experienced pleasurably. In fact, while being conscious of an ongoing transaction or of a segment of the stream of thought the subject may even be emotionally repelled from his phenomenal self as it is related to phenomena of nature and may distort those cognitions of self and natural phenomena as a consequence, thus becoming alienated from both the self and the rest of nature. As William James (1890/1981) observed:

> "We take a purer self satisfaction when we think of our ability to argue and discriminate, of our moral sensibility and conscience, of our indomitable will, than when we survey any of our other possessions. Only when these are altered is a man said to be <u>alienatus a se</u>" (p. 283).

Such a conception as above is consistent with and supportive of Fromm's (1947) assertation that the problem with selfish people is not that they love themselves too much but that they love themselves too little. It would be in their our self interest, he argues, for them to love or be able to love others more than they do, but because their

genuine love for themselves is so meager, they do not express love toward others but only strive to receive it or substitutions for it. Selfless persons, on the other hand, are also similarly deficient in self love, he asserts, but, contrary to selfish persons, they attempt to compensate for that deficiency in a diametrically opposite manner by attempting to be more expressive of love toward others and foregoing love from others or substitutions for it.

Conceptually, on an abstract continuum of selfishness versus selflessness (or egotism-altruism, immorality-morality, etc.), according to Fromm's conception, there is apparently an optimum level which would be in the self-interest of an individual relative to that individual's love of self, with that level approaching greater altruism or selflessness (from the perspective of a third party) in proportion to that individual's self love. Such a conception appears to resolve the various inconsistencies concerning self love by theologians such as St. Augustine as elucidated by O'Donovan (1980),[2] and it is consistent with Aristotle's (B.C./1984a) conception of the "greatness of soul":

> "Greatness of soul is a mean between vanity and littleness of soul, and it has to do with honour and dishonor, not with honour from the many but with that from the good, or at any rate more with the latter. For the good will bestow honour with knowledge and good judgement. He will wish then rather to be honoured by those who know as he does himself that he deserves honour. For he will not be concerned with every honour, but with the best,

> and with the good that is honourable and ranks as a principle. Those, then, who are despicable and bad, but who deem themselves worthy of great things, and besides that think that they ought to be honoured, are vain. But those who deem themselves worthy of less than befits them are men of little soul. The man, therefore, who is in the mean between these is he who neither deems himself worthy of less honour than befitting to him, nor of greater than he deserves, nor of all. And he is the man of great soul. So that it is evident that greatness of soul is a mean between vanity and littleness of soul" (pp. 1885-1886).

In the psychological development of the individual as it is ultimately organized by that individual's genotype, given the provision of environmental conditions necessary for that individual's continued development (though not always being intitially desired by the individual), the individual would be expected to shift from a social orientation which was predominately one of self-aggrandizement or of "having" to one of self-realization or of "being." During the earlier stage of self-aggrandizement, the individual would be functioning psychologically in relation to others while tending to attain and maintain an intrapersonal, emotional harmony, identified as that individual's state of freedom, in such a manner that those persons would be equated as <u>things</u>. During the later stage of self-realization, however, the individual would be functioning psychologically in relation to others while tending to attain and maintain personal freedom, an inner peace, in such a manner that those persons would be equated as <u>beings</u> like the individual himself, and the freedom or "well-being" of those persons

would be, generally, within the <u>self-interest</u> of the individual. The social orientation of the individual would change then from a more exploitive one to a more life-facilitative one, to one more indicative of a social communion. And the individual would be treating persons no longer as "things" or "means" (to a selfish end of the individual) but as "ends" in themselves (for the Self of the individual), as Kant had admonished. A selflessly oriented person would be both anti-aggrandizing and anti-self realizing and be treating himself as a thing to be used by others.

A genetically normal individual, however, who was not provided with the environmental conditions permitting a development to a social orientation of self-realization or of being from one of self-aggrandizement or of having, would either become fixated in development or become regressive rather then progressive. In a developmental regression, in which the primary incentives are generally one or more of the Philistine triumvirate of wealth, power, and prestige, the more of those "things" the individual acquired and the more bloated the surrogate image of himself would become with them, the more of those things would be required in the future by the individual in an effort to attain or maintain a personal state of pseudo-freedom (as in the freedom of a drug addict which enslaves). Others would therefore be exploited to an even greater extent, thus reducing their

freedom and, equivalently, social justice. Because the pleasures derived from having acquired such things were not derived instead from a higher-level of psychological functioning involving a greater understanding of metaphysical reality (whether intuitively or rationally), the overt activity level of the individual would be expected to continue to escalate as the individual became more attached and identified with the things of the world he acquired, and he would be becoming less cognizant of what was more true about the world while simultaneously becoming more self-alienated, more ignorant of the true nature of his phenomenal self. Eventually, if such a process continued, the individual would find it more and more difficult to attain or maintain even his own personal freedom, which by then would have long since taken the character of licentiousness in which he would experience greater amounts of anxiety and would seek to relieve that anxiety through greater and greater self-aggrandizement and social exploitation, leading perhaps, inevitably, to a disintegration of personality or suicide.

In contrast, an individual who proceeded along a developmental course of self-realization would become more cognizant of the greater realities of the world while simultaneously becoming more cognizant of what was most real within his personal existence: his phenomenal self, his natural soul--that sense which he shares in common with the

rest of nature. And, the path would lead, when natural resources must be practically considered to be limited, including his own personal resources, to greater personal freedom for the individual and others and consequently to greater societal justice. When one then considers the former course of individual development of self-aggrandizement with the latter of self-realization, one may then appreciate the wisdom of Christ's rhetorical question: "What should it profit a man if he should gain the whole world and lose his own soul?" As Wordsworth lamented:

> "The world is too much with us; late and soon,
> Getting and spending, we lay waste our powers:
> Little we see in nature that is ours;
> We have given our hearts away, a sordid boon!
> This Sea that bares her bosom to the moon;
> The winds that will be howling at all hours,
> And are upgathered now like sleeping flowers;
> For this, for everything, we are out of tune;
> It moves us not.--Great God! I'd rather be
> A Pagan suckled in a creed outworn;
> So might I, standing on this pleasant lea,
> Have glimpses that would make me less forlorn;
> Have sight of Porteus rising from the Sea;
> Or hear old Triton blow his wreathed horn."
>
> --William Wordswoth
> <u>The World Is Too Much With Us</u>

The conception that evil (a <u>regressive</u> social orientation of self-aggrandizement) is weaker than goodness and is inevitably self-destructive may be traced to antiquity. In the <u>Republic of Plato</u>, for example, Socrates observed that no social group, even one that exploits other groups, can exist and function without the condition of justice among its members, for, even in a gang of thieves, as it is

commonly said, there is honour among them. And, if that observation were true for a social group, as it obviously is, he presumed that it must also then be true for the individual, for the unjust man could not continue to exist and function either without being at least somewhat just for the sake of his self.

Although Socrates' argument involved a material fallacy--the fallacy of division--and he confused social justice as a pattern of relationships among persons with personal freedom as it exists within persons, as discussed previously, it seems quite apparent that even in the most ruthless and self-seeking individual the maintenance of personal freedom would require some goodness toward others, if only for the individual to relax and relate occasionally in words or actions to another his true attitudes and his true character. For, as Adeimantus noted in his dialogue with Socrates regarding the thoroughly unjust man who seeks to appear just for selfish gain: "it is not easy to be bad and never be found out" (p. 53).

Kant, as is commonly known, observed that evil is inherently parasitic, that it may only exist where there is goodness to serve as a host for it. A <u>regressive</u> social orientation of self-aggrandizement--the unjustified acquisition of greater wealth, power, and prestige from others, as ends in themselves--therefore, would be expected

to be indicative not of personal strength but of personal weakness. For the strength of the phenomenal self of an individual is not commensurate with those things, nor is his self to be confused with them; rather, it is commensurate with the individual's depth and breadth of thought, with the individual's knowledge, with his intuition or reason, with his wisdom. As Emerson (19th Century/1981d) stated:

> "He who knows that power is inborn, that he is weak because he has looked for good out of him and elsewhere, and, so perceiving, throws himself unhesitatingly on his thought, instantly rights himself, stands in the erect position, commands his limbs, works miracles; just as a man who stands on his feet is stronger than a man who stands on his head" (p. 164).

Although Kohlberg's (1981) cognitive-developmental theory of moral development does postulate moral stages of cognition in the individual ranging in perspective from the "punishment-and-obedience orientation" to the "universal-ethical-principle orientation," in the moral developmental theory presented here Miller's (1978) general systems theory of living systems will be relied upon instead for providing the conceptual framework for stages in moral development so as to consider not only the cognitive aspect of moral development but emotional and behavioral aspects as well and so as to consider that development relative to varying hierarchical levels of social reality. Additionally, the morality of an individual may then be considered as it is related to a particular social entity, such as an

organization like a work place or school which are indicative of subenvironments.

Miller (1978), as will be recalled, conceived of living systems as being hierarchically arranged, with those "levels of reality" consisting of the cell, the organ, the person, the group, the organization, the nation, and the world community (the "supranational level"). Eliminating the two lower levels of the cell and the organ from further consideration, then, the moral development of a person can be considered in relation to the five remaining hierarchical levels of social reality--that is, in relation to other persons, to groups, to organizations, to nations, and to the world community. In addition, however, it will be necessary to consider the moral development of the person in relation to the all encompassing level of reality, though not pervasively a human one--that is, the cosmos (universe, nature, ultimate metaphysical reality).

In the inchoate theory of dyadic social transaction, if the organizational level of social reality is considered, as, for example, a corporate work subenvironment, then, ostensibly, the psychological functioning of the individual defined as the subject is considered in relation to the focal-stimulus persons and ambient-stimulus physical settings populating that organization. If the individual has developed to a moral or immoral stage as indicated by

that hierarchical level of social reality, then the subject would be functioning psychologically in relation to the focal-stimulus persons within that subenvironment in a moral or immoral manner, respectively. The qualitative direction and quantitative magnitude of that stage of development may then be indexed by a mathematical combination of the two psychological dimensions described earlier: the personal trait dimension of morality-immorality and the role trait dimension of morality-immorality. That composite dimension, perhaps called simply "general morality-immorality" may then also serve as an index of the attitudinal dimension of morality-immorality in relation to that social organization as a social entity as a whole. Additionally, a combination of the personal and role attitudinal dimensions of morality-immorality in relation to the leadership of the organization may serve as a useful index of the subject's moral or immoral developmental stage in relation to the centralized authority of that organization.

If the subject had obtained a level of moral or immoral development commensurate to that level of social reality, then the subject would have previously achieved a level of moral or immoral development characteristic of the lower levels of social reality--the group level and person-to-person level--which would be consistent with the subject's social-psychological development at the organizational level. If the subject were a laborer within that

organization and functioned psychologically within that organization in a moral manner, for example, then he would also be found to do so within the group of laborers of which he is a member. And, similarly, he would also be found to be relating morally to persons within that group as persons.

Developmentally, it is not, of course, the psychological functioning of the subject in relation to the particular organization, group within the organization, or selected other persons within that group which are necessarily of concern per se in understanding the moral or immoral development of the subject. Rather, they simply represent a means of assessing that subject's moral development, for the subject may have passed through those stages within other past organizational contexts and simply continued that manner of functioning in his present organizational context. The stages, however, would be sequential in their development--interpersonal, group, and organizational.

If the subject has developed morally or immorally to a stage or level commensurate to a national level of social reality, then, as the conception is extended, the subject would also be found to have previously passed through the organizational stage of moral development in a manner consistent with that subject's national stage of development. Given that the nation to which the subject belongs may subsume a number of different organizations to

which the subject is also a member throughout that subject's life, however, the previous organizational stage of moral development preceding the national stage may have occurred within some earlier different organizational context, such as a school, for example.

Similarly, the hierarchical conception of the moral or immoral development of the subject may be extended to the ultimate level of social reality, to the supranational level of the world community. Although there are a few formally constituted organizations such as the United Nations and the International Court of Justice representative of this level of social reality, it has not yet been formed much intentionally by humankind though it nevertheless has a natural existence. Moreover, it does exist within the experience of some persons, as it has for some time. The ancient Stoic philosophers, for example, believed that there was a community or city, a polis, which transcended all city or national boundaries, encompassing the world and the cosmos as it was then known and enduring indefinitely, perhaps eternally, into time. That world community to which all persons belonged by virtue of their humanity they called the cosmopolis, and all its citizens were called "cosmopolitans," with that term having a radically different meaning then than it does now. As Marcus Aurelius (A.D./1964) presented this city of the world with its natural-spiritual laws of social justice:

> "The power of thought, the potential of reason, is universal among mankind. It follows that this reason speaks no less universally to us all with its "Thou Shalts." There is then world law, we are fellow citizens and the world is a single city. Is there any other citizenship that can be claimed by all humanity" (pp. 65)?

It should be emphasized, in the above account, however, that a moral course of development by an individual does not mean necessarily that the individual will not sometimes be in conflict with various social entities, for some such entities, such as Nazi Germany, are not life oriented, but death oriented. Nor does such a course of development necessarily mean physical violence will not sometimes be utilized, for, generally speaking, the attainment of social justice, like it or not, often depends upon violence. The nonviolent demonstrations advocated by Martin Luther King, for example, had to be complemented by the militancy of Malcolm X and the riots in the major cities and even upon the violent death of Martin Luther King himself before significant social reforms were made. And, prior to emancipation, blacks in America needed John Brown as well as pacifist abolutionists like the Quakers. Moreover, as another illustration, it should not be forgotten that the Romans fed Christians to the lions for 241 years before the Roman Emperor Constantine I was converted to Christianity and terminated the persecution of the Christians (Cooke, Kramer & Rowland-Ertwistle (1981).

Certainly, there are conflictual social situations in which the common appeal for the conflicting parties to become more moral (i.e., more humane) and communicative to each other, when assumed to be sufficient in bringing about a just solution, is, on the contrary, patently insufficient, if not completely absurd. More generally, when one party is irrationally subjected to another and the injustice is substantial, it is probable that more formal actions or even physical actions are more generally required in obtaining or maintaining social justice. In considering class struggles, for example, when in human history has a more dominant class ever justly relinquished any of its control over a class subjected to it except when it considered it more costly to do otherwise? As John Stuart Mill (1869/1970) observed in The Subjection of Women:

> "We now live--that is to say, one or two of the most advanced nations of the world now live--in a state in which the law of the strongest seems to be entirely abandoned as the regulating principle of the world's affairs: nobody professes it, and, as regards most of the relations between human beings, nobody is permitted to practice it. When anyone succeeds in doing so, it is under cover of some pretext which gives him the semblance of having some general social interest on his side. This being the ostensible state of things, people flatter themselves that the rule of mere force is ended; that the law of the strongest cannot be the reason of existence of anything which has remained in full operation down to the present time. However any of our present institutions may have begun, it can only, they think, have been preserved to this period of advanced civilisation by a well-grounded feeling of its adaptation to human nature, and conduciveness to the general good. They do not understand the great vitality and durability of institutions which place right

> on the side of might; how intensely they are clung to; how the good as well as the bad properties and sentiments of those who have power in their hands, became identified with retaining it; how slowly these bad institutions give way, one at a time, the weakest first, beginning with those which are least interwoven with the daily habits of life; and how very rarely those who have obtained legal power because they first had physical, have ever lost their hold of it until the physical power had passed over to the other side" (p. 8).
>
> The truth is, that people of the present and the last two or three generations have lost all practical sense of the primitive condition of humanity. ... History gives a cruel experience of human nature, in showing how exactly the regard due to the life, possessions, and entire earthly happiness of any class of persons, was measured by what they had the power of enforcing; how all who made any resistance to authorities that had arms in their hands, however dreadful might be the provocation, had not only the law of force but all other laws, and all the notions of social obligation against them; and in the eyes of those whom they resisted, were not only guilty of crime, but of the worst of all crimes, deserving the most cruel chastisement which human beings could inflict. ... The first small vestige of a feeling of obligation in a superior to acknowledge any right in inferiors, began when he had been induced, for convenience, to make some promise to them. Though these promises, even when sanctioned by the most solemn oaths, were for many ages revoked or violated in the most trifling provocation or temptation, it is probable that this, except by persons of still worse than the average morality, was seldom done without some twinges of conscience" (pp. 8-9).

Authority, whether politically structured rationally or not (in the sense of Fromm's earlier distinction between rational and irrational authority alluded to much earlier), once encultured, tends to obtain considerable seemingly "moral" justification, though not necessarily actually being so, simply by convention and by the ability to exercise

power. For, as J. S. Mill (1869/1970) asked rhetorically: "... {W}as there ever any domination which did not appear natural to those who possessed it?"

Neitzsche observed that through the recorded history of Western Civilization various philosophies have been either one of two types--philosophies of domination, master philosophies, or philosophies of subjection, slave philosophies (Sahakian & Sahakian, 1966). That is, they have been, fundamentally, either philosophies that "might is right" or "meekness is right." Yet, the social philosophy needed is not either an actively immoral one or a purportedly passively moral one, which all too often becomes one of cowardice cloistered in virtue, but an integrated philosophy which is more wholly moral, which becomes active or passive depending upon the social condition, that is, whether it be tolerably just or intolerably unjust--a social philosophy of <u>might</u> <u>for</u> right. Such a philosophy would be one in which the meek would cease being hosts for the parasites.

As Dawes (1980) has noted, a plethora of the problems confronting humankind today--pollution, population growth, economic exploitation, etc.--are of the type referred to as "trajedies of the common." Individuals involved in such problems are confronted with a moral dilemma in which as members of some social group sharing a <u>limited</u> <u>natural</u>

resource in common, they must choose between behaving more selfishly and contributing to an exploitation and possible exhaustion of the common resource--thus contributing possibly to their own malaise in the future, especially if their behavior has a similar influence upon others--or behaving more altruistically and perhaps not obtaining as much immediate satisfaction but by doing so helping to preserve the common resource for themselves and others as well in the future.

Despite proponents arguing that such dilemmas are "rationally" resolvable by choosing the egoistic alternative and other proponents arguing that the most rational alternative for the individual is the altruistic one, generally speaking, there is no rational reason for preferring one over the other, based upon a criterion of social justice. For both alternatives involve a material fallacy of reasoning: If the egoistic alternative is chosen, then the fallacy of composition has been committed, for the individual is a member of the larger social group and what may be good (or true) for the individual is not necessarily good (or true) for the group, and, as a member of that group, by condoning egotism by personal example, if not by other means, the individual is contributing to the ruin of that group of which he himself is a member. Obviously, if the altruistic alternative is chosen by the individual, then the fallacy of division has been committed,

for what is good for the group is not necessarily good for the individual (or as good). There is, then, an inescapable dialectical tension between the interests of the individual and the interests of the group.

The dialectical tension between the interests of the individual and the interests of the group, however, may be either alleviated or exaccerbated depending upon whether the individual and other members of the social group develop morally or immorally or, equivalently, whether they are oriented toward self-realization or self-aggrandizement, being or having, etc. For, as has been explained previously, as the individual develops morally, it is in the individual's interest to behave in a manner which is more altruistic in relation to others, which enhances and maintains his own freedom, his own inner harmony, while simultaneously doing so for others, for their freedom is also his own, albeit likely to a lesser extent. A moral orientation, then, in the psychological development of the members of a social group leads to greater social justice and a reduction and possible elimination of social problems that are in the form of trajedies of the common, whereas the opposite is true for an immoral course of psychological development among members of a group. Such an ethical principle, may perhaps be referred to as <u>ethical metadialecticism</u> in that if a moral orientation is followed by members of a social group the dialectical tension between

each member and the group is diminished, though never completely eliminated.

Although the above discussion concerned itself with the interests of the individual and the interests of the social group in which the individual was a member, the concept of the "social group" was not meant to be restricted specifically to a small group but was meant to be conceived generically to represent different social entities at different hierarchical levels of social reality--that is, the interpersonal, group, organizational, national, and supranational levels. The same moral dilemmas may exist for the individual in relation to social entities at different hierarchical levels of social reality, and an apparent resolution at one level, with regard to the interests of the members of a particular social group at that level, may be insufficient or even exaccerbate the same problem for a social group at a higher level.

In particular, self-aggrandizement and narcissism, one or more times removed (pseudo-self love through various group identifications), is often perceived by others with a similar orientation as virtuous. Though pride in one's nation, for example, may be based upon a moral sentiment for the values its represents, as being consistent with the values of the self-realization of its citizens and citizens of the world community--it may, and more commonly is, based

upon an insidious kind of emotional attachment which is in reality a form of self-aggrandizement and narcissim (social narcissim) expressed at the national level. As Irving Sarnoff (1966) expressed this false form of patriotism:

> "Of all the virulent types of insanity, nationalism is, perhaps, the most perfidious. On the surface, it seems almost inherently noble--almost 'natural'--to favor one's homeland over all others, to work toward its growing stature in the community of nations, and to protect it against the competition of rivals. But the moment one peeks beneath the surface of this doctrine, one is appalled by a famished demon of megalomania whose hunger for superhuman aggrandizement is as ravenous as that of monotheism {i.e., those formal religions like Calvinism in which material wealth is believed indicative of one's immortal predestination, thus fueling the motive of self-aggrandizement}. Far from doing honor to man, far from helping him to realize his human capacities, nationalism, like monotheistic religion, only succeeds in further alienating him from himself" (p. 49).

The assertion that the social problems confronting humankind can be reduced and possibly eliminated by pursuing a more moral orientation is, of course, not new and has been advocated sporadically throughout history. Aristotle (B.C./1984a), for example, in his Magna Moralia, conceived of man as an inherently social animal and that to function effectively in social affairs, the greatest being the social affairs of the city-state--statecraft--required moral excellence. And by such effective social-political functioning he did not mean social exploitation but rather that which would lead to an improvement of the public welfare, as determined especially by the more honorable, not

by those he referred to as "vicious." Ethics, then, he thought should properly be considered a branch of the science of statecraft.

It should be quite clear from an historical perspective as well as from Milgram's (1963; 1974) study on destructive obedience that an advocacy of moral development in and of itself is insufficient to bring about the social changes desired, and that such an advocacy must be complemented by a political structuring of social roles such that they are based upon Fromm's (1947) conception of rational authority. Indeed, the ethical precept seems to be that when an individual is granted authority to control the lives of others, then public accountability should be structured into that social position with the degree of accountability commensurate with the degree of authority over others conferred. Such an ethical principle is a radical one and in sharp contrast to the present emphasis upon entrusting oneself and others to the conscience of authority assumed to be rational and benevolent.

The prevailing assumption that existing authority is generally rational, as authority almost inevitably insists, may indeed be a considerable obstacle to social progress. But if the burden of proof is placed upon authority to prove such an assertion as would be the case if the authority were rationally structured politically in the beginning and as

would be in accordance with the formal rules of logic (i.e., in which a proponent of a proposition must be responsible for proving it rather than being allowed to make possibly irresponsible or unrealistic assertions) rather than placing the burden of proof upon others who are often subjected to that authority--then authority can be so politically structured so as to prevent its abuse and maintain its integrity against those who would exploit it for selfish purposes (and those selfless persons who would complement their efforts).

The inhibition from requiring authority to justify its existence, of course, often comes from an attitude that a person occupying a position of authority is innocent of incompetence, deliberate or otherwise, until proven guility, usually "beyond a reasonable doubt." But such a conception stems from criminal law and should not necessarily be applied to an issue which is not whether a citizen will be deprived of his rights as may be the case if found guilty of a crime but is whether one citizen shall be granted a special privilege of controlling others (if an appeal to legal convention is made, then it is more appropriate that the legal criterion be that used in civil cases--i.e., according to the "preponderance of the evidence"). If a presumption were to be made concerning the legitimacy of authority, then from an inductive, historical perspective it

would be most probable that it is not. As Lord Action stated:

> "I cannot accept your canon that we are to judge Pope and King unlike other men, with a favourable presumption that they did no wrong. If there is any presumption it is the other way against holders of power, increasing as power increases. Historic responsibility has to make up for the want of legal responsibility."

Although it is necessary to politically structure institutions to be accountable, such accountablity does not mean that citizens need to be directly involved in assuring that those institutions are held accountable for their actions. What is essential, however, is that citizens have representatives who are responsible for making certain those institutions are operating in a socially responsible manner, with those representatives in turn being held accountable to the citizenry. As the framers of the American constitution recognized, powers within a civilized society need to be balanced and widely shared. As John Stuart Mill later observed:

> "The idea of a rational democracy is, not that the people themselves govern, but that they have security for good government. This security they cannot have by any other means than by retaining in their own hands the ultimate control. If they renounce this, they give themselves up to tyranny. A governing class not accountable to the people are sure, in the main, to sacrifice the people to the pursuit of separate interests and inclinations of their own."

Despite the obvious importance of the psychological dimension of morality for social psychology, it is

intriguing that it has been so largely ignored for so long a time within the discipline, especially in view of the fact that it was of central importance to Auguste Compte (1852/1875), considered by Allport (1968) to be the founder of modern social psychology, and to the authors of the first two textbooks in the discipline--McDougall (1908/1921) and Ross (1908/1920). The emergence of psychoanalysis and behaviorism within psychology, however, may be conceived as having been inhibitions to the serious study of morality. Freud (1933/1965), for example, conceived of the moral aspect of an individual, that individual's super ego, as developing from an essentially irrational process at an early age, through the resolution of the Oedipual Complex for males and the Electra Complex for females. In the resolution of those complexes, as a means of reducing anxiety children presumably idenfified with their same-sexed parent and by doing so incorporated their moral values uncritically and not for their inherent value. From then on, though those values became more internalized, they were considered more often than not simply as a source of later emotional disturbance to the individual and possibly others. Additonally, Freud's thinking, according to Schutz (1958) was influenced by the philosopher Schopenhauer who believed that everybody was inescapably miserable and therefore all were victims deserving

of compassion from one another--a pessimistic philosophy of moral equivalence.

Behaviorism, as espoused initially by its founder in America, John Watson (1924/1930), as noted earler, viewed a belief in a moral aspect to human existence as unscientific, as a belief in "something else" in addition to the individual as a phenomenon of nature. Instead, he proposed the development of an "experimental ethics" in which individuals were to be conditioned or re-conditioned according to what a psychologist thought was "realistically" good or bad. One might also speculate that the more contemporary cognitive-developmental approach has not attracted as much attention to the subject of morality as that subject deserves because of the narrowness of its perspective, and the appearance it presents of morality that its personal and social value is largely in vain, as Aristotle (B.C./1984a) had said of Socrates' conception of the rational good.

Strangely, Schutz (1958), favoring a psychoanalytic perspective, in his cluster-analytic study of the psychological dimensions accounting for interpersonal relations, found another empirical dimension within the analysis besides the three of inclusion, control, and affection upon which he later based his theory--that other dimension being morality. He ignored it, however, and

instead adopted what might be referred to as the "moderation theory" of morality which is commonly attributed to Aristotle. Schutz believed, according to his theory, that extremes on the three dimensions of inclusion, control, and affection _relative to others_ were not good for the individual and were psychopathological. Instead, apparently, he believed conformity to the bio-social mean on those dimensions was ethically best. It was, then, a kind of ethical doctrine of social-psychological mediocrity.

It should be emphasized, however, that Aristotle (B.C./1984a) himself viewed morality as being of utmost importance to the psychological functioning of the individual. To function effectively in society, as an individual needed to do, he believed an individual had to strive to achieve a mean between two extremes on a number of psychological bipolar dimensions, but that mean was determined _relative_ to other members of society and especially to the more honorable. The individual was to be biased, then, in the direction of altruism, not egotism, nor was the individual to be morally neutral. Moreover, certain social behaviors he considered evil _per se_. His theorizing, in short, has been commonly misrepresented and appears often to have been used irrationally as a rationalization for avoiding social responsibility.

One rationale that has been given for the irrationality and, curiously, apparently the immorality of morality, has been the assertion that goodness, like truth, is relative to the individual, and one individual's morality, or alleged lack of it, is just as good as another's and therefore should be treated with equal respect. However, greater correspondence toward the reality of nature--truth--may be objectively known, for classical relativism as advanced by Protagoras is self-defeating as demonstrated by Plato, and Einstein's more contemporary theory of relativity is misunderstood when it is used to justify a belief in classical relativism.

According to Einstein's theory of relativity, for example, although an individual's spatial and temporal experiences of a physical object of nature is subjective, it can be coordinated with an objective spatial-temporal frame of reference and thereby compared to others. And, although the comparisons with others then vary according to the spatial-temporal position in relation to the physical object in which the observations are made, they are all translatable (or transformable) to one another through a set of mathematical formulae. Additionally, according to the theory, there are some absolutes such as the formula for the conversion of matter into energy and the speed of light in a vacuum. The truth of relativity physics, therefore, is relative not in the classical sense but in the sense as

stated above, and it might then be said that it is literally relative but not arbitrary. As for the argument that a classically relativistic (subjectively arbitrary) view regarding ethics is more humane, it might be simply noted that toleration and respect are not precluded from an ethical theory and that, despite rhetoric to the contrary, no one escapes functioning morally and/or immorally nor does any conscious being not possess an ethical theory of one form or another.

The position which has been taken here, of course, is that the dimension of morality is of central importance to the psychological functioning of the individual and the influence that individual has on other members of society. Moral evaluations by an individual are relative to that individual, but they are relative to the stage of moral or immoral development achieved by that individual on the absolute dimension of morality-immorality.

One of the most ardent proponents who has previously endeavored to develop an objectively valid ethical theory centrally related to the psychological functioning of man himself, was Erich Fromm. As Fromm (1947) stated his position in a book devoted to the subject: Man for Himself: An Inquiry into the Psychology of Ethics:

> "It may be surprising to many readers to find a psychoanalyst dealing with problems of ethics and, particularly, taking the position that psychology must not only debunk false ethical judgments but

> can, beyond that, be the basis for building objective and valid norms of conduct. This position is in contrast to the trend prevailing in modern psychology which emphasizes "adjustment" rather than "goodness" and is on the side of ethical relativism {actually "ethical arbitrariness"}. My experience as a practicing psychoanalyst has confirmed my conviction that problems of ethics can not be omitted from the study of personality, either theoretically or therapeutically. The value judgments we make determine our actions, and upon their validity rests our mental health and happiness. To consider evaluations only as so many rationalizations of unconscious, irrational desires--although they can be that too-narrows down and distorts our picture of the total personality" (p. v).

Cosmic Justice

Yet, one may still feel, from what has preceded, a lingering absence for something more. If, as it is truly known, social injustice prevails in this world, while one is within it, then for what purpose does one have for being just--is it not all in vain? The answer to such a question, though, is inherent in the question. For "being" just within the world, is being more "truly" within it. The fundamental purpose in life is, therefore, the cultivation of one's soul--there is no other, and the cultivation of one's soul, entails the cultivation of those of others.

> "No man tires of receiving benefits. But benefit comes from doing acts that accord with nature. Never tire, then, of receiving such benefits through the very act of conferring them" (p. 118).
>
> --Marcus Aurelius
> Meditions

Above all nations is humanity, but above humanity is a higher-order of reality, the universe. When we speak of social justice or social morality, then, we must speak about the good, but, as Aristotle (B.C./1984a) stated: "... about good not without qualification, but relatively to ourselves. For we have not to do with the good of the Gods. To speak about that is a different matter" (p. 1869). For the word is "not univocal." As he explained: "For 'good' is used either of what is best in the case of each being, that is, what is desirable because of its own nature, as of that by partaking in which all other things are good, that is, the Idea of Good" (p. 1889).

The universe, as it is known to us, is becoming more differentiated and correspondingly more organized and consequently manifesting increasingly greater integrity, with that integrity experienced by us as beauty and known to us through reason as truth. Goodness and justice within the universe are none other than that which has been spoken of as the beauty and integrity within the universe--integrity, beauty, truth, goodness, and justice, then, when considered universally, being perfectly synonymous. Through this universal process, what can not be maintained within the universe dis-integrates, and this disintegrity is experienced by us as ugliness and known to us by reason as falsehood, with evil, dis-integrity, ugliness, falsehood, and injustice, then, all being perfectly synonymous. All

aspects of the universe in the present, then, as they contribute to the future, are good, and, relative to the origin of the universe, better than their counterparts of the past; for, at their origination they are necessary for the degree of integrity of the universe at that time. But those that are oriented toward future integrations are better (of a greater good)--that is, moral--and those that are oriented toward disintegration, from exclusion from the future universal good, are worse (bad, evil)--that is, immoral.

Therefore, the existential being of the universe, the universal soul, that which has a continuity of existence independently of any of its physical manifestations, is moral (oriented toward integrity, beauty, truth, justice, and love). "There is," then, as Emerson (19th Century/1981a) has stated, "... a soul at the centre of nature and over the will of every man, so that none of us can wrong the universe" (p. 192). And, as he has also stated:

> "Thus is the universe alive. All things are moral. That soul which within us is a sentiment, outside of us is a law. We feel its inspiration; but there in history we can see its fatal strength. 'It is in the world, and the world was made by it.' Justice is not postponed. A perfect equity adjusts its balance in all parts of life. 'Ἀεὶ γὰρ ἐν πίπτουσιν οἱ ἄλλοι κύβοι'--The dice of God are always loaded" (p. 171).

No man, in the final analysis, can violate his nature, though if he has become knowledgeable of the moral nature of the universal soul and of its purest manifestation within him in the form of his own soul, his phenomenal self, then by living in accordance with his own soul he participates most fully in the universal soul, the universal good, within which all may partake. Though he will encounter disappointments in life, trajedies, social injustices, perhaps a dismal view of the future of mankind, he will continue to live morally, for nature (or God) becomes the foreground in his life rather than the background and there he may find the most valued kind of justice, universal justice, regardless of the nature of social conditions. The secret of self-reliance, then, is reliance upon the creative process in nature, the universal soul.

> "To speak truly, few adult persons can see nature. Most persons do not see the sun. At least they have a very superficial seeing. The sun illuminates only the eye of the man, but shines into the eye and the heart of the child. The lover of nature is he whose inward and outward senses are still truly adjusted to each other; who has retained the spirit of infancy even into the era of manhood. His intercourse with heaven and earth becomes part of his daily food. In the presence of nature a wild delight runs through the man, in spite of real sorrows, Nature says,--he is my creature, and maugre are all his impertinent griefs, he shall be glad with me. ...In the woods ... a man casts off his years, as the snake his slough, and at what period soever of life is always a child. In the woods is perpetual youth. Within these plantations of God, a decorum and sanctity reign, a perennial festival is dressed, and the guest sees not how he should tire of them in a thousand years. In the woods, we return to reason and faith. Then I feel that nothing can

> befall me in life,--no disgrace, no calamity (leaving me my eyes), which nature cannot repair. Standing on the bare ground,--my head bathed by the blithe air and uplifted into infinite space,--all mean egotism vanishes. I become a transparent eyeball; I am nothing; I see all; the currents of the Universal Being circulate through me; I am part or parcel of God" (pp. 10-11).
>
> --Emerson
> Nature

Perhaps events in nature, including human lives, are events in the mind of a divine being, and he may regenerate them at a later time, as he wants, as we may similarly do for the events in our lives. Or, maybe the universal soul, the cosmic stream, is the highest level of reality and is what is divine, as the pantheists believe.

Pantheists such as the Stoics were thoroughgoing materialists and believed man breathed in universal reason, an extremely fine substance, a kind of mind-fire, which entered the blood and through it, reached the brain. The word "happiness," they knew, was derived from the ancient Greek word "eudonia," meaning "the good god within," and that god within them they became cognizant of by employing their intellect, their faculty for reasoning, which operated according to logic. Nature was for them their supreme god of which they were an offspring.

Christians have a similar tripartite conception to that of the Stoics--the Christian trinity. They, however, are also spiritualists rather than only materialists. According

to their belief, the holy spirit--a divine justice incorporating love--pervades nature (at least mankind); the universe was created by a divine being, Jehovah or God; and Jesus was the son of God. Although their belief exceeds the naturalism of the Stoics, there is considerable common ground between Stoicism and Christianity, for nature is at least part of a possible god, the holy spirit would of course correspond to the universal soul (or reason) assumed physical in its manifestation (matter or energy), and Jesus was a man greatly imbued by the universal soul as are all men to some degree, if he was not also, literally, the one and only son of God.

It is also interesting to note that the concept of agape, brotherly love, which has been of special interest to theologians and psychologists recently, is a commandment from God which seems to be only understood completely by recognizing that love from God or of something greater than humanity is what makes it possible, just as explained earlier that reliance on the universal soul (cosmic justice) makes social justice possible. Outka (1972), in his treatment of the subject, only considers agape independently from eros from God, but it is interesting to note that in the Christian scriptures, in the verses cited by James, the commandment by God for Christians to love one another is immediately preceded by the commandment for them to love God, as if the two forms were causally connected, as if eros

from God (a receptive mode of psychological functioning) provides the basis for agape, the expression of brotherly love (an expressive mode of social-psychological functioning), perhaps in accordance with the concept of all people being thought of as sons of God or brethren in Christ and behavior then being in accordance with such a belief (a divinely inspired social transaction).

> "Thou shalt love the Lord thy God with all thy heart, and with all thy soul, and with all thy mind. This is the first and great commandment. And the second is like unto it, Thou shalt love thy neighbor as thyself. On these two commandments hang all the law and the prophets" (Mathew 22: 37-40).

It should, perhaps, not be so unexpected to begin to comprehend a natural theory of religion emerging from a psychological theory when the subject matter of that theory is <u>ontos</u>, personal existence. For that subject matter is also shared in common with metaphysics, and, as Aristotle (B.C./1984b) said of that science, "... God is thought to be among the causes of all things and to be a first principle, and such a science either God alone can have, or God above all others" (p. 1555).

It is especially important today that we do develop an objectively valid ethical theory and one would think the burden would fall heavily upon the science of psychology for that development. Humanity, as in no other time in history, is at a crossroads in which it will either follow a course

of mutual construction--of personal and social integrity--or of mutual destruction--of personal and social dis-integrity, in accordance with the continued progression of the universe, the Divine Providence. The nature of our governments and institutions, on the one hand, and our own nature, on the other hand, presently gives us, as Stanley Milgram (1974) said, "only a modest chance of survival," and if we are to progress into the future, then an objectively valid, common ethical orientation is direly needed so as to direct and implement the social changes necessary. To be effective, to countervail the status quo, it will have to rely more heavily upon the source of strength upon which humanity, knowingly or unknowingly, relies, nature itself, and whatever else might lie behind it. But individuals will follow such an orientation for their own sake, primarily, regardless of any failing in the social condition, by participating more fully in the greater realm of Nature of which all are a part.

> . . . For I have learned
> To look on nature, not as in the hour
> Of thoughtless youth; but hearing oftentimes
> The still, sad music of humanity,
> Nor harsh nor grating, though of ample power
> To chasten and subdue. And I have felt
> A presence that disturbs me with the joy
> Of elevated thoughts; a sense sublime
> Of something far more deeply interfused,
> Whose dwelling is the light of setting suns,
> And the round ocean and the living air,
> And the blue sky, and in the mind of man:
> A motion and a spirit, that impels
> All thinking things, all objects of all thought,
> And rolls through all things. Therefore am I still
> A lover of the meadows and the woods,

And mountains; and of all that we behold
From this green earth; of all the mighty world
Of eye, and ear,--both what they half create,
And what perceive; well pleased to recognize
In nature and the language of the sense
The anchor of my purest thoughts, the nurse,
The guide, the guardian of my heart, and soul
Of all my moral being.

--William Wordsworth
Lines, Composed a Few Miles above Tintern Abbey

CHAPTER THREE

Psychological Dimensions of the Theory of Social Transaction and Factorial Studies of the Common Traits of Personality

Factor analytic procedures which conform generally to the classical Thurstonian common-factor model account for the covariation among a set of variables representative of some domain of inquiry with a reduced number of dimensions termed common factors. Those dimensions are called "common factors" because each such dimension accounts for variance shared in common by two or more of the initial variables in the sample. Each variable in the sample, then, is generally conceived as consisting of common variance accounted for by one or more common factors (the general case being all common factors) and by unique variance. The unique variance, in turn, is accounted for by an error factor due to error in measurement and error in the sampling of cases and by a specific factor due to that aspect of the variable peculiar to it which may not be accounted for by the common factors and is not error as represented by the error factor. That is, $v^2 = c^2 + u^2$, where $u^2 = s^2 + e^2$, in which v^2 is the variance of a variable, c^2 is the common variance of that variable, u^2 is the unique variance of that variable, s^2 is the specific variance of that variable, and e^2 is the error variance of that variable.

Theoretically, however, an infinite number of different sets of a given number of common factors exists which will mathematically account for the covariation among a set of variables, and any mathematical procedure for deriving a set of common factors results in a set which is generally not substantively meaningful for the domain of inquiry. Therefore, any set of common factors after they are initially mathematically derived must be transformed in some manner to yield a set of common factors which are substantively meaningful.

Personality researchers have for decades actively applied factor analysis to the domain of personality attributes in an effort to objectively determine, more or less, the number and nature of the common traits--that is, those traits which a population of persons share in common--which account for their psychological functioning in the various situations which populate their lives. In their research, a set of personality attributes or psychological descriptions are utilized as a set of variables and factor analyzed with the resulting common factors then being equated as common traits.

What is peculiar, however, in the factor-analytic investigations of the common traits of personality--as represented, for example, most notably in the questionnaire medium in the extensive work of Cattell (1973), Comrey

(1973), Eysenck (1970), Guilford (Guilford, Zimmerman & Guilford, 1976), and Howarth (1980) and their associates--is that the methodology has not been appropriate. As noted by Stephenson (1953) several decades ago, in such investigations a large sample of individuals are assessed on a set of attributes (or psychological descriptions), and the covariation among those attributes are factor analyzed purportedly to determine the set of common traits accounting for the psychological functioning of the sample of individuals and by inference of the population to which they belong. Yet, the factors derived from such a methodology--called R-technique by Cattell (1973)--ostensibly account necessarily only for <u>individual differences</u> in psychological functioning--that is, only for inter-individual variation and not necessarily for intra-individual variation across various psychological situations. Although the common factors derived from such a methodology may be useful constructs for accounting for individual differences--inter-individual variation--there is no logical assurance that those factors may be validly used to account for the psychological functioning of individuals <u>as individuals</u> within a given population, i.e., to account for intra-individual variation (variation across situations). For, by definition, such common factors do not necessarily constitute common traits. By such a methodlogy as R-technique, for example, a subset of attributes constituting

a common factor may covary similarly over a subset of the individuals in the sample but have no such covariation across the individuals from the rest of the sample.

One particular hazard in research investigations of the common traits of personality through the medium of questionnaire, therefore, is the possibility that with increasingly larger samples of questionnaire items and samples of subjects, increasingly greater numbers of common factors (not necessarily common traits) would become possible, for subsets of subjects would be expected to respond more in a peculiar manner to subsets of items resulting in more common factors, though not in such instances to more common traits. Such research could go on indefinitely, besides not necessarily identifying any additional common traits.

For *a priori* reasons, however, one might expect that the *major* common factors accounting for inter-individual variation would be the same ones, qualitatively if not operationally, *commonly accounting for intra-individual variation* and therefore be indicative of common traits. For, given that the genotype organizes psychological development and the main stuff of the evolution of species including the human species is continuous variation, even more so than mutation (Falconer, 1960), then the same genetic factors commonly accounting for the major

differences among members of a species would be expected to account commonly for differences of individual members of that species in various situations. A psychological dimension such as dominance-submission, for example, would be expected to account commonly for both inter-individual variation and intra-individual variation.

An appropriate methodology, however, to employ in research investigations of the common traits of personality is to average the personality attributes across subjects and then for the average subject determine the common factors accounting for the covariations among the attributes across situations. The resulting factor pattern would then be compared to factor patterns similarly obtained for each subject (or a smaller sample of subjects) to determine if it is indeed generalizable and therefore common from one member of the population to the next. Each of the attributes, however, would previously have had to be generally a property of the individual members of the population--i.e., each or nearly each individual would have had to have possessed each attribute to some degree. Such a methodology, besides being appropriate for the empirical identification of common traits whereas the conventional R-technique is not, also requires fewer subjects though much more is required of them.

Another general criticism of research investigations of common traits of personality is that the variables they utilize such as questionnaire items are mixtures of items concerning cognition, emotion, and behavior which are usually factor analyzed together. Such a procedure results in factors which are predominantly only one aspect of psychological functioning--such as a factor of anxiety pertaining only to emotion, for example--which results also in a larger number of factors. As previously argued, a psychological dimension such as a common trait should be conceived as consisting of the three components of cognition, emotion, and behavior, and it should be defined initially by the cognitive component with the other components determined accordingly.

ISSUES IN FACTOR ANALYSIS

Three other major issues confronted by research investigators of the common traits of personality, though not peculiar to them, concern, in order of their general importance, a) the number of common factors accounting for the covariation of the variables, b) the procedure to use in transforming or, geometrically speaking, rotating the common factors derived from the original mathematical solution to yield a substantively meaningful solution, and c) when the questionnaire medium is used in the research, whether to analyze items directly or to analyze parcels of homogeneous

groups of items first and then relate the original items to the obtained factors. To further complicate these issues, it must be noted that the decisions made concerning them are inter-related. For example, the number of factors decided upon influences the substantive meaningfulness of the final transformations of those factors, and the method chosen for those transformations may influence whether it is necessary to analyze parcels or it is adequate to analyze items. It is the issue concerning the number of factors, however, which is by far superordinate.

Number of Factors

What Thrurstone (1938) wrote over four decades ago still holds true today: "A recurring problem in factor analysis is to determinine how many factors to extract from the correlational matrix" (p. 65). As Hakstian and Muller (1973), after having investigated the issue over three decades later, wrote: "There is probably no facet of the factor analytic process that appears more arbitrary or intractable than that concerned with determining the "correct" number of factors to represent the variables at hand" (p. 461).

Kaiser (1966) categorized criteria for determining the number of factors as a) algebraic, b) psychometric, c) statistical, and d) psychological, a classification scheme which was also later utilized by Hakstian and Muller (1973),

though they referred to the last category as "importance" rather than simply as "psychological." Guttman (1954) provided three algebraic criteria for determining the lower bound to the correct number of factors: The number of eigenvalues of the original correlation matrix greater than or equal to one he showed algebraically to be a lower bound to the number of factors, which of his three criteria he considered the "weakest." The number of non-negative eigenvalues of the correlation matrix with multiple correlations inserted in the diagonal elements he showed to be the "strongest" of his three criteria for determining the lower bound of the number of common factors, and the number of non-negative eigenvalues of the correlation matrix with the highest correlation in each column placed in the diagonal element in the column he showed to be a "moderate" criterion for determining the lower bound to the number of factors, which therefore mediated the other two. Although all three of his criteria require a non-singular correlation matrix which is rarely if ever determined by researchers before the criteria are applied and would be expected not to be generally the case with item data in particular, his criteria appear to often unreliable (Brennan & Lee, Note 4; Hakstian & Muller, 1973) and as concluded by Hakstian and Muller (1973) should be generally disregarded.

Kaiser (1966), a decade later, showed that Guttman's weakest lower-bound criterion could also be considered a

psychometric criterion, however, because when the internal reliability of a component, its alpha coefficient, was greater than zero then its associated eigenvalue was greater than or equal to one, thus conforming to Guttman's weakest lower bound criterion. That criterion then became commonly known as the Kaiser-Guttman (K-G) eigenvalue-of-one-criterion. Besides being generally inaccurate as mentioned previously, however, as Hakstian has concluded, in a common-factor analysis the original factors are rotated which re-distributes their variance thus affecting their internal homogeneity and invalidating the legitimacy of the K-G criterion. As he has suggested, if it is to be used, then it should be used as a supplement after the final transformation of the factors has been achieved.

Statistical criteria such as Bartlett's chi-square (see Gorsuch, 1974) and the maximum likelihood ratio (Joreskog, 1967) have been criticized for a number of reasons, perhaps the most compelling being that the number of statistically significant factors is partially a function of the sample size, as with all significance tests. Yet, as in all significance tests it is also a function of the "effect," which, as regards statistical tests for the number of factors pertains to the size of the factors. If the strongest assumptions of those tests are presumed to be met (e.g., multivariate normality for the maximum likelihood), however, then, as Gorsuch (1974) has suggested, they may be

used to establish the upper bound on the number of factors, and, at times, they may be found to coincide with the best judgment as to the number of factors.

Hakstian and Muller (1973) applied various criteria to various factor problems occurring in the literature, including the Subjective Scree (Cattell, 1966) and two variations of the maximum likelihood criterion and concluded that the criterion of psychological meaningfulness or "importance" was the best. As they summarized their conclusions:

> "{T}he number of factors problem--in the case of common and image factors--should perhaps be somewhat recast into that of finding the number of factors to transform so that an optimally clear solution results. This number, then, would represent the theoretically most justifiable dimensionality of the variables, although fewer than this many factors may ultimately be interpreted" (p. 473).

It should be noted, however, that in the original article by Thurstone (1931) in which he first presented group-factor analysis in a rudimentary form of the centroid method prior to later formalizing his theory of common-factor analysis (Thurstone, 1947), he stated that the objective of factor analysis was not to determine all the common or group factors but only those which were of a more major importance in accounting for the covariation among the variables, not those which were "minor" common factors. As Thurstone (1931) himself put it:

> "{O}ur object is to ascertain how many general and independent factors it is necessary to postulate in order to account for a whole table of intercorrelations and we shall therefore intentionally ignore those additional specific factors as well as those minor group factors which may not appreciably affect the correlations" (p. 409).

It is the author's opinion that when the problem as to the number of common factors is construed in terms of determining the number of "major" common factors as Thurstone (1931) originally conceived of it rather than the number of common factors without qualification, as in the various statistical criteria (other than their probability of emerging in a sample), which may be both practically and theoretically insoluble--in that, for example, the universe of variables from which the sample of variables is selected may have an inordinately large or even an infinite number of common factors--then the number of factors will generally approximate fairly closely the number of factors in the factorial solution which is, as Hakstian and Muller (1973) recommended, the "optimally clear" or psychologically meaningful solution. Morever, the number of major factors may often be closely approximated by that number of successively extracted factors in which the cummulative proportion of variance accounted for by successive factors begins to decrease much more rapidly. When the amounts of variance accounted for by the factors are plotted in the order in which each factor is extracted as in the Subjective

Scree Test (Cattell, 1966), that number would correspond to the precipitous drop in the plot of eigenvalues prior to beginning to decrease much more gradually. Or, alternatively, when observing the plot of eigenvalues from right to left as is conventional, it would be at that numbered eigenvalue when a precipitous rising in the plot begins--i.e., at the bottom of the inflection in that curve. Ideally, then, an analyst would calculate various solutions beginning with about two more factors than indicated and then eliminate one factor at a time until the most meaningful solution was obtained.

Cattell and Vogelman (1977) have shown that inexperienced adults with half an hour of instruction can be taught to make judgments as to the number of common factors in accordance with the recommendation above. But, inasmuch that the test requires a subjective judgment, a researcher may be consciously or unconsciously biased making such a decision according to theoretical expectations and select a number of factors in support of those expectations. Although the main criterion determining the number of factors to retain in the accepted solution would be according to the psychological meaningfulness of the solution, if the previous recommendation were followed, the relatively small range of solutions if beginning at an egregiously smaller or larger number may not encompass the

most meaningful solution so it is important to estimate initially the number of major factors as accurately as possible.

Fortunately, Brennan and Lee (Note 4) have developed an Objective Scree Test for the number of factors which is in close agreement with the Subjective Scree (Cattell, 1966) but even more accurate and eliminates prejudiced and dishonest judgments. They have tested it on classical problems, plasmodal problems, and problems consisting of random variables and found it to perform quite accurately, better than both the Subjective Scree and the Kaiser-Guttman eigenvalue-of-one criterion.

Naturally, multiple criteria may be utilized in deciding upon the number of factors in a factor analysis, including perhaps cross-validation of factor solutions, and there may be considerable convergence among those criteria. At any rate, conservative upper and lower bounds on the actual number of factors can be reasonably established in which the range is relatively small for many problems thus minimizing the disastrous affect in an analysis when the final solution departs from the most optimally meaningful solution which is inherent in the data. Fritz (1970), incidentally, generated variegated sets of artificial data and concluded that there are inter-relationships between residuals, factor loadings, number of variables, and sample sizes which may lead

themselves to a mathematical function for determining the number of factors more rationally which the author believes would correspond closely to the Objective Scree which tends to identify only more major factors. As Fritz (1970) noted: "{W}hen criteria for factor extraction termination were too restrictive, under .225 for largest factor loadings and under .100 for residual correlations, error factors tended to appear in large numbers" (p. 688).

When the orientation of factor analytic studies shifts to the orientation recommened above of searching for the "major common factors" of personality which provide the optimally meaningful solution, then it is believed there will be a much greater convergence of findings than presently characterizes such studies. From such an approach the common factors will likely be found to correspond to actual "common traits" from study to study regardless of methodology--whether an inter-individual or intra-individual method--and regardless of other factor analytic considerations.

Factor Rotation

If the term "common factor" is construed to mean a "substantively important factor" or a "major factor" as Thurstone (1931) originally conceived of that term to mean, then a common factor would be expected to emerge in a properly conducted factor-analytic study in which the

sampling of cases--whether of individuals or situations (etc.)--and the sampling of variables were sufficient--provided the proper number of factors were chosen. For the final transformation or "rotation" of a common factor which determines its final nature, regardless of the criterion employed, depends somewhat upon the transformation of the other factors in the study, and if too many or too few factors are chosen in the analysis, then the final transformation of that factor may be somewhat in error, with the likelihood of that error increasing with the error in the number of factors chosen. If too many factors are chosen, then "factor fision" may occur in which the inter-related aspects of a common factor become represented by different mathematical factors, with perhaps none being highly similar to the common factor, and if too few factors are chosen, then "factor fusion" may occur in which two or more common factors which are conceptually distinct though empirically related become represented by a single mathematical factor which though related to all may be highly similar to none. Such a problem may be alleviated considerably by following the suggestion of Hakstian and Muller (1973) as stated previously of examining a range of factorial solutions varying in number and selecting the most meaningful, though such a criterion is not completely an objectively analytical one (it is objective only with regard to it falling within some objective range of solutions).

The emergence of a common factor in a factor analytic study, however, besides depending upon the number of factors chosen, also depends upon the rationale employed in the transformation of the initial mathematical factors extracted to their final and presumably more substantively meaningful forms. Thurstone (1947) proposed that the transformation of the initially obtained factors in an analysis follow the criterion of "simple structure." That is, geometrically, given an initial configuration of variables (a hyperspace of variables emanating from an origin of dimensionality as possibly as great as the number of variables) and a given number of factors within that configuration, he recommended that the factors be rotated (transformed) according to a set of criteria such that each factor was related to as few variables as possible--a negative criterion--while being highly related to the few variables that were related to it--a positive criterion. His criteria were actually more complicated than as they have just been described and have, in fact, never been completely represented in an objectively analytic manner as Gorsuch (1974) has noted, but the conceptual gist of his rationale of simple structure is essentially as it has been explained.

Cattell (1978) has recommended as an analytic criterion for simple structure the maximization of the number of variables not statistically related to the factors. That is, each factor is rotated so that as few variables as

possible are related to it and therefore are in a hyperplane orthogonal to the factor.

Such an index of simple structure as the hyperplane count which employs a negative criterion, however, presumes that the factor is also being rotated toward some variables, a positive criterion; otherwise, it would be possible to rotate out of the common factor space while improving the hyperplane count of the factors (by rotating into the unique factor space). Maximizing the number of variables related to each factor beyond a relatively high magnitude, is in fact, roughly equivalent conceptually to maximizing the number of variables related to each factor below a relatively low magnitude when factors are rotated toward simple structure. The Varimax (Kaiser, 1958) objective, analytic criterion, incidentally, achieves its degree of success in achieving simple structure by maximizing the variance on each factor which results, roughly, in implicitly employing both the positive and negative criterion. For as its criterion is employed in the maximization of the variance of the factors, in general, the variables most related to each factor become more so and the variables less related to it become less so, thus employing both the negative and the positive criteria and yielding a simpler solution. Although one would expect an analyst who, for example, has visually rotated toward simple structure to obtain an average hyperplane count for the factors which is

comparatively higher than before such rotations, the average hyperplane count may only be taken as evidence for the obtaining of simple structure if one is willing to presume the analyst was indeed rotating toward simple structure and not, for example, toward a confirmation of a preconceived factor structure which may lie more out of the common factor space. Additionally, it must be noted that such an index as the average hyperplane count or percentage is relative to the number of factors chosen, increasing with the number of factors, and it therefore can not generally be used as an absolute criterion in comparing studies.

When a factor analytic study has a sufficient number of cases and variables and both the cases and variables are representative of the domain of interest, then Thurstone's principle of simple structure would be expected to eventuate in a set of factors quite representative of the common factors as they actually exist in that domain, for given that those common factors are distinctly different, the principle of simple structure would be expected generally to distinguish them from one another. Comrey (1959; 1973), however, has disagreed with such a position.

In an early study comparing a Varimax (Kaiser, 1958) rotation with another objectively analytic rotational procedure by Thurstone (1954) oriented toward simple structure, Comrey (1959) claimed Thrustone's procedure led

to a less compelling solution. Yet, in inspecting that study, the author judged the differences between those two rotations as not being that significant and as being in accordance with expectations.

Comrey (1973) has also reported that in a series of unpublished studies, he found a computer program designed to increase the hyperplane counts of factors leading to some factors with inversely inter-related variables loading them and other factors that were uninterpretable. It should be observed in regard to the foregoing discussion, however, that he may have extracted too many factors which may have resulted in such irrational factors. Additionally, employing the negative criterion of simple structure only (maximization of the hyperplane counts) is not sufficient for obtaining simple structure in that the algorithm employed could have been rotating the factors out of the common factor space if the more positive aspects of the principle of simple structure were not incorporated in the algorithm.

A more formidable criticism by Comrey (1973) of the principle of simple structure in factor analytic studies is the observation that most if not all or nearly all factorial investigations do not employ cases and/or variables that are representative of the domain being investigated. To the degree such biases exist, he therefore argues, one would

expect the criterion of simple structure to be to some extent misleading in the identification of the common factors as they exist in that domain. Consequently, because the criterion of simple structure is not infallible as are all other rotational criteria pertaining solely to the data itself, he recommends that a rotational solution not rely solely upon such criteria as simple structure but rather that it be based primarily upon prior knowledge:

> "The correctness of a factor matrix as an interpretation of the data cannot be validated by reference to anything within the analysis itself, including the conformity of the solution to oblique simple structure. To attempt to do so would be circular. The validity of an interpretation of the data must be assessed with reference to evidence that is gathered independently, that is, outside the analysis itself. This evidence may come from many sources, for example, knowledge about the characteristics of the variables that are being analyzed, previous factor analytic investigations, experiments conducted using these variables, experiments conducted using factor scores derived from this investigation, additional factor analytic studies in which variables have been added, dropped, or modified according to certain hypotheses, and so on.
>
> Since the correctness of a factor analytic interpretation of the data can only be established by appeal to information independent of the analysis itself, it would seem to be reasonable to use all available knowledge in selecting the best possible factor interpretation to begin with. It would be absurd to select a factor solution which contradicts available knowledge when an alternate solution is available that is consistent with that information. The investigator is urged, therefore, to use, in addition to oblique simple structure, any available well-established knowledge that he has to guide him in arriving at a final rotational solution" (1973, p. 163).

If it is generally true, however, that, as Comrey (1973) has stated, "{t}he correctness of a factor matrix as an interpretation of the data cannot be validated by reference to anything within the analysis itself, including the conformity of the solution to oblique simple structure," then, although factor analysis may be useful in some instances as a tool, it may not lay any claim as an objective procedure useful for empirically determining the common factors within a domain of inquiry. A scientific experiment, whether it involves the use of factor analysis or not, is an objective test, and the rationale upon which the test is based in conjunction with the data gathered must be sufficient in either disconfirming or supporting the experimental proposition being tested. Condoning the intrusion of subjective factors into experimentation may undermine the scientific enterprise and violates the very canons upon which science is based. As Carl Sagan (1979) observed:

> "Scientists are, of course, human. When their passions are excited they may abandon temporarily the ideals of their discipline. But these ideals, the scientific method, have proved enormously effective. Finding out the way the world really works requires a mix of hunches, intuition and brilliant creativity; it also requires skeptical scrutiny of every step. It is the tension between creativity and skepticism that has produced the stunning and unexpected findings of science. ...But the success of science, both its intellectual excitement and its practical application, depend upon the self-correcting character of science. There must be a way of testing any valid idea. It must be possible to reproduce any valid experiment. The character or

> beliefs of the scientist are irrelevant; all that matters is whether the evidence supports his contention. Arguments from authority simply do not count; too many authorities have been mistaken too often" (p. 73).

There is, however, some a priori reasoning supporting the application of experimentally independent criteria such as simple structure to rotational solutions in factor analyses. Given a reasonably comprehensive and numerically adequate sampling of cases and variables from the domain of interest, though biased somewhat, if the common factors within that population hyperspace do exist in a relatively simple manner as may be generally expected if they are indeed reasonably differentiated from one another, then a somewhat biased hyperspace representative of that population hyperspace would be generally expected to lead to a set of factors when the rotational principle of simple structure is pursued which are reasonably representative of the common factors in the population. One would expect such an outcome because only a small portion of the variables in the population would be most identified with a given factor and with only a few necessarily needing to be represented in the sample--with the larger proportion of variables in the population as represented in the sample also being of substantial importance in identifying the factor under consideration. One might therefore expect that the common factors in the population hyperspace would be rather robust in their

representation within comprehensive though somewhat biased samplings of cases and variables.

Such an a priori argument is, as Comrey (1973) stated of the criterion of simple structure, a logical begging of the issue, for the population hyperspace is unknown and the factor structure from a possibly biased sampling of it may therefore not be objectively compared with it. However, it is an objective rather than a purely subjective criterion, and it would seem to provide the only alternative even if its validity in a particular study may not be objectively tested.

Doubt as to the validity of the criterion of simple structure might be alleviated considerably, however, through plasmodal studies in which a population of cases and variables is defined and biased samplings from it extracted and factor analyzed utilizing the criterion of simple structure, with the resulting factors then compared to the population common factors. A better understanding of the validity and robustness of the criterion of simple structure might then be obtained. Additionally, such an issue can be more directly resolved by obtaining random or matched samples of cases and variables within a domain of interest in the first place, which may constitute a major study in itself. It is indeed unfortunate that such studies have never been done, which may account to some extent for the

varying outcomes of factorial studies within the various substantive areas which have been investigated.

Cattell (1978) publicly advocates Thurstone's recommendation to rotate graphically a factorial solution to oblique simple structure (though allowing for freedom of orthogonality), though with the availability of analytic rotational programs yielding an exact solution according to some criterion, he recommends that the graphical rotation in an analysis follow a good analytic procedure in order to save time. The graphical rotations, he asserts, must, however, be conducted without knowledge of the nature of the variables being analyzed while graphically rotating, as Thurstone had recommended, in order to avoid prejudicial judgments. Such a procedure of "blind rotation" he states is necessary during a graphical rotation if it is to be considered scientific; graphically rotating with the knowledge as to the nature of the variables being studied, presumably especially if in accord with one's preconceptions, he labels as "cheating." The evidence he cites as proof for the achievement of simple structure is the hyperplane count.

Eysenck and Eysenck (1969) have stated that such practices as the graphical rotation of factors fail to be rigorous enough for scientific use and advocate the use of analytic programs. They seem to suspect such a procedure as

graphical rotation may encourage an unscrupulous researcher to rotate a factorial solution to support a particular theoretical viewpoint.

The average hyperplane count of a factorial solution does, however, provide a good index for the achievement of simple structure--assuming that a rotational procedure is indeed oriented toward simple structure. Burdsal and Bolton (1979) have shown that a graphical rotation toward simple structure as indexed by the average hyperplane count _following an analytic rotation_ is _generally_ superior to (and always as good as) an exact analytic rotational program, and for substantial precision it should be relied upon at the conclusion of a rotational procedure.

Fortunately, the justifiable concern of Eysenck and Eysenck (1969) that a graphical rotation may fail to be rigorous enough for a scientific investigation and may lead to abuse, may be largely resolved by following the procedure of employing the best analytic rotational procedure available and following with graphical rotations, if and only if they improve the average hyperplane count. _Both_ the average hyperplane counts for the completely objective analytic program and for the final rotational solution following the graphical rotations would then also need to be reported, and a graphically rotated solution would then be considered legitimate _if and only if_ it improved upon the

analytic solution which it followed (though it would still have to be presumed the analyst was not rotating out of the common factor space).

The old issue in rotation as to whether to rotate orthogonally or obliquely seems no longer to be as debated. The school of thought which seems to predominate and which is supported by the author is to utilize an oblique rotational procedure which would permit an orthogonal solution, depending upon the structure of the data, as opposed to constraining the solution to an orthogonal one which may be more artificial. Guilford (1975) has in the past used orthogonal solutions, though he has not argued against oblique solutions; he has only believed them to be unneccessary and not worth the effort. Of the most well-known researchers in the area of personality, only Comrey (1973) has continued to argue in favor of orthogonal solutions, but in the final factor analysis upon which the initial publication of his personality questionnaire was based (Comrey, 1973), even he improved upon his solution with oblique graphical rotations toward simple structure as indexed by the hyperplane count, though while rotating within the constraint of his theory.

The author has found a rotational procedure beginning with the analytic rotational program of Harris and Kaiser (1964), which begins with an orthogonal rotation and follows

it with an oblique rotation, followed by blind graphical rotations, followed by the restricted topographical Maxplane (Burdsal, Note 11) automatic rotation (called sometimes the "Hobbled Maxplane") to lead to the best simple structure as indexed by the average hyperplane count. Moreover, he has generally found worthwhile improvements with each of the above types of rotations when used in that order. The Harris and Kaiser (1964) rotation, by itself, however, he has found generally to correspond quite closely with maximum simple structure, though occassionally he has found that there are some meaningful though not dramatic substantive and qualitative differences.

Items Versus Parcels

The third major issue in factor analysis, as it pertains to data gathered from questionnaires at least, is whether to factor directly the items on a questionnaire or to group them first into homogeneous parcels and factor those parcels and then relate the individual items to the derived factors. The issue is often confused, however, by the failure to consider whether the parcels formed are formed in an objective manner as in Comrey's FHID's (factored homogeneous item dimensions) and Cattell's and Burdsal's (1975) radial parcelling method. Or, whether the parcels are formed in a subjective manner as when using sets of the items presumably found to load a factor from one or more previous studies

(e.g., a scale or split-scale of a factor) as has characterized the bulk of Cattell's studies or as when forming parcels from items believed intuitively to represent a common factor as in the major study by Guilford and Zimmerman (1956).

In the opinion of the author, the objective parcelling of items into parcels consisting of an equal number of items (to give equal weighting to each item in determining the factorial solution) is generally the best, but there are many instances in which the factoring of items directly would be much simpler and probably just as good as if an objective parcelling-factoring procedure were followed. Questionnaire items which are dichotomous, for example, have little covariation with one another, partially due to poor reliability, and geometrically tend to hover around the origin in the common factor space thus making a visually guided graphical rotation difficult if not impossible. But if the items have a more adequate number of response categories on an underlying dimension, say five or six, like a Likert scale, then their reliablity is generally better. They may then be found farther from the origin thus making a visually guided graphical rotation possible. And, in some instances, an analytic rotation may be considered sufficient anyway, thus making it unnecessary to use the much more laborious parcelling-factoring method. A more important reason for parcelling items, however, is that, as Gorsuch

and Yagel (Note 5) have indicated, it may help eliminate the emergence of factors for nonsubstantive reasons such as in the emergence of "difficulty factors"--e.g., two sets of items representing the same substantive factor separating into two factors due to each set having items with similarly shaped distributions but with the distributional forms characterizing those two sets varying considerably and thus resulting in the separation of the two factors (in that the maximum correlation possible between any two variables varies with the similarity of the shape of their distributions).

Using a parcelling-factoring method, however, in which the parcels are <u>subjectively</u> formed (i.e., not according to their empirical relationships as indicated in the data being analyzed) based upon common factors believed to exist as in the use of scales or split-scales from previous research, introduces a definite bias in a factor-analytic procedure in which the derived factors tend to support one's theoretical expectation. Cattell, Wagner and Cattell (1970) have argued that such a practice is not biased; yet, in point of fact, they are wrong, as may be demonstrated graphically, though it should be immediately intuitively obvious. For, if a) the parcels are essentially estimates of the factors expected to emerge, b) an equal number of parcels are formed to represent each factor, c) the parcels formed as split-scales of the same factor are inter-correlated more with

each other than with parcels formed as split-scales of other factors, and d) the total number of parcels is a multiple (or close to a multiple) of the number of factors and the number extracted is close to the number theoretically expected--then to the extent those conditions are met, the "empirically" derived factors would necessarily conform to theoretical expectations. Comrey (1961), in factoring items to form his FHID's has empirically demonstrated how easy it is to select sets of variables believed indicative of factors and for those factors to emerge from a factor analysis when close to the expected number of factors are chosen.

FACTORIAL STUDIES OF PERSONALITY

Having previously discussed the major methodological issues in factor analysis, especially as it pertains to factor analytic studies of the common traits of personality, the research which has been conducted in that area may be more rationally evaluated. The most well-known researchers in that area which have used the questionnaire as a medium for data gathering are, as mentioned previously, Cattell, Comrey, Eysenck, Guilford, and Howarth.

In general, it may be suggested that the set of nomothetic traits of dependence vs. independence, dominance vs. submission, inclusion vs. exclusion, morality vs. immorality postulated by the theory of dyadic social

transaction is not contra-indicated by other factor-analytically derived trait theories of personality which have emerged during the last several decades, when those theories are rationally evaluated. Based upon information collected through the self-report questionnaire, Cattell and his associates (e.g., Cattell, 1973; Cattell & Cattell, 1969; Cattell, Eber & Tatsuoka, 1970) have advanced that at least 13 traits are necessary to account for the personality of adolescents and at least 15 traits are necessary to account for the personality of adults, if one excludes from consideration the ability factor of intelligence. However, Cattell's initial factor-analytic study of the traits of adults through the questionnaire medium (Cattell, 1950) is far from being unequivocal as to both the number and nature of those factors. And a factor-analytic study of his (Cattell, 1974b) published more recently using the radial-parcelling method (Cattell & Burdsal, 1975)--in which questionnaire items are parcelled together empirically in parcels of equal numbers of items according to their congruence coefficients and the parcels then factored and the derived factors then related subsequently to the initial items--has not provided sufficient information for a reader to form an independent judgment as to his claim that the results support the empirical validity of the traits previously purported to exist.

The bulk of Cattell's factorial studies of the trait-structure of the personality of adolescents and adults as ascertained through the questionnaire medium--Cattell, Coan and Beloff (1958); Cattell, Eber and Delhees (1968); Cattell and Nesselroade (1965); Cattell, Schroder and Wagner (1969); Cattell, Wagner and Cattell (1970); Schumaker and Cattell (1974); and Tsujioka and Cattell (1965)--have employed a split-scale (or scale) parcelling technique in which parcels are formed as split-scales or scales of traits believed to exist according to previous factor-analytic studies, with an equal number of such parcels representing an a priori trait (factor). Such a factor-analytic procedure, however, does, as explained previously, in fact (in as factual a sense as 2 + 2 = 4), bias the outcome of the analysis in favor of supporting the hypothetical factors. Nevertheless, even given such a biased procedure, the factors asserted by Cattell to be representative of the traits of his theory have, with the exception of the trait of morality proposed here, not replicated across even his own studies.

In the seven studies cited above by Cattell and his associates, using the criterion that in a split-scale (or scale) factor-analytic study a majority of the a priori factors (parcels) representative of each hypothetical factor must have a loading of absolute magnitude greater than or equal to +0.35 on an empirically derived factor before that

factor is considered representative of the corresponding hypothesized factor--only Cattell's trait of super-ego is found to replicate across his own studies according to a nonparametric test (the binomial test) at the 0.05 level of significance, <u>though he always concludes in each study that his theory is generally supported</u>. The traits of personality asserted by Cattell to be primary, therefore, can, with the possible exception of his trait of super-ego, be disregarded in that they fail to be replicated even in his own factor-analytic studies which are known to incorporate a procedural bias favoring their support. Factor-analytic studies by other independent investigators, it should also be noted, have also failed to support his theory (Becker, 1961; Comrey & Duffy, 1968; Grief, 1970; Howarth & Browne, 1971; Sells, Demaree & Wills, 1970; 1971; Soueif, Eysenck & White, 1969). Additionally, it should also be noted that Howarth (1976b) has re-analyzed early rating data of Cattell's from the 40's and been unable to replicate Cattell's factors, and Digman and Takemoto-Chock (1981) have found an error in the correlation matrix of one of Cattell's early rating studies of a female sample, which would have led to erroneous results.

Guilford began his research earlier than Cattell, initially by factor-analyzing small sets of items presumed to represent various hypothesized factors (Guilford, Zimmerman & Guilford, 1976). Because when he began there

were no computer facilities and for a long time after when they came into existence they were not very advanced, he segregated the different sets of items which presumably measured different factors into three different questionnaires which, when combined, measured 13 factors believed to exist from prior studies. Lovell (1945) factored the 13 scales in all those instruments to investigate any "super-factors" which might account for the inter-correlations of those putative factors, which, of course was a higher-order factor analysis. It was not until Thurstone (1951), however, that the dimensionality of the total correlation matrix was investigated to determine if all those factors were actually necessary.

Using the data accumulated in the prior study by Lovell (1945), Thurstone (1951) inserted the reliabilities of the factor scales as indicated in the test manual into the corresponding diagonal element of the correlation matrix of the factors and extracted nine factors from that matrix by the centroid method, with termination occurring when the residuals of the correlation matrix became trivial. He then concluded the dimensionality of the hyperspace represented by the 13 putative factors was nine, not 13 as believed by Guilford, and then he rotated his factors to oblique simple structure, with only seven being retained for meaningful interpretation.

Guilford and Zimmerman (1956), in their major study upon which Guilford's current system is founded (Guilford, Zimmerman & Guilford, 1976), reanalyzed Lovel's (1945) data, going back to 1945, but did so in a different manner. From the total pool of items, they grouped the items in parcels representative of the factors they believed to be in existence. The items were parcelled according to their psychological assessment--not according to any empirical assessment (or necessarily according to the scale to which they were previously associated)--with the number of parcels representative of each a priori factor being approximately the same, though the number of items in the parcels varied more considerably.

Guilford and Zimmerman (1956) then factor analyzed 69 intuitively formed parcels constructed as described above plus a variable for sexual identity. Using the centroid method and extracting factors until encountering trivial residual correlations, they extracted 18 factors and graphically rotated them to orthogonal simple structure.

Although the factorial study conducted by Guilford and Zimmerman (1956) was methodologically biased and must be discounted for that reason alone, it is interesting to note, however, that in contrast to the research conducted by Cattell and his associates using parcels formed from scales or split scales, eleven of thirteen of the factors

hypothesized by Guilford and Zimmerman emerged in the analysis according to the same criterion employed in evaluating the studies by Cattell and his associates (with the other two factors missing by only one parcel each). That is, for eleven of thirteen of the factors hypothesized by Guilford and Zimmerman to emerge in their study, the majority of the parcels representing each hypothesized factor had loadings in absolute magnitude greater or equal to +0.35 on the factor they were believed to represent, usually with a loading substantially greater.

Fundamentally, however, Eysenck and Eysenck (1969) were quite correct when they stated of the trait theories of Cattell and Guilford that "... the outstanding fact about such systems as those of Cattell and Guilford is not that they are objective and based on correlation and factor analysis, but they are subjective, and based on arbitrary and intuitive judgements" (p. 326). Eysenck and Eysenck (1969) analyzed 109 items received from Guilford hypothesized to represent Guilford's factors, and they also analyzed 99 items received from Cattell which Cattell hypothesized to represent his factors. In both analyses (conducted separately), factors purported by the theorist failed to replicate. Similarly, in the monumental factor-analytic study conducted by Sells, Demaree, and Will (1970), a questionnaire consisting of 300 items presented by Guilford as representative of his factors and 300 items

presented by Cattell as representative of his factors were presented to about 2000 service men. All 600 items were factor analyzed and 18 factors were extracted and obliquely rotated to simple structure. Eight of the factors they interpreted as corresponding to Guilford's factors, and six of the factors they interpreted as corresponding to Cattell's factors, though there were no empirical indices for those comparisons. Quite clearly, although that study was very similar methodologically to the major study by Guilford (Guilford & Zimmerman, 1956) and the earliest by Cattell (1950), it failed to adequately support the set of traits theorized by either Guilford or Cattell, though being decidedly in favor of Guilford's theory (8 of 13 versus 6 of 15).

Comrey (1973, p. 247) began his research of the common traits of personality as ascertained through the use of factor analysis initially to seek a "resolution of the differences" among "three of the best known writers in the field of personality measurement"--who at that time were Guilford, Cattell, and Eysenck. His "intention was to independently seek out and identify the major factors of personality with the idea of comparing the resulting taxonomy of the traits with those of the three authors mentioned" (p. 247). As his research progressed, however, it became clear to him that the set of major factors which were emerging in his studies, though having factors in

common with the sets of traits postulated by the other theorists, were nevertheless distinct from them.

Beginning first by analyzing items in the MMPI, Comrey and his associates later extended their analyses to include the postulated sets of factors by Guilford (Comrey, Jamison & King, 1968), by Cattell, and by Eysenck (Comrey & Duffy, 1968). The factor-analytically derived traits within his final taxonomy as a result of his investigations were as follows: T--Trust versus Defensiveness; O--Orderliness versus Lack of Compulsion; C--Social Conformity versus Rebelliousness; A--Activity versus Lack of Energy; S--Emotional Stability versus Neuroticism; E--Extraversion versus Introversion; M--Masculinity versus Femininity; and P--Empathy versus Egocentrism (Comrey, 1973).

Early in his factor-analytic studies, Comrey (1961; 1962b) began to construct parcels consisting of homogeneous items with an equal number of items in all the parcels, and he interpreted those parcels and utilized them rather than the items contained within them for his factor analyses. Those parcels, however, unlike the major study by Guilford and Zimmerman (1956) and the bulk of the studies by Cattell, were <u>objectively</u> constructed by taking sets of items and factoring them, with the interpretable factors identifying the homogeneous groups of items used in the parcels for future factoring (Comrey, 1961). Those objectively

constructed parcels he referred to as "factored homogeneous item dimensions" (FHID's). In his initial construction of those FHID's he began with 36 (Comrey, 1962b), and he culminated his work with 40 (Comrey, 1973).

Although Comrey (1973) and his associates conducted quite a number of factor-analytic studies (Comrey & Duffy, 1968; Comrey, Jamison & King, 1968; Comrey, Meschieri, Misiti & Nencini, 1965; Jamison & Comrey, 1969; Rodrigues & Comrey, 1974), he only added factors to his system as they were judged to be indicated. One may not, therefore, as easily assess the replicability of the various factors in the final system he proposed as was done previously for the factors postulated by Cattell. However, if the same criterion as that applied to Cattell's studies using split-scale (or scale) factoring and to the major study by Guilford and Zimmerman (1956) is applied to determine the identification (or replication) of the factors by Comrey hypothesized to emerge in a factor analysis--that is, the requirement that the majority of the parcels (or FHID'S) identified with a factor have a loading in absolute magnitude greater than +0.35--then in his final study, <u>all eight factors</u> may be considered empirically supported. In fact, all the hypothesized factors were loaded unanimously by all the parcels hypothetically associated with them, except for one factor which, while having a majority of its parcels loading it, had one which failed to adequately load it (.34, not

.35). Similarly, in a cross-cultural study of those factors using a Portuguese translation of the questionnaire items believed to represent Comrey's eight factors and a Brazilian population, employing the same criterion for factor identification as used previously, all but one of Comrey's eight factors were identified in that foreign sample (Rodrigues & Comrey, 1974).

The greatest theoretical contribution by Comrey and his associates, in the author's opinion, has probably been in more reasonably establishing the dimensionality of the common factor space represented by items in the MMPI and the questionnaires by Guilford, Cattell, and Eysenck as being probably no greater than eight and probably at least as great as seven. That is, if one equates a common trait with a common major factor--in accordance with Thrustone's (1931) earliest conception and later theorists such as Cattell (1966) (who asserted analysts should seek "non-trivial common factors")--then the number of common traits as represented by the aforementioned questionnaires is very unlikely to be any greater than eight and quite possibly as many as eight, but at least greater than two or three as postulated by Eysenck (Eysenck, 1970; Eysenck & Eysenck, 1969).

Comrey (1974) recognized early in his research that the number of major and minor common factors in personality

research may well be infinite, so, more than Guilford and Cattell, he sought to identify only those of major importance, which he believed obviously to be finite and more stable. In the factoring procedure he has employed, in fact, he has extracted more factors than indicated (i.e., the maximum possible) and then used an automatic rotation program that has distributed the variance on as few of the factors as possible and then concluded the analysis by rotating only that smaller set of factors (Comrey, 1973). Such a procedure has encouraged the most parsimonious set of factors in accounting for the data, with additional factors being added in later analyses only as they became clearly discernible. Such a process as it has been conducted throughout his factorial studies has led to a sharp cleavage in the variance accounted for by his smallest factor in his system and any additional factor which one might attempt to add.

Unfortunately, the common or major factors of his system do not conform mathematically to Thurstone's (1947) common-factor model thus making his set of major factors difficult to evaluate from that perspective. In one of his typical factor analytic studies, after establishing the number of factors to retain and rotate, he employs two additional criteria in the subsequent rotation which pertain more to cluster analysis than factor analysis (Comrey, 1967). Arguing that variables loading the same factor should be

correlated, the probability of any two variables loading the same factor during the final rotation is then made partially a function of their correlation. That is, besides the influence of the correlation of the two variables itself, the two variables are more likely to load on the same factor if they are correlated (Criterion I) and less likely if they are uncorrelated (Criterion II)--with two criteria being necessary rather than one apparently in order to use only linear formulae. His rotational procedure, then, would be expected to bias the positioning of the factors towards clusters of variables, and the "factors" emerging from such a procedure, therefore, might be somewhat strange creations, neither fully a cluster nor a factor, analogous to the legendary centaur--half man, half horse.

Additionally, his analytic rotational solutions are orthogonal, with any graphical oblique rotation then being performed within the constraint imposed by a prior understanding of the factors hypothesized to emerge (Comrey, 1973), thus introducing the issues of more orthogonally biased solutions and of subjectively biased solutions. The author, despite Guilford's (1975) claim, has found substantive differences between orthogonal and oblique solutions. As for the subjectivity involved in Comrey's factor analyses, it is not at all possible, of course, to evaluate objectively how such subjectivity has affected the nature of the final factors of his system, though a number

of the factors have been found by other investigators (Guilford, 1975; Eysenck, 1970).

One fact is obvious, however, using Comrey's objective procedure up to the point of performing any intuitively guided rotations on his questionnaire yields very impressively the results postulated by his theory (Comrey, 1973). Moreover, in the author's opinion, essentially the same results would probably be obtained if the Objective Scree (Brennan & Lee, Note 4) were used to determine the number of factors from the eigenvalues of the correlation matrix, and the principle axis method then used in factoring followed by an oblique Harris-Kaiser (1964) analytic rotation. But such an opinion is, of course, only a plausible hypothesis.

In comparing Comrey's (1973) set of eight factors with the four trait dimensions of inclusion, dominance, dependence, and morality postulated by the theory of social transaction, there appears to be substantial correspondence: Comrey's extraversion versus intraversion, which in some of his previous studies he referred to as "shyness," with regard to its opposite extreme, corresponds to the dimension of social inclusion vs. social exclusion postulated here. Comrey's dimension of empathy versus egocentrism may relate considerably to the dimensions of social submission versus social dominance, though it may also be somewhat related to

morality. Comrey's dimension of trust versus defensiveness, which replaced a similar dimension in one of his earlier analyses called dependence (Jamison and Comrey, 1969), may correspond considerably to the dimension of dependence postulated here. Comrey's factor of social conformity versus rebelliousness corresponds to the dimension of morality from the unprincipled extreme to the conventional middle portion, with the more principled extreme not being represented in Comrey's interpretation of his factor. Comrey's dimension of masculinity-femininity pertains most likely to sex stereotypical activities rather than to common modes of relating to others, so it would be largely irrelevant for the theory of social transaction. Comrey's factor of activity, may be somewhat related to social inclusion--Guilford (1975) has considered it to combine with his factor of sociability to form his factor of social activity. And Comrey's factor of emotional stability, of course, pertains to emotional functioning in particular. Finally, his orderliness factor is probably an aspect of morality.

The research begun by Howarth and his associates has been in many ways a continuation of the factor-analytic investigations alluded to earlier by Sells, Demaree, and Will (1970; 1971). Sells et al. (1971), it will be recalled, factored an item correlation matrix consisting of 600 items--300 items representative of Guilford's thirteen

factors and 300 items representative of Cattell's fifteen factors (which excluded his factor for intelligence)--based upon a sample of over 2000 service men. They extracted 18 factors which were more than sufficient based upon the residuals within the correlation matrix after the 18th factor was extracted, and they rotated the factors by an oblique analytic Promax program (Hendrickson & White, 1964) after having found it to be superior to an orthogonal Varimax (Kaiser, 1958). They interpreted 8 of those factors as perhaps representing Guilford's factors and 6 of those factors as perhaps representing Cattell's factors. It is important to note, however, that Sells et al. used only an antiquated method of determining the number of factors, and they concluded they overfactored by at least three or four factors, inasmuch as those factors were not psychologically interpretable. Similarly, Howarth and his associates have proceeded to extend the line of inquiry begun by Sells et al. by factoring large sets of items based upon large samples to determine which common factors are replicable and therefore of major importance, <u>though without any rationale as to determining the number of factors in an analysis and without addressing the issue of overfactoring</u>.

Howarth and his associates have demonstrated that it is possible to base the empirical determination of replicable factors upon items directly rather than parcels and yet have more than the two or three factors replicate across studies

which Eysenck (Eysenck, 1970; Eysenck & Eysenck, 1969) has asserted to be the maximum. In a study conducted shortly after the pivotal study by Sells et al. (1970), for example, Howarth and Browne (1970) factored a set of items including items marking eight of the clearest factors found in the study by Sells et al. and claimed all eight factors replicated--though if one requires a majority of the marker items to load the putative factor they are associated with (beyond .35), then only five of the factors replicated (a criterion which is decidedly more stringent for items than for parcels).

Howarth and some of his associates (e.g., Browne & Howarth, 1977; Howarth, 1980) have taken the position that the "major factors" of personality may only be ascertained by factoring comprehensive and <u>very large</u> correlation matrices of questionnaire items, based upon samples of subjects therefore which must be very large, and considering only those "common factors" as "major factors" which replicate across such studies. Moreover, they do not apply any clearcut rationale for deciding upon the number of factors to extract in such studies and typically just extract a large number without any regard to the issue of factor fissioning with overextraction and the interdependence of the number with the nature of factors obtained in a factorial solution more generally (Guilford, 1975; Hakstian & Muller, 1973).

In one study, for example, Browne and Howarth (1977) factor analyzed a correlation matrix of 400 items based upon a "cross-continent" sample of subjects of 1003 and arbitrarily extracted 20 factors, even though a plotting of the eigenvalues of those factors prior to rotation would suggest a sharp drop in variance accounted for after the first seven and probably little basis for continuation, at least, after the first 12 factors. Many of those 20 factors, consequently, were fragments of other factors or of some more psychologically unitary factor that would have been obtained if they had not overextracted. For example, they obtained two "dominance" factors, one pertaining to dominance in relation to only one person and the other to dominance in relation to a group. A number of the pairs of factors seem to be statistically distinct, but not psychologically distinct--that is, being either aspects of a greater psychologically unitary factor or pertaining to the way different segments of the population may manifest the same psychological trait differently.

As discussed at the beginning of this chapter, however, if the objective of the research conducted in this area is the empirical determination of the major common traits--that is, the major underlying dimensions accounting for the psychological functioning of individuals as individuals across the situations which populate their lives--then the methodological approach and especially the scientific

attitude of Howarth and his associates is inappropriate. For a common mathematical factor obtained from the intercorrelations of items across a large sample of subjects is not necessarily a major common factor, which in turn is not necessarily logically a major common trait. It is likely, though not definite, that those factorial solutions which consist of major common factors (in terms of variance accounted for and consequently replicability, not simply the latter) are factorial solutions consisting of common traits, for they would be large enough and robust enough to be likely common to the psychological functioning of a population of individuals.

The approach of Howarth and his associates is indicative of an attempt to overcome a theoretical problem by sheer institutional and technological escalation. It is the same approach that was taken initially by Guilford and Cattell in their earlier factorial studies of the items of questionnaires, now asserted by Howarth to be definitely resolvable with the newer advances of computer technology in conjunction with greater social and organizational cooperation as larger numbers of subjects are then required (Browne & Howarth, 1977). Yet, what substantial relevance is necessarily indicated by common factors from such an investigation employing 400 variables and over 1000 subjects commonly to the individuals of that population or any other? Would not a more modest number of variables, though

comprehensive, when factored for each of a small number of individuals across situations be more likely to achieve the objective of identifying the major common traits of personality?

Howarth (1980) has incorporated about fifteen psychological dimensions in the personality questionnaire he has constructed. Yet, despite the considerable number of factor-analytic investigations he and his associates have conducted over the last decade and a half and the large number of subjects and variables they have employed (Browne & Howarth, 1977; Howarth & Browne, 1971a; Howarth & Browne, 1971b; Howarth & Browne & Marceau, 1974), the major common factors of personality which replicate from study to study have, to a considerable extent, continued to elude them (Howarth, 1980).

A number of common factors, however, have repeatedly emerged in the factorial studies of Howarth and his associates, some of which appear to correspond to the four psychological dimensions postulated by the theory of dyadic social transaction: The dimension of inclusion-exclusion has appeared to emerge in a number of their studies though labelled as "shyness" (Browne & Howarth, 1977; Howarth & Browne, 1971a; 1971b). The dimension of dominance-submission has emerged in two of their studies (Browne & Howarth, 1977; Howarth & Browne, 1971b), though in one of

the studies it was represented by two factors with one pertaining to interpersonal dominance and the other to dominance within a group (Browne & Howarth, 1977). The dimension of dependence seems to be rather similar to a factor Howarth and his associates have found in three of their studies called "sociability" (Browne & Howarth, 1977; Howarth & Browne, 1971a; 1971b). Finally, the dimension of morality postulated here has emerged in a couple of the studies by Howarth and Browne (Browne & Howarth, 1977; Howarth & Browne, 1971a). Additionally, in the pivotal study conducted by Sells et al. (1970) which formed the initial basis for the line of research conducted by Howarth and his collegues, all four of the dimensions postulated here appear to have emerged from that analysis though labelled as "social extraversion" (inclusion), "agreeableness" (submission), "cyclothymia" (dependence), and "conscientiousness" (morality).

Additional Factor Analytic Evidence

After modifying for a Hawaiian population the items of the High School Personality Questionnaire (IPAT, 1973) which purports to be represented structurally by the thirteen adolescent personality traits advocated by Cattell, the author (Campbell, Note 6) found that an Objective Scree Test for the number of factors (Brennan & Lee, Note 4)--a test which had been found highly accurate when applied to

numerous other data sets when the number of factors were known--indicated seven factors were sufficient to account for the covariation among the questionnaire items in a large sample of Hawaiians 12-13 years of age. An application of the Subjective Scree Test (Cattell, 1966) by the author had similarly indicated 6-7 factors, and, following an improved modification of the radial-parcelling procedure, the number of factors indicated for the parcels (48 parcels of four items each) by both the Subjective and Objective Scree tests was seven (though the second scree was used in the objective test), and, additionally, a maximum likelihood procedure indicated a maximum of eight factors for those parcels (at a significance level less than .01). Similarly, when the same questionnaire was used for a slightly older, large sample of Hawaiians 14-17 years of age, the same tests for the number of factors indicated eight factors as being most likely (Campbell, Note 7).

The nature of the factors for the two samples of Hawaiians were generically very similar though showing some changes as would be expected according to differing levels of development. In the younger sample (Campbell, Note 6), the factors were interpreted as dependence vs. independence, dominance vs. submission, social activity vs. shyness, super-ego, ego-strength, anxiety, and masculinity-femininty. The first four factors, then, corresponded to the four factors advocated here, and ego-strength and anxiety, which

were substantially correlated and at the second-order level (Campbell, Note 8) found to compose a factor labelled "emotionalism" (corresponding to what has been pejoratively labelled "neuroticism" in the literature), may be disregarded as primarily pertaining to the emotional components of the other traits (or as being a higher-order composite of emotional traits). Masculinity-femininity was found to appear bimodally distributed and highly correlated with sexual identity (Campbell, Note 9) and therefore to be a factor not so much common to all the subjects as much as a type-factor for distinguishing two types of subjects, male and female subjects as self-identified.

The factors of the older sample of Hawaiians (Campbell, Note 7) were recognizable as qualitatively (i.e., generally) the same as for the younger sample. Exceptions, however, were an extra factor indicative of what is referred to locally as well as nationally as a "cruising" mentality, probably similar to Guilford's factor of personal relations (Guilford, Zimmerman & Guilford, 1976), and the emotional aspect of the factor of masculinity-femininity at the earlier age diverging from that factor to coalesce into the factor of super-ego, leaving as a remnant only the cultural-activity aspect resulting in the remaining factor then being termed "Culture." Interestingly, that splitting was even discernible as the factorial solution was rotated further towards simple structure following an automatic, analytic

Harris-Kaiser oblique rotation (Harris & Kaiser, 1964) (though providing a rotational solution less oblique then the more improved graphically rotated solution). Digman and Inouye (Note 10) have since reported that the factor of Culture, as it is found through the medium of ratings by others, is an aspect of the ability factor of general intelligence. The results of the factor-analytic studies of the personality traits of those two populations, therefore, may be regarded as being quite consistent with the four traits of personality postulated here--dependence, dominance, inclusion, and morality.

The nomothetic personality traits postulated here are also not inconsistent with what has been referred to by Digman and Takamoto-Chock (1981) as the five-robust dimensions of personality found through the rating medium to generalize across quite diverse populations. Those dimensions, advanced earlier by Norman (1963), have been given different labels by different researchers but may be referred to here as extroversion, neuroticism (or ego strength or anxiety), dominance (or socialization or agreeableness), morality (called by Digman and Takamoto-Chock "Will-to-Achieve"), and culture (or intellect).

As alluded to earlier, the factor of culture may be regarded as an aspect of intellect and, as more of a nonsocial cognitive factor, be disregarded from a discussion

of personality traits as previously defined. Analogously, the factor of neuroticism can, as previously argued in the discussion concerning the questionnaire medium, be considered an emotional component (or a combination of emotional components) of personality traits as identified primarily by their cognitive component, though also including an emotional and behavioral component as well. And, as mentioned previously (Campbell, Note 8), in the questionnaire medium, for a young population of Hawaiians (12-13 years of age), the primary factors when in turn factored yielded as one of the second-order factors a factor labelled "emotionalism" (referred to in the literature as neuroticism) which was formed primarily by the two negatively correlated primary factors of ego strength and anxiety. The robust dimensions of personality as ascertained from the rating medium remaining to be reconciled theoretically with the four traits postulated here, therefore, are extroversion, dominance, and morality.

The robust dimensions from the rating medium of dominance and morality obviously appear to correspond to the two personality traits by those names which have been postulated here, and the robust rating dimension of extroversion may be considered as corresponding to a second-order factor occurring in the questionnaire medium which is composed of the two primary factors occurring in that medium of dependence vs. independence and social inclusion vs. social

exclusion (i.e., of independence and inclusion). In the factor-analytic study of the personality traits of Hawaiians of ages 12-13 alluded to previously, a factor analysis of the factors found at the first-order level (i.e., primary factors) resulted in three second-order factors (Campbell, Note 8): charisma (extroversion), emotionalism (called pejoratively by some as neuroticism), and dominance. Excluding from consideration the factor of emotionalism for the reason given earlier and noting that dominance occurred at the first-order as well (it was empirically the same), the factor of charisma, essentially extroversion, was found to be composed primarily of the two primaries of dependence vs. independence and social activity vs. shyness (or social inclusion vs. social exclusion), with the more charismatic (extroverted) person being more socially active and independent.

Eysenck (1952; 1970), who is the most well known and one of the earliest trait theorists using the factor-analytic method who supported the validity of the trait of extroversion, has also postulated that it is a higher-order factor composed of two component traits (S.B.G. Eysenck & H. J. Eysenck, 1963; 1969), following a review by Carrigan (1960) questioning the unidimensionality of that construct. Incidentally, it might also be noted that in the Hawaiian data, given the relatively high negative correlation between the primaries of anxiety and ego strength and between the

primaries of social inclusion (activity) and dependence in the second-order factor structure (Campbell, Note 8), it was quite apparent that a five factor solution would have corresponded closely to the five robust dimensions, though with the primary of masculinity-femininity bifurcating to the two robust dimensions of morality and culture.

Although the correlation across a sample of individuals between factors from the rating domain and the questionnaire domain may be generally low inasmuch as the different assessments are relative to different perspectives (Becker, 1960) and for other reasons as well, one would nevertheless expect the same dimensions generally to be important in both rating and questionnaire media for a priori reasons. A dimension such as dominance-submission, for example, would likely be important for both questionnaire and rating data even if the cummulative distortion from those two media result in a low correlation for such a dimension. The position taken here is that the well established five robust factors in the rating domain correspond qualitatively to different major factors found in the questionnaire domain, though different distortions are involved in their operational measures. Sells, Demaree, and Will (1970) have similarly interpreted a number of the larger factors found in their extremely large factor analysis of questionnaire items as corresponding to the five robust factors in the rating domain advanced earlier by Norman (1963).

A strong socio-biological argument can be advanced in support of the four postulated traits, an argument so obvious that it need only be alluded to here. Given that the main material for the evolution of a species is not mutation as often supposed but rather the biological variation of continous characteristics (Falconer, 1960), the dimensions of dependence, dominance, and inclusion which have been of obvious importance in differentiating among species would be expected then to differentiate within species also. Social dominance, for example, characterizes not only the predator-prey relationship among species but also the dominance hierarchies within (Hediger, 1964). Species also differ greatly in dependence and social inclusion, the human infant, for example, being extremely dependent upon its mother for a long period of time (in order to mature and learn), and species of primates differ in the degree to which they are socially solitary and in the nature of their social groups. Altruistic (moral) behavior is also noted as characterizing and differentiating different species. Dependence and aggression, a partial manifestation of dominance, are also known to be genetically influenced in humans, and their genetic inheritance to even distinguish between the sexes (Hoyenga & Hoyenga, 1979; Maccoby & Jacklin, 1974).

All things considered, there is a strong argument that can be advanced in support of the four nomothetic traits of

personality of dependence, dominance, inclusion, and morality. The evidence, though based partially upon some plausible speculations, comes from many sources and is quite compelling.

CHAPTER FOUR

Empirical Investigation of Four Psychological Dimensions of the Inchoate Theory of Dyadic Social Transaction: II. Introduction, Method, Results, and Discussion

The inchoate theory of dyadic social transaction as it has been presented in the previous chapters postulates the four nomothetic prototypical psychological dimensions of Inclusion-Exclusion, Dominance-Submission, Dependence-Independence, and Morality-Immorality as being both necessary and sufficient in accounting for the social transactions involving a subject and a focal-stimulus person in a subenvironment--excluding from consideration the dimensions of Formality-Informality and Constraint-Nonconstraint pertaining to the ambient-stimulus physical settings in which those transactions occur. Those four psychological dimensions, as the previous chapter has indicated, are not contraindicated by the factor-analytic research of the common traits of personality which has been conducted over the last several decades, and when that research is rationally evaluated, substantial support for those four dimensions can be demonstrated. See Appendix A.

The psychoanalytic theory of Horney (1945) and the empirically based theories of Schutz (1958) and Adamopoulos (1982), however, assert that only three psychological

dimensions corresponding generally to the three dimensions of Inclusion, Dominance, and Dependence incorporated in the theory of dyadic social transaction are sufficient in accounting for social relations in general, with the dimension of Morality-Immorality not being necessary and for the psychoanalytically-oriented Horney (1945) and Schutz (1958) not being considered desirable anyway. Yet, the psychological dimension of Morality is important in cognitive-developmental theories such as Kohlberg's (1969; 1981), and in a recent review of research and theory in personality, Loevinger and Knoll (1983) have stated that far from being unnecessary, the dimension of Morality is the "central dimension" of personality.

Consistent with the theoretical importance attributed to the dimension of Morality by Loevinger and Knoll (1983), the theory of dyadic social transaction also considers Morality the most important psychological dimension. For the dimension of Morality is conceived as subordinating the other three dimensions and as indicating the social-psychological course of development of the individual, besides being of paramount importance to the psychological functioning of others.

To resolve more objectively the theoretical dilemma briefly described above--as to whether the three-dimensional model incorporating the psychological dimensions of

Inclusion, Dominance, and Dependence was sufficient to account for the social transactions of inhabitants within a given *a priori* subenvironment such as a university campus or the four-dimensional model including the additional psychological dimension of Morality was required--the author conducted an experimental investigation which was capable of *disconfirming* the three-factor model, if it were indeed insufficient, and capable of *supporting* the four-factor model. Additionally--given that a psychological dimension was conceived according to theory as consisting of a cognitive, an emotional, and a behavioral component--a number of related but subordinate issues were also investigated.[4]

The theory of dyadic social transaction conceives of each of the four psychological dimensions of Inclusion, Dominance, Dependence, and Morality as consisting of a cognitive component, identical to a dimension found to underlie social cognition, an emotional component defined as a linear function of the dimensions found to account for emotion, making the emotional component somewhat heterogeneous in nature, and a behavioral component, identical to a dimension found to underlie social behavior. The cognitive dimensions are presumed to be those of Activity, Potency, Pleasantness, and Sublimity, with the first two being those found by Osgood and Suci (1955) and the last two being differentiations of the dimension of

Evaluation found initially by those two investagators, believed to exist in the domain of social cognition. The three emotional dimensions are postulated to be those found objectively by Mehrabian and Russell (1974) in studies in environmental psychology, that is, Arousal, Control, and Pleasure. And three of the four behavioral dimensions are those of Inclusion, Dominance, and Dependence (or Affection) based upon the research of Schutz (1958) and Adamopoulos (1982) and the clinical speculation of Horney (1945). The behavioral component of the psychological dimension of Morality which may not be identified as one of the three homogeneous behavioral dimensions is presumed to be heterogeneous in nature and may be termed Altruism or Justice.

According to the theory, by roughly equating an emotional dimension with the emotional component in each of the psychological dimensions, though those components may be somewhat heterogeneous, the four psychological dimensions may then be more explicitly described as follows: Activity-Arousal-Inclusion (for Inclusion), Impotency-Control-Dominance (for Dominance), Pleasantness-Pleasure-Dependence (for Dependence or Affection), and Sublimity-Pleasure-Altruism or Justice (for Morality).

The first subordinate hypothesis of the investigation, therefore, was that the four dimensions of Activity (vs.

Passivity), Potency (vs. Impotency), Pleasantness (vs. Unpleasantness), and Sublimity (vs. Baseness) did, in fact, underlie cognitions of focal-stimulus persons in dyadic social situations. As alluded to previously, Osgood and Suci (1955) had found from a factor-analytic study of the meaning of words as signs for objects that the three dimensions of Activity, Potency, and Evaluation accounted for such stimuli, though, as they stated, had they included more variables of a more "denotative" nature in their factor-analytic study, they may have found additional dimensions. Wiggins and Fishbein (1969), in fact, later conducted a more complex multivariate analysis of semantic meaning and found that for one group of subjects, at least, that instead of simply one general dimension of Evaluation as postulated by Osgood and Suci (1955), there were two more differentiating evaluative dimensions--one represented by "good-bad" in the amoral sense of pleasing-displeasing and the other represented by "fair-unfair," in the sense of what is moral and just.

In the investigation, therefore, it was hypothesized that when subjects are provided with a set of bipolar rating scales for describing their cognitions of focal-stimulus persons in various settings and that set includes an ample number of scales similar in meaning to "pleasantness" and an ample number of scales similar in meaning to "sublimity," then rather than the single more undifferentiated dimension

of Evaluation postulated by Osgood and Suci (1955), the two dimensions of Pleasantness and Sublimity would be found to underlie such cognitions, along with the dimensions of Activity and Potency. Subjects, for example, would be expected to associate with some focal-stimulus persons because they were "warm" and comfortable to be around and to associate with others because of their "magnanimity."

The second subordinate hypothesis of the investigation, as suggested by the earlier discussion, was that the three dimensions of Arousal (vs. Unarousal), Control (vs. Helplessness), and Pleasure (vs. Displeasure) did actually underlie emotions in relation to focal-stimulus persons in various settings. Mehrabian and Russell (1974) had found those three dimensions both necessary and sufficient in accounting for the emotions of subjects in various environmental settings, through their factor-analytic studies (though the dimension labelled here "Control-Helplessness" they actually labelled "Dominance-Submission").

The three emotional dimensions of Arousal, Control, and Pleasure, as Mehrabian and Russell (1974) had postulated, were expected to relate roughly to the three dimensions underlying signs for environmental objects: That is, an object (or sign) which denoted activity was expected to be followed by emotional arousal, an object which denoted

potency was expected, generally, to be followed by emotional helplessness (or vice-versa, impotency of an object followed by emotional control), and an object which denoted goodness was expected to be followed by emotional pleasure.

In the realm of social transactions, however, though there was only one emotional dimension of Pleasure postulated, there were focal-stimulus persons (objects) presumed to arouse our higher mental faculties which lead to more sublime pleasures (more enduring and frequent, if not also more intense), and there were presumed to be objects which did not arouse our higher mental faculties, which lead to sublunary pleasures (though not to suggest they do not have their place). Emerson (19th Century/1981e), for example, may have made such an evaluative distinction when he characterized Thoreau after Thoreau's death as the essence of "noble purity." Yet, given the existence of the two evaluatiave dimensions, if sublime pleasures were not reducible to those which were more base, as postulated, they, nevertheless, were expected necessarily to involve, generally, the same pleasure area in the brain (though not localized to it). Such a rationale, then, justified postulating two evaluative dimensions denoting the properties of environmental objects while permitting only one emotional dimension of pleasure.

The third subordinate hypothesis of the investigation, as suggested by the earlier discussion, was that the four behavioral dimensions of Inclusion (vs. Exclusion), Dominance (vs. Submission), Dependence (vs. Independence), and Justice (vs. Injustice, or Altruism vs. Egotism) did factually underlie behaviors of individuals in relation to focal-stimulus persons in various settings. The three behavioral dimensions of Inclusion, Dominance, and Dependence (or Affiliation or Affection) were regarded as well established (e.g., Adamopoulos, 1982; Horney, 1945; and Schutz, 1958), though they had been referred to by different labels (Horney, though, perhaps the original proponent of the three dimensions, based her theory on the psychoanalytic method).

If one were roughly to associate the previously postulated cognitive dimensions with the emotional dimensions, with each association termed a "motive," then the motive of Activity-Arousal would be expected to lead to behavioral Inclusion, as individuals sought "social stimulation," and the motive of Potency-Helplessness would be expected to lead to behavioral Submission (or Impotency-Control to behavioral Dominance). The motive of Pleasantness-Pleasure, similarly, would be expected to lead to behavioral Dependence (an affectionate inter-dependency), obviously one primal goal of interpersonal relations. But another possible motive, Sublimity-Pleasure ("sublimity"

meaning, literally, "up to the lintel or threshold," suggesting one must have developed psycho-neurologically to apprehend greater social realities), would be expected to lead to behaviors in interpersonal situations which were more cross-situationally inconsistent, though their heterogeneity across situations would be guided or "consistent" with pleasure of a more sublime nature derived from a greater apprehension of social reality and leading, ostensibly, to a more altruistic individual.

The behaviors characterizing the behavioral component of such a moral dimension, then, would be theoretically interrelated, though "apparently heterogeneous" from some third party perspective directly observing an individual across situations. It would, obviously, be a more abstract goal in interpersonal relations (leading to "kindred spirits"), but concreteness does not exist in nature anyway, outside of our conceptual rigidities (except possibly for some elementary particles).

The fourth and final subordinate hypothesis of the investigation, as suggested from the above discussion, was that not only would the sets of dimensions hypothesized to underlie cognition, emotion, and behavior be found, but they would also be organized in forming the four psychological dimensions of Inclusion, Dominance, Dependence, and Morality as postulated. That is, by roughly associating an emotional

dimension with an emotinal component of a psychological dimension, though recognizing that the emotional components may be somewhat heterogeneous, then the constitution of the four psychological dimensions would be as follows: Activity-Arousal-Inclusion, Impotency-Control-Dominance, Pleasantness-Pleasure-Dependence (Affection), and Sublimity-Pleasure-Justice or Altruism, for the psychological dimensions of Inclusion, Dominance, Dependence, and Morality, respectively.

All the hypotheses of the empirical investigation, then, were as follows:

I. The three-dimensional model of Inclusion, Dominance, and Dependence is insufficient and a four-dimensional model consisting of those three psychological dimensions plus the psychological dimension of Morality is empirically supportable (with a tripartite conception of a psychological dimension in terms of cognition, emotion, and behavior being understood).

A. The dimensions underlying the <u>cognitions</u> of an individual in relation to focal-stimulus persons in physical settings are those of Activity, Potency, Pleasantness, and Sublimity (moral perception).

B. The dimensions underlying the <u>emotions</u> of individuals in relation to focal-stimulus persons in physical settings are those of Arousal, Control, and Pleasure.

C. The dimensions underlying the <u>behaviors</u> of individuals in relation to focal-stimulus persons in physical settings are those of Inclusion, Dominance, Dependence, and Justice (moral behavior), though Justice is ostensibly

> heterogeneous, though motivationally or thematically unified (heterogeneous either as a linear composite of Inclusion, Dominance, and Dependence, or even more so than that).
>
> D. Given that a psychological dimension consists of the three components of cognition, emotion, and behavior and that the emotional component is mathematically permitted to be factorially heterogeneous and the behavioral component of the psychological dimension of Morality is heterogeneous--their specific natures for some population inhabiting some subenvironment are generally as follows: Activity-Arousal-Inclusion (for Inclusion), Potency-Helplessness-Submission (for Submission vs. Dominance), Pleasantness-Pleasure-Dependence (for Dependence), and Sublimity-Pleasure-Justice (for Morality). For definitions of all the above dimensions, see Appendix B.

The inchoate theory of dyadic social transaction, however, though postulating only four prototypical psychological dimensions pertaining to focal-stimulus persons (Inclusion, Dominance, Dependence, and Morality) and only two prototypical psychological dimensions pertaining to ambient-stimulus physical settings (Formality-Informality and Constraint-Nonconstraint), postulates four kinds of that prototypical set of four dimensions which synthesize together with two kinds of that prototypical set of two psychological dimensions pertaining to ambient-stimulus physical settings to predict particular dyadic social transactions. The four kinds of the prototypical set of four psychological dimensions pertaining to focal-stimulus

persons are "personal attitudinal dimensions," "personal trait dimensions," "role attitudinal dimensions," and "role trait dimensions."

The personal attitudinal dimensions pertain to the specificity (uniqueness) of the personhood of the focal-stimlus person, and the personal trait dimensions pertain to the generality (common-ness) of the personhood of the focal-stimulus person, where the "personhood" of the focal-stimulus person refers to that person as a person, irrespective of that person's social role. That is, it is postulated that an individual perceives a focal-stimulus person as a particular person (discrimination) and as a person in general (generalization)--as a common representative of a class rather than a unique member--with regard to the personhood of that focal-stimulus person. Analogously, the role attitudinal dimensions and the role trait dimensions refer to the specificity and generality, respectively, with regard to the focal-stimulus person in fulfilling a particular social role. An individual, for example, may have an unfavorable "attitude" toward a doctor due, perhaps, to the doctor's competency, but a generally favorable view (stereotype) toward doctors in general, with such discrimination and generalization entering into his social transactions with that doctor in question--all of

which may be somewhat distinct from the personhood of that doctor, who may be personally congenial but professionally incompetent, etc.

According to the theory of dyadic social transaction, given, therefore, that there are four kinds of the prototypical set of four dimensions pertaining to focal-stimulus persons in social transactions and it would have been overly ambitious to investigate empirically all four in a single study, only the personal trait dimensions were empirically studied. For a particular a priori subenvironment, a particular population fulfilling a social role was identified, and the influence of varying social roles for focal-stimulus persons was reduced or "averaged out" by giving them an approximately equivalent representation when assessing the personal trait dimensions of the sample of subjects from the population. An analogous strategy was followed for averaging out the influence of the setting dimensions from the assessment of the personal trait dimensions.

METHOD

Units of Person-Subenvironment

The units of person-subenvironment empirically investigated were nine female undergraduate students at a university campus (the University of Hawaii-Manoa). The participation of the students was solicited through an

advertisement in their campus newspaper and various other means, and they were each paid twenty-five dollars for their participation (for approximately five hours of work). Prior to their participation, however, the general purpose of the study was explained to them (i.e., to determine the manner in which female undergraduates think, feel, and behave in various social situations on a university campus) as well as what would be required of them, and their informed and voluntary consent was explicitly obtained.

The nine subjects, referred to throughout the report of the investigation as Subjects 1-9, respectively, had a mean age of 24.4 years (Subject Nine was considerably older, at 47). All of the subjects were caucasian, except for two subjects, and all were academically upperclass, except for three of the subjects. More specifically, with respect to age, ethnicity, and academic class status: Subject One was 24, caucasian, and a sophomore; Subject Two was 20, Chinese-American, and a junior; Subject Three was 22, Filipino-American, and a senior; Subject Four was 23, caucasian, and a senior; Subject Five was 20, caucasian, and a junior; Subject Six was 18, caucasian, and a freshman; Subject Seven was 25, caucasian, and a sophomore; Subject Eight was 21, caucasian, and a junior; and Subject Nine was 47, caucasian, and a senior.

Instrumentation

A questionnaire was constructed consisting of two parts--Part I and Part II. Each of those two parts of the questionnaire consisted of the same set of forty different hypothetical social situations presented in paragraph form followed by one of two sets of rating scales, referred to as Response Form A and Response Form B. For the forty situations in each part of the questionnaire, the response forms which followed alternated between Response Form A and Response Form B, with the response form used for each situation in Part II being the alternative of the response form used for that situation in Part I. The presentation of the response forms following the situations in each part, then, were counterbalanced, and, in an ANOVA sense, the forty situations and two response forms were crossed.

Of the forty different hypothetical social situations, each of the four hypothesized personal trait dimensions of Inclusion-Exclusion, Dominance-Submission, Dependence-Independence, and Morality-Immorality was represented by ten hypothetical social situations. For each group of ten social situations representative of a putative dimension, in half of those situations the focal-stimulus person was another student and in the other half of those situations the focal-stimulus person was a professor, with the sex of the focal-stimulus person when stated being female about as

often as male, regardless of social role. And, in half of those situations, the ambient-stimulus physical setting was formal (e.g., a classroom), and in the other half of those situations the ambient-stimulus physical setting was informal (e.g., a snack bar), with the formality or informality of the setting counterbalanced over an ordering of the ten situations beginning with those in which the focal-stimulus person was a student and ending with those in which the focal-stimulus person was a professor.

Although in a university campus there are more social roles than those of student and professor existing in social situations, persons fulfilling other social roles such as maintenance worker or administrator appear to be infrequently involved in social transactions with female undergraduates, at least in the less perfunctory social transactions. To simplify the experimental design of the study, therefore, it was assumed that by equally representing the social roles of student and professor in the social situations, any factors extracted from the collected data would adequately pertain to personal trait dimensions, which were the focus of the study.

A re-examination of the results of the research of Adamopoulos (1982) suggested the other simplification in the experimental design of the investigation regarding the dimensionality of the physical settings. Although

Adamopoulos (1982) found the two dimensions of Formality and Constraint of ambient-stimulus physical settings accounting for the expected behavior of undergraduates in social situations on a university campus, those two dimensions appeared so conceptually related to each other as to be indistinguishable, and it may very well eventually be found that the empirical distinction between those two dimensions is due merely to a difference in the pleasantness of two idealized physical settings (formal and unrestrained) which are actually bipolar opposites of a single dimension.

To avoid over-complication of the design of the empirical investigation, therefore, "unrestrained" physical settings were equated as the opposite of "formal" settings, i.e., as "informal settings," thus accounting for the dimensionality of physical settings with the single bipolar dimension of Formality-Informality. Given that the dimensionality of physical settings was only being incorporated in the study so as to average out its confounding effect on the personal trait dimensions to be extracted, the legitimacy of the simplifying assumption of the unidimensionality of physical settings would ultimately be determined by the results of the study (i.e., whether or not the dimensions extracted expected to be personal trait dimensions were confounded by dimensions of physical settings).

Additionally, for each set of ten hypothetical social situations putatively representative of a hypothesized personal trait dimension, half of those situations were constructed to depict the focal-stimulus person involved as exemplifying one extreme of the cognitive component of the representative personal trait dimension with the expectation that a subject construing that social situation would assess her likely behavior to be characterized by the corresponding opposite of the behavioral component of that personal trait dimension. Similarly, the other half of those situations were constructed to depict the focal-stimulus person as exemplifying the other extreme of the cognitive component of the hypothesized personal trait dimension with the corresponding expectation that a subject construing those situations would assess her likely behavior to be characterized by the corresponding other extreme of the behavioral component of that personal trait dimension.

For the hypothesized personal trait dimension of Activity-Arousal-Inclusion (termed Inclusion), for example, in half of the situations putatively representing that dimension the focal-stimulus person was characterized as active with the expectation the subject would construe that person as such and assess her likely behavior in relation to that person in a manner characterized as inclusive. And, similarly, for the other half of those situations the focal-stimulus person was depicted as passive and the subject was

expected to construe that person correspondingly and subsequently behave in relation to that person in an exclusive manner.

However, although for the ten social situations purportedly representative of the hypothesized personal trait dimension of Morality-Immorality the focal-stimulus person was characterized as virtuous in half those situations and vicious in the other half as indicated by the previous description--the behavior expected of a subject in those situations was correspondingly just or unjust, but ostensibly characterized (with moral considerations extracted) by the behavioral component of one of the other three personal trait dimensions, with those three behavioral components and their opposites approximately equally represented. That is, for the situations depicted by a virtuous focal-stimulus person and the situations depicted by a vicious focal-stimulus person, the subject was likely to characterize her behavior as inclusive or exclusive, dominant or submissive, dependent or independent, contingent upon the nature of the focal-stimulus person (virtuous or vicious), the circumstances of the situation, and the emotion aroused in the subject (the moral sensibility of the subject), with the three behavioral components about equally represented for both the moral and immoral situations.

Finally, for each of ten social situations putatively representative of an hypothesized personal trait dimension, the two opposite extremes of the cognitive component of that dimension depicting the focal-stimulus persons were crossed as closely as possible with the social roles of the focal-stimulus persons and the formality and informality of the physical settings. The sequential order of the total forty situations as it appeared in both parts of the questionnaire was then determined by a counterbalancing of situations according to the putative dimension they represented.

Appendix C presents the forty hypothetical social situations contained in both parts of the questionnaire in the order in which they appeared. The situations representative of Inclusion begin with the first and then occur every fourth one; the situations representative of Dominance begin with the second and then occur every fourth one; the situations representative of Dependence begin with the third then occur every fourth one; and the situations representative of Morality begin with the fourth and then occur every fourth one.

Collectively, Response Form A and Response Form B consisted of fifty bipolar adjectival rating scales. Twenty of the rating scales represented cognitive variables; fifteen of the rating scales represented emotional variables; and fifteen of the rating scales represented

behavioral variables. The twenty bipolar cognitive variables represented the four cognitive components (factors) of the hypothesized personal trait dimensions--that is, the cognitive factors of Activity-Passivity, Potency-Impotency, Pleasantness-Unpleasantness, and Sublimity-Baseness. The fifteen bipolar emotional variables represented the three emotional factors defining the emotional components of the hypothesized personal trait dimensions--that is, the emotional factors of Arousal, Control-Helplessness, and Pleasure-Displeasure. And the fifteen bipolar behavioral variables represented the three hypothesized homogeneous behavioral components of the personal trait dimensions--that is, the behavioral factors of Inclusion-Exclusion, Dominance-Submission, and Dependence-Independence. Each of the hypothesized factors was represented by five variables.

Table 1 presents the fifty variables, and specifies the hypothesized factor they represented and the response form in which they were included. The cognitive variables were selected from one or more previous studies as indicated in the table; the emotional variables were extracted from factor-analytic research by Mehrabian and Russell (1974); and the behavioral variables were selected by reviewing some relevant literature such as Schutz (1958) and Adamopoulos (1982) and by consulting a dictionary and a thesaurus.

The investigator met with the nine subjects separately, and they were each verbally instructed in the completion of the questionnaire, besides being asked to read the written instructions prior to completing the questionnaire. The forty different social situations presented twice amounted to eighty presentations. To prevent fatique, therefore, the questionnaire was divided into five sections consisting of sixteen social situations each, and the subjects were instructed to complete one section a day preferably over a period of five consecutive days, making sure not to miss any more than one or two days.

The beginning of the questionnaire used in the study is presented in Appendix D. Included are the instructions and the first two social situations followed by the two alternative response forms, Form A and Form B. As can be seen, following a paragraph description of a social situation, the subject was asked in relation to the person depicted in that situation how she would likely perceive that person, with bipolar rating scales then following to enable the subject to make such an assessment. Then the subject was asked how she would likely feel toward that person, with some rating scales following, and, finally, how she would likely behave toward that person, with rating scales following. An important instruction to the subjects was that they be sure to read the interrogative question before each of the three sets of rating scales in each

response form (e.g., "How would you likely perceive that person?") before making their assessment for each of those sets--to insure that they would actually be assessing cognition, emotion, or behavior, as the case might be.

RESULTS AND DISCUSSION

The data from the questionnaire of each of the nine subjects were numerically encoded into a provisional data matrix. From that matrix, a raw-score data matrix consisting of the forty different situations presented in Appendix A by the fifty variables shown in Table 1 was generated. For each of the variables, a high value was indicative of the first of the two opposite adjectives describing the opposite extremes of that variable. Additionally, an analogous data matrix was generated for a hypothetically average subject, Subject Ten, by calculating the means of the corresponding elements of the raw-score data matrices of the other subjects (any missing values were excluded from the calculation).

For the nine subjects and the average subject, various distributional properties for each of the fifty variables across the forty situations were calculated from the raw-score data matrices. Rather uniformly, the variables had a somewhat negative kurtosis, probably as a result of the subjects trying to avoid choosing the neutral response option on a scale as they had been instructed (they had been

instructed to avoid choosing the neutral response option to counter any bias toward neutrality whenever it was reasonably appropriate for them to do so). Table 2 presents the mean and standard deviation of each variable for the nine real subjects (Subjects 1-9) and the hypothetically average subject (Subject 10). The scale for each variable consisted of the values -2, -1, 0, +1, and +2, and, as is demonstrated, the variability of the variables--which may have been deficient in a study such as this on intra-individual variation--is substantial.

TABLE 1

COGNITIVE, EMOTIONAL, AND BEHAVIORAL VARIABLES

COGNITIVE VARIABLES

HYPOTHESIZED FACTOR OF ACTIVITY-PASSIVITY

VARIABLE	FORM	NAME	STUDIES
1	A	ACTIVE-PASSIVE	1,5
2	A	FAST-SLOW	1,5
3	A	SHARP-DULL	5
4	B	AGITATED-CALM	5
5	B	HOT-COLD	5

HYPOTHESIZED FACTOR OF POTENCY-IMPOTENCY

VARIABLE	FORM	NAME	STUDIES
6	A	STRONG-WEAK	1,2,4,5
7	A	POWERFUL-POWERLESS	2
8	B	RUGGED-DELICATE	1
9	B	LARGE-SMALL	1,5
10	B	HARD-SOFT	5

HYPOTHESIZED FACTOR OF PLEASANTNESS-UNPLEASANTNESS

VARIABLE	FORM	NAME	STUDIES
11	A	PLEASANT-UNPLEASANT	1
12	A	POLITE-IMPOLITE	1
13	A	NICE-AWFUL	1
14	B	MILD-HARSH	2
15	B	AGREEABLE-DISAGREEABLE	2

TABLE 1 (cont.)

HYPOTHESIZED FACTOR OF SUBLIMITY-BASENESS

VARIABLE	FORM	NAME	STUDIES
16	A	FAIR-UNFAIR	1
17	A	HONEST-DISHONEST	1
18	B	WHOLESOME-UNWHOLESOME	4
19	B	NOBLE-IGNOBLE	4
20	B	JUST-UNJUST	

EMOTIONAL VARIABLES

HYPOTHESIZED FACTOR OF AROUSAL-UNAROUSAL

VARIABLE	FORM	NAME	STUDIES
21	A	STIMULATED-RELAXED	6
22	A	EXCITED-CALM	6
23	B	FRENZIED-SLUGGISH	6
24	B	WIDE-AWAKE--SLEEPY	6
25	B	AROUSED-UNAROUSED	6

HYPOTHESIZED FACTOR OF CONTROL-HELPLESSNESS

VARIABLE	FORM	NAME	STUDIES
26	A	CONTROLLING-CONTROLLED	6
27	A	INFLUENTIAL-INFLUENCED	6
28	A	IN-CONTROL--CARED-FOR	6
29	B	IMPORTANT-AWED	6
30	B	AUTONOMOUS-GUIDED	6

TABLE 1 (cont.)

HYPOTHESIZED FACTOR OF PLEASURE-DISPLEASURE

VARIABLE	FORM	NAME	STUDIES
31	A	HAPPY-UNHAPPY	6
32	A	PLEASED-ANNOYED	6
33	A	SATISFIED-UNSATISFIED	6
34	B	CONTENTED-MELANCHOLIC	6
35	B	HOPEFUL-DESPAIRING	6

BEHAVIORAL VARIABLES

HYPOTHESIZED FACTOR OF INCLUSION-EXCLUSION

VARIABLE	FORM	NAME
36	A	INCLUSIVE-EXCLUSIVE
37	A	ENTERING-EXITING
38	A	COMING-LEAVING
39	B	ARRIVING-DEPARTING
40	B	ASSOCIATING-DISASSOCIATING

BEHAVIORAL VARIABLES

HYPOTHESIZED FACTOR OF DOMINANCE-SUBMISSION

VARIABLE	FORM	NAME
41	A	DOMINANT-SUBMISSIVE
42	A	LEADING-FOLLOWING
43	B	COMMANDING-OBEYING
44	B	RESISTING-YIELDING
45	B	DEMANDING-COMPLYING

TABLE 1 (cont.)

BEHAVIORAL VARIABLES

HYPOTHESIZED FACTOR OF DEPENDENCE-INDEPENDENCE

VARIABLE	FORM	NAME
46	A	RELYING-ON-OTHER--RELYING-ON-ONESELF
47	A	ATTACHING-DETACHING
48	B	AFFECTIONATE-UNAFFECTIONATE
49	B	PERSONAL-IMPERSONAL
50	B	COMFORTING-UNCOMFORTING

Note: "FORM" refers to response form, and studies 1-6 are as follows: 1) Osgood and Suci (1955), 2) Osgood, May, and Miron (1975), 3) Levin (1965), 4) Kuusinen (1969), 5) Wiggins and Fishbein (1969), and 6) Mehrabian and Russell (1974).

TABLE 2

MEAN AND STANDARD DEVIATION OF EACH VARIABLE FOR EACH SUBJECT

	SUBJECTS									
	1	2	3	4	5	6	7	8	9	10
VARIABLES										
1	+0.53	+0.58	+0.68	+0.60	+0.60	+0.60	+0.55	+1.08	+0.80	+0.67
	+1.68	+1.17	+1.73	+1.63	+1.77	+1.89	+1.91	+1.14	+1.38	+1.35
2	+0.65	+0.45	+0.53	+0.75	+0.75	+0.35	+0.95	-0.23	+0.36	+0.51
	+1.66	+0.93	+1.69	+1.32	+1.77	+1.90	+1.50	+1.00	+1.09	+1.07
3	+0.28	+0.38	+0.75	+0.58	+0.50	+0.53	+0.63	+0.95	+0.15	+0.53
	+1.74	+1.13	+1.75	+1.48	+1.84	+1.85	+1.75	+1.13	+1.23	+1.21
4	-0.28	+0.08	+0.00	-0.28	-0.60	-0.50	-0.26	-0.33	-0.26	-0.26
	+1.55	+1.12	+1.80	+1.60	+1.81	+1.84	+1.80	+1.23	+1.31	+1.15
5	+0.10	+0.48	+0.35	+0.13	-0.08	+0.30	+0.40	+0.00	-0.18	+0.17
	+1.39	+1.01	+1.25	+1.22	+1.79	+1.32	+1.65	+1.22	+1.05	+0.80
6	+0.13	+0.48	+0.58	+0.38	+0.78	+0.55	+0.53	+0.85	+0.44	+0.53
	+1.67	+1.18	+1.80	+1.43	+1.66	+1.81	+1.66	+0.80	+1.25	+1.18
7	+0.10	+0.30	+0.35	+0.28	+0.73	+0.23	+0.95	+0.53	+0.41	+0.43
	+1.45	+0.99	+1.72	+1.22	+1.59	+1.70	+1.47	+0.91	+1.14	+1.05
8	+0.08	+0.40	+0.53	+0.40	+0.73	+0.69	+0.53	+0.68	+0.26	+0.47
	+1.58	+0.96	+1.57	+1.22	+1.72	+1.67	+1.40	+0.89	+1.23	+0.99

TABLE 2 (cont.)

VARIABLES	SUBJECTS 1	2	3	4	5	6	7	8	9	10
9	-0.13	-0.08	+0.23	-0.43	+0.00	+0.23	-0.03	-0.36	+0.28	-0.03
	+1.62	+1.21	+1.83	+1.20	+1.95	+1.67	+1.73	+1.14	+1.34	+1.13
10	-0.33	-0.43	+0.18	-0.10	-0.68	+0.25	+0.33	-0.03	-0.08	-0.10
	+1.64	+0.96	+1.62	+1.22	+1.69	+1.58	+1.53	+1.14	+1.01	+0.96
11	+0.05	+0.05	+0.13	+0.03	+0.28	+0.28	-0.05	+0.65	+0.36	+0.19
	+1.69	+1.34	+1.88	+1.59	+1.75	+1.74	+1.74	+1.37	+1.35	+1.36
12	+0.18	+0.48	+0.48	-0.10	+0.55	+0.28	+0.18	+0.65	+0.51	+0.35
	+1.68	+1.13	+1.75	+1.50	+1.78	+1.66	+1.85	+1.19	+1.47	+1.26
13	+0.20	+0.48	+0.63	+0.23	+0.30	+0.45	+0.43	+1.08	+0.59	+0.48
	+1.70	+1.24	+1.74	+1.48	+1.84	+1.57	+1.66	+0.92	+1.23	+1.26
14	+0.38	+0.15	+0.43	+0.13	+0.50	+0.73	+0.35	+0.15	+0.26	+0.34
	+1.64	+1.03	+1.71	+1.54	+1.80	+1.78	+1.78	+1.39	+1.16	+1.23
15	+0.38	+0.38	+0.05	-0.13	+0.35	+0.75	+0.25	+0.80	+0.31	+0.35
	+1.72	+1.19	+1.58	+1.71	+1.79	+1.63	+1.82	+1.38	+1.63	+1.32
16	+0.03	+0.40	+0.55	+0.18	+0.28	+0.33	-0.03	+0.75	+0.44	+0.32
	+1.73	+1.24	+1.78	+1.47	+1.77	+1.61	+1.53	+1.15	+1.33	+1.22
17	+0.45	+0.78	+1.05	+0.53	+0.78	+1.00	+0.65	+0.98	+0.67	+0.77
	+1.63	+0.80	+1.48	+1.13	+1.67	+1.49	+1.53	+1.10	+1.26	+1.06

TABLE 2 (cont.)

VARIABLES	SUBJECTS 1	2	3	4	5	6	7	8	9	10
18	+0.08	+0.45	+0.88	+0.23	+0.53	+0.75	+0.45	+0.98	+0.21	+0.51
	+1.67	+1.26	+1.57	+1.53	+1.69	+1.53	+1.65	+1.00	+1.28	+1.26
19	-0.03	+0.58	+0.95	+0.10	+0.40	+0.73	+0.38	+0.85	-0.10	+0.43
	+1.67	+1.20	+1.52	+1.46	+1.74	+1.52	+1.60	+1.00	+1.23	+1.20
20	+0.10	+0.63	+0.78	+0.30	+0.55	+0.88	+0.50	+0.93	+0.05	+0.53
	+1.75	+1.08	+1.67	+1.51	+1.68	+1.52	+1.66	+1.10	+1.41	+1.24
21	+0.63	+0.51	+0.15	+0.50	+0.73	+0.40	+0.78	+1.00	+0.35	+0.56
	+1.28	+0.91	+1.53	+1.36	+1.54	+1.91	+1.72	+0.99	+1.37	+0.83
22	+0.43	+0.31	-0.20	-0.05	+0.25	-0.55	+0.48	+0.00	-0.63	+0.01
	+1.41	+1.00	+1.65	+1.40	+1.81	+1.81	+1.69	+1.28	+1.15	+0.94
23	+0.30	+0.15	+0.30	+0.30	-0.63	-0.70	+0.43	+0.50	-0.13	+0.01
	+1.29	+1.08	+1.34	+0.94	+1.44	+1.38	+1.24	+1.04	+0.62	+0.73
24	+0.95	+0.23	+0.68	+0.83	+0.98	+0.64	+1.25	+0.38	+1.50	+0.82
	+1.45	+1.06	+1.73	+1.22	+1.53	+1.63	+1.43	+1.37	+0.98	+0.87
25	+0.88	+0.20	+0.48	+0.45	-0.40	+0.38	+0.13	+0.38	+0.79	+0.36
	+1.36	+1.20	+1.87	+1.43	+1.71	+1.75	+1.79	+1.13	+1.07	+0.96
26	+0.13	-0.25	-0.13	-0.08	-0.28	+0.25	-0.95	-0.40	-0.58	-0.25
	+1.14	+1.01	+1.59	+1.39	+1.34	+1.48	+1.22	+0.96	+1.04	+0.82

TABLE 2 (cont.)

VARIABLES	SUBJECTS 1	2	3	4	5	6	7	8	9	10
27	+0.60	-0.54	+0.23	+0.10	-0.35	+0.13	-1.05	+0.60	-0.38	-0.07
	+1.06	+1.02	+1.44	+1.24	+1.51	+1.49	+1.38	+0.96	+1.08	+0.85
28	+0.43	+0.10	+0.50	+0.78	+0.63	+0.65	+0.20	+0.68	+0.26	+0.47
	+1.32	+1.01	+1.55	+1.44	+1.35	+1.53	+1.36	+1.07	+1.33	+0.88
29	+0.13	+0.00	+0.28	+0.23	-0.08	+0.33	+0.33	-0.03	-0.03	+0.13
	+1.36	+1.09	+1.75	+1.19	+1.31	+1.53	+1.51	+1.07	+0.92	+0.56
30	+0.50	+0.25	+0.30	+1.13	+1.78	+1.50	+0.10	+0.93	-0.24	+0.70
	+1.11	+1.26	+1.73	+1.04	+0.80	+1.13	+1.87	+1.02	+1.22	+0.76
31	-0.03	+0.08	+0.18	-0.45	+0.03	-0.28	-0.33	+0.80	+0.20	+0.02
	+1.63	+1.25	+1.84	+1.36	+1.73	+1.74	+1.69	+1.20	+1.34	+1.27
32	-0.10	-0.03	-0.03	-0.55	-0.13	-0.50	-0.43	+0.58	+0.38	-0.09
	+1.55	+1.53	+1.85	+1.41	+1.73	+1.68	+1.88	+1.30	+1.33	+1.24
33	-0.10	+0.00	+0.05	-0.65	-0.10	-0.53	-0.10	+0.68	+0.05	-0.08
	+1.55	+1.28	+1.87	+1.46	+1.80	+1.68	+1.74	+1.19	+1.24	+1.22
34	+0.05	+0.10	+0.08	-0.03	-0.05	+0.13	+0.23	+0.73	-0.16	+0.13
	+1.50	+1.28	+1.85	+1.17	+1.83	+1.51	+1.67	+1.18	+1.10	+1.14
35	-0.05	+0.30	+0.05	-0.28	+0.23	+0.25	+0.25	+0.53	+0.45	+0.20
	+1.65	+1.47	+1.84	+1.36	+1.76	+1.82	+1.77	+1.32	+1.20	+1.21

TABLE 2 (cont.)

VARIABLES	SUBJECTS 1	2	3	4	5	6	7	8	9	10
36	+0.18	+0.13	-0.15	-0.30	-0.18	-0.08	+0.03	+0.73	+0.43	+0.09
	+1.66	+1.11	+1.86	+1.52	+1.72	+1.85	+1.92	+1.34	+1.39	+1.21
37	+0.00	+0.33	+0.08	-0.25	-0.25	-0.18	-0.20	+0.58	+0.55	+0.07
	+1.70	+1.00	+1.80	+1.48	+1.68	+1.84	+1.94	+1.17	+1.43	+1.11
38	+0.00	+0.28	-0.35	-0.38	-0.18	-0.10	-0.23	+0.25	+0.45	-0.03
	+1.64	+1.01	+1.79	+1.58	+1.71	+1.87	+1.87	+1.17	+1.66	+1.12
39	+0.05	+0.50	+0.13	-0.18	+0.03	+0.03	-0.05	+0.59	+0.16	+0.14
	+1.65	+0.91	+1.73	+1.47	+1.76	+1.78	+1.87	+1.16	+1.39	+1.11
40	+0.20	+0.68	+0.13	-0.25	+0.00	+0.08	+0.28	+0.71	+0.63	+0.27
	+1.73	+0.92	+1.76	+1.48	+1.86	+1.86	+1.87	+1.33	+1.60	+1.22
41	+0.43	-0.15	+0.38	+0.48	+0.30	+0.35	+0.13	+0.20	+0.05	+0.24
	+1.13	+0.98	+1.43	+1.11	+1.04	+1.44	+1.80	+1.16	+1.24	+0.88
42	+0.75	-0.03	+0.35	+0.83	+0.38	+0.18	-0.08	+0.38	+0.05	+0.31
	+1.03	+1.05	+1.53	+1.22	+1.30	+1.38	+1.89	+1.08	+1.48	+0.85
43	+0.03	+0.23	+0.03	+0.30	+0.28	+0.58	-0.05	+0.10	-0.05	+0.16
	+1.21	+1.03	+1.42	+1.16	+1.20	+1.28	+1.65	+1.13	+0.84	+0.87
44	+0.15	-0.85	+0.05	+0.48	+0.35	+0.33	-0.20	-0.13	+0.00	+0.02
	+1.39	+0.66	+1.75	+1.50	+1.46	+1.40	+1.74	+1.22	+1.38	+1.01

TABLE 2 (cont.)

VARIABLES	SUBJECTS 1	2	3	4	5	6	7	8	9	10
45	+0.00	-0.58	+0.13	+0.43	-0.08	+0.18	-0.40	-0.54	-0.55	-0.16
	+1.18	+0.96	+1.62	+1.11	+1.39	+1.32	+1.61	+1.00	+1.03	+0.92
46	-1.25	-0.18	-0.33	-1.15	-1.55	-1.23	-0.58	-0.48	-0.78	-0.83
	+0.98	+1.04	+1.70	+1.35	+1.01	+1.42	+1.84	+1.40	+1.31	+0.84
47	-0.08	+0.03	-0.23	-0.50	-0.18	-0.18	-0.23	+0.28	+0.50	-0.07
	+1.61	+1.05	+1.75	+1.47	+1.71	+1.80	+1.83	+1.55	+1.59	+1.19
48	+0.00	+0.05	-0.05	-0.90	+0.18	+0.28	+0.08	+0.67	+0.13	+0.05
	+1.70	+1.15	+1.80	+1.19	+1.84	+1.69	+1.72	+1.20	+1.02	+1.20
49	+0.08	-0.10	-0.10	-0.55	+0.05	+0.13	+0.08	+0.44	+0.03	+0.01
	+1.72	+1.15	+1.78	+1.40	+1.91	+1.77	+1.89	+1.27	+1.26	+1.22
50	+0.10	+0.50	+0.13	-0.40	+0.23	+0.23	+0.15	+0.92	+0.29	+0.24
	+1.82	+0.93	+1.76	+1.50	+1.87	+1.83	+1.86	+0.81	+1.29	+1.20

Note: Mean is upper value and standard deviation is lower value.

Following the assessment of the distributional properties of the fifty variables, standardized score matrices were then generated from the raw-score data matrices, following the insertion of means for missing values. That is, for each subject and the average subject, for each variable the raw-score mean of that variable across the forty situations was inserted for any missing values, and all of the values for that variable were then standardized across situations (not subjects). Later analyses were then based upon complete, standardized data matrices.

Factor-Analytic Procedure

For each subject, real or hypothetical, a sequential range of factorial solutions according to the number of factors extracted was obtained for each set of variables--cognitive, emotional, and behavioral. Each range of factorial solutions was considered as representing the plausible factorial solutions encompassing the best factorial solution for that subject for that set of variables. That range was decided upon according to considerations external to the data, such as previous theoretical expectations, and according to more objective, multiple criteria which could be applied to the data itself.

The numerous criteria applicable in determining the range of factorial solutions internal to the investigation, the internal criteria, included the following: A) The Scree

test for the number of common factors (Cattell, 1966), though recognizing it as a somewhat subjective criterion which may be influenced by personal bias. B) The Kaiser-Guttman eigenvalue-of-one criterion (Kaiser, 1961), referred to as the "KG" criterion. C) The percentage and cumulative percentage of common variance attributable to the extraction of each successive factor, using 5% and 90% as explicitly stated criteria for the percentage and cumulative percentage, respectively. D) The number of common factors rotated orthogonally by the analytic Varimax procedure (Kaiser, 1958) which have greater than unit variance, called here the "New Kaiser" or "NK" criterion. E) The number of common factors rotated obliquely by the analytic Harris-Kaiser procedure (Harris & Kaiser, 1964) with greater than unit variance with the variance attributable to the other factors partialled out, referred to here as the "HK" criterion. And F) the criterion of psychological "Importance," based upon an examination of the obtained range of factorial solutions and selecting that solution which was best, as recommended by Hakstian and Muller (1973), taking everything into consideration, especially the psychological meaningfulness of the solution. The last criterion, "Importance," then, entailed extending the range of factorial solutions if a compelling solution was not initially found until one was.

The number of orthogonally rotated common factors with unit variance or more, when used as a criterion in deciding upon the number of factors is based upon the rationale of the Kaiser-Guttman eigenvalue-of-one criterion. According to the KG criterion, for a principal component to have a correlation with any ideal factor it may purport to represent, it must have more than unit variance. When applied to common factors, however, that criterion, though sometimes worth considering, fails to consider the fact that the common variance is redistributed over the factors following their transformation (rotation). Hence, the unit-variance criterion should be applied, as Hakstian and Muller (1973) have recommended, to the common factors <u>after</u> their transformation. Analogously, the number of obliquely rotated factors with more than unit variance after the influence of the other factors has been partialled out (the number of reference vectors with more than unit variance) applies that same reasoning for an orthogonal solution to an oblique solution.

The percentage and cumulative percentage of common variance attributable to the extraction of each successive factor as reported and when used as a criterion for deciding upon the number of factors for a set of variables were obtained as follows: For each variable, its highest correlation with the other variables was used as its initial communality estimate. The initial reduced correlation

matrix (with initial communality estimates in the diagonal) was then factored by Hottelling's principal-axis method (see Harman, 1979), iterating for the final communality estimates with the number of factors initially specified as equal to the number of variables and after the first iteration re-specified as equal to the number of non-negative eigenvalues. The number of non-negative eigenvalues following the first iteration may be considered effectively as the absolute maximum possible number of factors, as Comrey (1973) has stated, though it is usually likely to overestimate the number of factors, as Digman and Takamoto-Chock (1981) have reported from their experience.

After deciding upon a sequential range of factorial solutions for a set of variables for all the subjects, each factorial solution was obtained by the Hottelling principal-axis method for the appropriately specified number of factors, using the highest correlation of a variable with the others as its initial communality estimate and then iterating for the final communality estimate. The common factors from the principal-axis solution were then rotated to their final position by the Harris-Kaiser Case II Orthoblique analytic procedure (Harris & Kaiser, 1964), with an Equamax rotation (Saunders, Note 13) used as the initial orthogonal rotation and with the power parameter specified

as 0.30 (the power of the square roots of the eigenvalues by which the eigenvectors are scaled within the oblique phase of the rotational procedure).

Although the simple structure of each factorial solution obtained may have been improved by graphical rotations followed by a restricted topographical procedure such as Maxplane (Cattell & Muerle, 1960) to refine the rotational process (Burdsal & Bolton, 1979; Campbell, Note 6; Note 8), such precision was not thought worthwhile given the nature of the particular investigation being conducted. Additionally, it was believed that greater generalizability of factorial solutions across subjects might be obtained by terminating the rotational process with the Harris-Kaiser analytic rotation. Moreover, terminating the rotational process with the analytic Harris-Kaiser solution avoided any concerns others might have regarding the intrusion of subjectivity into the rotational process if graphical rotations were performed.

In interpreting the factors within a factor pattern matrix, it is often useful to identify those variables with <u>salient</u> loadings on each of the factors. Throughout the interpretations of factor patterns within this empirical investigation, a "salient loading" of a variable on a factor is provisionally defined as one which has an absolute value greater than or equal to +0.35 <u>and</u> the square root of the

mean of the squared loadings of the matrix. It will therefore have an absolute magnitude of at least +0.35 but usually more, depending upon the magnitude of all the loadings of the matrix within which it is embedded.

Given the previously stated provisional definition of a salient loading of a variable on a factor, one objective criterion used throughout this investigation for deciding if a hypothesized factor emerged within a factorial solution was if a majority of the variables representative of that hypothesized factor loaded saliently upon a factor being considered as the same. Each of the hypothesized factors was represented, presumably, by five variables. According to the criterion, therefore, three or more of the variables representative of a hypothesized factor were required to have salient loadings on a factor for that factor to be interpreted as the one hypothesized.

An objective index used in the investigation for determining the similarity of two empirically derived factors for different subjects was the index recommended by Wrigley and Neuhaus (1955). That index, referred to in this investigation as the "proportionality coefficient," is the scalar product of the two column vectors of the factors from their respective factor pattern matrices, following their normalization. For two factors, it is based upon the degree of proportionality of their variable loadings, for an

identical set of variables. Given certain conditions, the proportionality coefficient is equal to the canonical correlation between the two sets of variables (Wrigley & Neuhaus, 1955).

Any two factors interpreted substantively as the same were considered identical if their proportionality coefficient was +0.71 or greater. The critical value of +0.71 was chosen based upon the rationale that the proportionality coefficient is analogous to the correlation coefficient between the two factors and that it is necessary that the point estimate of the proportionality coefficient of the two factors indicate they are <u>probably</u> more similar than dissimilar. Because two factors must have a correlation greater than +0.707 to be more similar than dissimilar, +0.71 was therefore chosen as the critical value for deciding if two factors interpreted the same were to be considered identical.

As previously noted, given certain conditions, the proportionality coefficient of two factors is equal to the canonical correlation coefficient of their two sets of variables, thus supporting the critical value of +0.71 for a proportionality coefficient between two variables as a reasonable one. The critical value of +0.71, furthermore, may be considered as reasonably stringent when one considers

that each factor is determined from a small number of variables and a relatively small number of cases (situations).

Finally, in the investigation to be reported, the criterion selected for determing the generalizability of a common factor across subjects was that at least seven of the nine proportionality coefficients relating that factor for the average subject to the other nine real subjects must meet the previously stated critical value of +0.71 or greater for factor matching. In choosing that criterion, it was decided that if a common factor is considered an operational definition of a common trait, then a reasonably stringent criterion of a common trait in a population is that it be shared by at least 95% of the population. Testing the null hypothesis, then, that a factor for an average subject generalizes to 95% of a population leads to its rejection at a significance level of 0.008 when that factor for the average subject fails to match at least seven of the nine subjects in the sample, as may be ascertained from a set of binomial tables (Daniel, 1978).

In the criterion of factor generalizability stated above, the requirement that a factor exists in at least 95% of the population is reasonably stringent, without being overly so. For, if a common factor is an operational definition of a common trait, then by definition it must be "common" to the

individuals within a population. Yet, requiring a trait to be common to all members of a population would be overly stringent not only because it might make it too difficult to demonstrate any common traits, but because it would likely make the task unrealistic. For, to use an analogy, if one were to require that a physical trait such as vision be shared by all members of a population, then in most populations one might define, vision would not be a common physical trait, because some members are likely to be blind. Clearly, then, it would seem that a common trait needs to be confidently considered common to individuals within a population, though not necessarily quite common to all. Requiring a common trait to be shared by 95% of a population to be operationally defined as "common," then, would grant a conventional level of confidence, a necessary degree of rigor, without being overly stringent and making the identification of common traits unrealistic.

Cognitive Factors

Factorial solutions were obtained for the twenty cognitive variables previously presented in Table 1. Those twenty variables were purportedly representative of the four hypothesized cognitive factors of Activity (Variables 1-5), Potency (Variables 6-10), Pleasantness (Variables 11-15), and Sublimity (Variables 16-20).

The sequential range of factorial solutions was from two to four factors and was obtained for all of the subjects, including the hypothetical average subject. The considerations external to the data which influenced the range of factorial solutions chosen included the fact that four factors had been hypothesized and variables had been chosen to be equally representative of those hypothesized factors, thus making it unlikely that more than four substantively meaningful factors would emerge from the data. Additionally, previous research using the Semantic-Differential in the domain of personality suggested that as few as two factors would be found (Hallworth, 1965), as did Eysenck's earlier two-factor theory of personality (H. J. Eysenck & S. B. G. Eysenck, 1969). And, of course, the research of Osgood and his associates in the area of psycholinguistics (e.g., Osgood and Suci, 1955) and the popular three-dimensional theory of interpersonal relations by Adamopoulos (1982), Horney (1945), and Schutz (1958) all suggested that three factors would emerge from the data.

Table 3 presents the common variance of the cognitive variables attributable to the extraction of successive factors for each of the subjects. For the average subject, Subject Ten, whose data would, of course, best exemplify any general characteristics for the real subjects, it may be observed that the first factor extracted accounted for 60% of the common variance and the second factor accounted for

31%, making the cumulative common variance attributable to the first two factors above 91%. Notably, the third factor extracted accounted for a mere 4% of the common variance.

Table 4 presents the criteria internal to the empirical investigation itself for determining the number of factors. Clearly, those criteria support the range of factorial solutions varying from two to four factors chosen for the subjects.

The primary reason the criterion of Importance often indicated fewer factors than the other criteria and some of those other criteria on a small number of occasions indicated more than four factors was related to the manner in which the questionnaire was constructed. Because each of the forty hypothetical social situations was presented twice in the questionnaire with one of two different sets of rating scales each time, for a set of variables representative of the same substantive factor, those within the same response form tended to covary more with one another than with those other variables in the other response form, due to differences in the mood of the subject and so forth on the two assessment occasions. Consequently, when more factors were extracted for a solution than the number of existing substantive factors, pairs of factors were often representative of the same substantive factor, though as represented by the two different sets of variables

from the two response forms. They were in essence the same substantive factor though as measured by the two alternate forms, and, hence, they may be referred to as "form factors."

Two-Factor Solution of Cognition. Tables 5-14 present the factor patterns for the two-factor solutions of the twenty cognitive variables for subjects 1-10, respectively. The first factor for all the subjects which accounts for the most variance is interpreted as the factor of Evaluation found initially by Osgood and Suci (1955). For each subject, Variables 11-15 representative of the hypothesized factor of Pleasantness and Variables 16-20 representative of the hypothesized factor of Sublimity all have salient and highest loadings (i.e., greater than +0.35 and the root mean of squared loadings) on that factor. The second factor for all the subjects is interpreted as Dynamism, and it appears to be one of the two factors found by Hallworth (1965) which he labelled by that same name. It is a combination of the two hypothesized factors of Inclusion and Potency, represented by Variables 1-5 and Variables 6-10, respectively. Of the two sets of variables representative of those two hypothesized factors of Inclusion and Potency, a majority of that combined set of ten variables have salient and highest loadings on the factor of Dynamism for all subjects except for four--Subject One, Subject Five, Subject Eight, and Subject Nine.

TABLE 3

PERCENTAGE OF COMMON VARIANCE OF COGNITIVE VARIABLES ATTRIBUTABLE TO EXTRACTION OF SUCCESSIVE FACTORS

	SUBJECTS									
FACTORS	1	2	3	4	5	6	7	8	9	10
1	68	52	46	56	66	53	52	53	51	60
	68	52	46	56	66	53	52	53	51	60
2	22	35	33	28	20	28	30	19	20	31
	90	87	79	84	86	81	83	71	71	91
3	03	08	06	07	05	05	05	10	08	04
	93	95	84	91	91	86	87	82	79	95
4	02	03	05	05	03	04	04	08	06	02
	96	98	89	95	94	91	92	90	85	97
5	01	03	03	03	03	04	03	03	05	01
	97	100	92	98	96	94	95	93	89	98
6	01	--	03	02	02	02	02	03	04	01
	98	--	96	99	98	96	97	96	93	99
7	01	--	02	01	01	02	02	03	03	00
	99	--	98	100	99	98	99	99	96	99
8	01	--	01	--	01	02	01	02	02	00
	100	--	99	--	100	100	100	100	98	100
9	--	--	01	--	--	--	--	--	02	--
	--	--	100	--	--	--	--	--	100	--

Note: Upper value and lower value are, respectively, the percentage and cumulative percentage of common variance attributable to that corresponding factor.

TABLE 4

CRITERIA FOR DETERMINING NUMBER OF COGNITIVE FACTORS

	CRITERIA						
SUBJECTS	SCREE	KG	INCREMENT	CUMULATIVE	NK	HK	IMPORTANCE
1	3	2	2	2	3	2	2
2	3	3	3	3	4	4	3
3	3	4	3	5	4	4	3
4	3	3	3	3	4	4	3
5	3	3	3	3	4	3	2
6	2	3	3	4	4	4	3
7	4	3	4	4	5	4	3
8	4	4	5	4	4	4	3
9	2	5	4	6	5	4	2
10	2	2	2	3	2	3	2

Note: Increment criterion is greater than or equal to 5 per cent of the common variance, and cumulative criterion is less than or equal to 90 per cent of the common variance.

TABLE 5

TWO-FACTOR SOLUTION OF COGNITION FOR SUBJECT ONE

		I	II
		EVALUATION	DYNAMISM
1	ACTIVE-PASSIVE	-0.07	+0.81*
2	FAST-SLOW	+0.27	+0.89*
3	SHARP-DULL	+0.82*	+0.42
4	AGITATED-CALM	-0.56	+0.48
5	HOT-COLD	+0.39	+0.13
6	STRONG-WEAK	+0.75*	+0.52
7	POWERFUL-POWERLESS	+0.60	+0.66*
8	RUGGED-DELICATE	-0.23	+0.76*
9	LARGE-SMALL	+0.96*	+0.14
10	HARD-SOFT	-0.64*	+0.61
11	PLEASANT-UNPLEASANT	+0.97*	+0.04
12	POLITE-IMPOLITE	+0.88*	-0.20
13	NICE-AWFUL	+0.96*	-0.03
14	MILD-HARSH	+0.66*	-0.61
15	AGREEABLE-DISAGREEABLE	+0.92*	-0.11
16	FAIR-UNFAIR	+0.93*	-0.07
17	HONEST-DISHONEST	+0.92*	-0.20
18	WHOLESOME-UNWHOLESOME	+0.95*	+0.16
19	NOBLE-IGNOBLE	+0.98*	+0.05
20	JUST-UNJUST	+0.96*	-0.03

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 6

TWO-FACTOR SOLUTION OF COGNITION FOR SUBJECT TWO

		I	II
		EVALUATION	DYNAMISM
1	ACTIVE-PASSIVE	-0.05	+0.87*
2	FAST-SLOW	+0.04	+0.90*
3	SHARP-DULL	+0.48	+0.68*
4	AGITATED-CALM	-0.61*	+0.40
5	HOT-COLD	+0.67*	+0.10
6	STRONG-WEAK	+0.17	+0.90*
7	POWERFUL-POWERLESS	+0.00	+0.80*
8	RUGGED-DELICATE	-0.12	+0.82*
9	LARGE-SMALL	+0.77*	+0.34
10	HARD-SOFT	-0.48	+0.53
11	PLEASANT-UNPLEASANT	+0.75*	+0.40
12	POLITE-IMPOLITE	+0.82*	+0.09
13	NICE-AWFUL	+0.84*	+0.18
14	MILD-HARSH	+0.63*	-0.54
15	AGREEABLE-DISAGREEABLE	+0.76*	-0.19
16	FAIR-UNFAIR	+0.73*	+0.04
17	HONEST-DISHONEST	+0.71*	+0.03
18	WHOLESOME-UNWHOLESOME	+0.80*	-0.21
19	NOBLE-IGNOBLE	+0.83*	+0.06
20	JUST-UNJUST	+0.86*	-0.14

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 7

TWO-FACTOR SOLUTION OF COGNITION FOR SUBJECT THREE

		I	II
		EVALUATION	DYNAMISM
1	ACTIVE-PASSIVE	-0.11	+0.89*
2	FAST-SLOW	+0.01	+0.85*
3	SHARP-DULL	+0.09	+0.93*
4	AGITATED-CALM	-0.50	+0.31
5	HOT-COLD	+0.09	+0.26
6	STRONG-WEAK	+0.15	+0.93*
7	POWERFUL-POWERLESS	+0.10	+0.85*
8	RUGGED-DELICATE	-0.16	+0.83*
9	LARGE-SMALL	+0.44	+0.62
10	HARD-SOFT	-0.62*	+0.60*
11	PLEASANT-UNPLEASANT	+0.70*	+0.42
12	POLITE-IMPOLITE	+0.84*	+0.11
13	NICE-AWFUL	+0.89*	+0.09
14	MILD-HARSH	+0.79*	-0.32
15	AGREEABLE-DISAGREEABLE	+0.79*	-0.20
16	FAIR-UNFAIR	+0.87*	+0.15
17	HONEST-DISHONEST	+0.74*	+0.11
18	WHOLESOME-UNWHOLESOME	+0.89*	-0.04
19	NOBLE-IGNOBLE	+0.83*	+0.14
20	JUST-UNJUST	+0.88*	+0.02

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 8

TWO-FACTOR SOLUTION OF COGNITION FOR SUBJECT FOUR

		I	II
		EVALUATION	DYNAMISM
1	ACTIVE-PASSIVE	-0.27	+0.77*
2	FAST-SLOW	-0.27	+0.82*
3	SHARP-DULL	+0.25	+0.72*
4	AGITATED-CALM	-0.35	+0.09
5	HOT-COLD	+0.61*	+0.18
6	STRONG-WEAK	+0.38	+0.78*
7	POWERFUL-POWERLESS	+0.09	+0.76*
8	RUGGED-DELICATE	+0.02	+0.84*
9	LARGE-SMALL	+0.50	+0.60*
10	HARD-SOFT	-0.29	+0.68*
11	PLEASANT-UNPLEASANT	+0.92*	+0.13
12	POLITE-IMPOLITE	+0.90*	-0.04
13	NICE-AWFUL	+0.92*	+0.10
14	MILD-HARSH	+0.85*	-0.42
15	AGREEABLE-DISAGREEABLE	+0.91*	-0.04
16	FAIR-UNFAIR	+0.91*	-0.02
17	HONEST-DISHONEST	+0.78*	+0.19
18	WHOLESOME-UNWHOLESOME	+0.94*	-0.02
19	NOBLE-IGNOBLE	+0.90*	+0.08
20	JUST-UNJUST	+0.90*	-0.06

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 9

TWO-FACTOR SOLUTION OF COGNITION FOR SUBJECT FIVE

		I	II
		EVALUATION	DYNAMISM
1	ACTIVE-PASSIVE	-0.40	+0.76*
2	FAST-SLOW	+0.39	+0.69*
3	SHARP-DULL	+0.73*	+0.37
4	AGITATED-CALM	-0.76*	-0.07
5	HOT-COLD	+0.33	+0.32
6	STRONG-WEAK	+0.05	+0.84*
7	POWERFUL-POWERLESS	-0.04	+0.88*
8	RUGGED-DELICATE	+0.07	+0.74*
9	LARGE-SMALL	+0.64*	+0.48
10	HARD-SOFT	-0.40	+0.44
11	PLEASANT-UNPLEASANT	+0.95*	+0.00
12	POLITE-IMPOLITE	+0.95*	-0.19
13	NICE-AWFUL	+0.93*	+0.10
14	MILD-HARSH	+0.88*	-0.08
15	AGREEABLE-DISAGREEABLE	+0.94*	+0.10
16	FAIR-UNFAIR	+0.94*	+0.02
17	HONEST-DISHONEST	+0.93*	-0.12
18	WHOLESOME-UNWHOLESOME	+0.95*	+0.00
19	NOBLE-IGNOBLE	+0.93*	+0.10
20	JUST-UNJUST	+0.99*	-0.02

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 10

TWO-FACTOR SOLUTION OF COGNITION FOR SUBJECT SIX

		I	II
		EVALUATION	DYNAMISM
1	ACTIVE-PASSIVE	-0.20	+0.71*
2	FAST-SLOW	+0.13	+0.83*
3	SHARP-DULL	+0.44	+0.71*
4	AGITATED-CALM	-0.64*	+0.35
5	HOT-COLD	+0.12	+0.54
6	STRONG-WEAK	+0.25	+0.86*
7	POWERFUL-POWERLESS	-0.18	+0.58*
8	RUGGED-DELICATE	-0.41	+0.72*
9	LARGE-SMALL	+0.30	+0.68*
10	HARD-SOFT	-0.53	+0.58*
11	PLEASANT-UNPLEASANT	+0.80*	+0.33
12	POLITE-IMPOLITE	+0.86*	+0.06
13	NICE-AWFUL	+0.89*	+0.21
14	MILD-HARSH	+0.78*	-0.44
15	AGREEABLE-DISAGREEABLE	+0.95*	-0.15
16	FAIR-UNFAIR	+0.85*	+0.15
17	HONEST-DISHONEST	+0.69*	+0.17
18	WHOLESOME-UNWHOLESOME	+0.88*	+0.01
19	NOBLE-IGNOBLE	+0.82*	+0.29
20	JUST-UNJUST	+0.95*	-0.02

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 11

TWO-FACTOR SOLUTION OF COGNITION FOR SUBJECT SEVEN

		I	II
		EVALUATION	DYNAMISM
1	ACTIVE-PASSIVE	-0.23	+0.71*
2	FAST-SLOW	-0.15	+0.90*
3	SHARP-DULL	+0.27	+0.75*
4	AGITATED-CALM	-0.30	+0.21
5	HOT-COLD	+0.69*	+0.42
6	STRONG-WEAK	+0.49	+0.78*
7	POWERFUL-POWERLESS	+0.23	+0.75*
8	RUGGED-DELICATE	-0.17	+0.86*
9	LARGE-SMALL	+0.61*	+0.47
10	HARD-SOFT	-0.32	+0.79*
11	PLEASANT-UNPLEASANT	+0.87*	+0.01
12	POLITE-IMPOLITE	+0.88*	-0.13
13	NICE-AWFUL	+0.92*	-0.18
14	MILD-HARSH	+0.67*	-0.51
15	AGREEABLE-DISAGREEABLE	+0.83*	-0.10
16	FAIR-UNFAIR	+0.87*	+0.09
17	HONEST-DISHONEST	+0.88*	-0.11
18	WHOLESOME-UNWHOLESOME	+0.87*	-0.18
19	NOBLE-IGNOBLE	+0.90*	+0.23
20	JUST-UNJUST	+0.93*	+0.11

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 12

TWO-FACTOR SOLUTION OF COGNITION FOR SUBJECT EIGHT

		I	II
		EVALUATION	DYNAMISM
1	ACTIVE-PASSIVE	-0.13	+0.80*
2	FAST-SLOW	-0.14	+0.44
3	SHARP-DULL	+0.24	+0.76*
4	AGITATED-CALM	-0.21	+0.11
5	HOT-COLD	+0.63*	+0.10
6	STRONG-WEAK	-0.06	+0.88*
7	POWERFUL-POWERLESS	-0.08	+0.55*
8	RUGGED-DELICATE	+0.04	+0.35
9	LARGE-SMALL	+0.54*	+0.47
10	HARD-SOFT	-0.63*	+0.20
11	PLEASANT-UNPLEASANT	+0.81*	+0.01
12	POLITE-IMPOLITE	+0.67*	-0.07
13	NICE-AWFUL	+0.64*	+0.03
14	MILD-HARSH	+0.76*	-0.11
15	AGREEABLE-DISAGREEABLE	+0.91*	+0.09
16	FAIR-UNFAIR	+0.88*	+0.00
17	HONEST-DISHONEST	+0.66*	-0.09
18	WHOLESOME-UNWHOLESOME	+0.77*	+0.10
19	NOBLE-IGNOBLE	+0.85*	-0.01
20	JUST-UNJUST	+0.87*	-0.11

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 13

TWO-FACTOR SOLUTION OF COGNITION FOR SUBJECT NINE

		I	II
		EVALUATION	DYNAMISM
1	ACTIVE-PASSIVE	-0.27	+0.79*
2	FAST-SLOW	-0.03	+0.77*
3	SHARP-DULL	+0.54*	+0.49
4	AGITATED-DULL	-0.73*	-0.13
5	HOT-COLD	+0.19	+0.10
6	STRONG-WEAK	+0.30	+0.73*
7	POWERFUL-POWERLESS	+0.23	+0.73*
8	RUGGED-DELICATE	-0.41	+0.47
9	LARGE-SMALL	+0.52	+0.28
10	HARD-SOFT	-0.23	+0.44
11	PLEASANT-UNPLEASANT	+0.75*	+0.13
12	POLITE-IMPOLITE	+0.65*	+0.03
13	NICE-AWFUL	+0.80*	+0.22
14	MILD-HARSH	+0.79*	-0.44
15	AGREEABLE-DISAGREEABLE	+0.77*	+0.03
16	FAIR-UNFAIR	+0.70*	+0.20
17	HONEST-DISHONEST	+0.73*	+0.16
18	WHOLESOME-UNWHOLESOME	+0.89*	-0.17
19	NOBLE-IGNOBLE	+0.82*	-0.16
20	JUST-UNJUST	+0.82*	+0.01

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 14

TWO-FACTOR SOLUTION OF COGNITION FOR SUBJECT TEN

		I	II
		EVALUATION	DYNAMISM
1	ACTIVE-PASSIVE	-0.26	+0.88*
2	FAST-SLOW	-0.01	+0.97*
3	SHARP-DULL	+0.51	+0.77*
4	AGITATED-CALM	-0.68*	+0.21
5	HOT-COLD	+0.59	+0.43
6	STRONG-WEAK	+0.30	+0.91*
7	POWERFUL-POWERLESS	+0.11	+0.87*
8	RUGGED-DELICATE	-0.24	+0.94*
9	LARGE-SMALL	+0.70*	+0.60
10	HARD-SOFT	-0.65*	+0.70*
11	PLEASANT-UNPLEASANT	+0.94*	+0.18
12	POLITE-IMPOLITE	+0.95*	-0.08
13	NICE-AWFUL	+0.97*	+0.05
14	MILD-HARSH	+0.90*	-0.42
15	AGREEABLE-DISAGREEABLE	+0.97*	-0.04
16	FAIR-UNFAIR	+0.96*	+0.05
17	HONEST-DISHONEST	+0.92*	+0.00
18	WHOLESOME-UNWHOLESOME	+0.96*	+0.00
19	NOBLE-IGNOBLE	+0.95*	+0.16
20	JUST-UNJUST	+0.99*	+0.01

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

For the average subject, Subject Ten, the two factors of Evaluation and Dynamism were correlated negligibly (+0.06), and they were therefore essentially orthogonal, though obliquity was permitted in the rotation procedure. Additionally, as the factor pattern for Subject Ten in Table 14 indicates, Variable 9 (Large-Small) which was expected to represent the hypothesized factor of Potency and therefore should have loaded on the factor of Dynamism obtained, instead tended to load the derived factor of Evaluation. Similarly, Variable 4 (Agitated-Calm) and Variable 5 (Hot-Cold) which were expected to represent the hypothesized factor of Inclusion and therefore load on the obtained factor of Dynamism instead tended to load the derived factor of Evaluation, with Variable 4 (Agitated-Calm) loading it inversely.

The fact that many of the loadings in the factor patterns for the cognitive variables were so high, as well as for the other variables, was attributable to the high inter-correlations among subsets of the variables. The high inter-correlations among subsets of the variables, in turn, were due to the fact that the variables were selected to represent hypothesized factors, and subsets of those variables would therefore be expected to be highly correlated. Additionally, unlike conventional factor-analytic studies in which the variables were confounded with settings and correlated across different persons, the

variables in the investigation conducted were correlated across situations for the same person. The assessment of all the variables after each situation by the same subject would, then, be expected to lead to subsets of variables which were highly inter-correlated, especially when many of those variables were very similar in meaning.

For the two-factor solution of the cognitive variables, Table 15 presents a matrix of the proportionality coefficients (Wrigley & Neuhaus, 1955) of the first factor of Evaluation for all of the subjects, and Table 16 displays a proportionality coefficient matrix of the second factor of Dynamism for all of the subjects. As can be seen, all of the coefficients are positive and very high, and in applying the criterion of generalizability discussed previously (i.e., the factor for the average individual must have a proportionality coefficient of at least +0.71 with the factor interpreted as the same for at least seven of the nine subjects for the factor to be considered generalizable), both of the factors of Evaluation and Dynamism generalize across subjects (i.e., the assertion of generalizability for the two factors is consistent with the data). All of the coefficients in the last row (Subject Ten by Subjects 1-10) of Table 15 are above +0.96, and all of the coefficients in the last row of Table 16 are above +0.91.

TABLE 15

PROPORTIONALITY COEFFICIENTS OF EVALUATION FROM TWO-FACTOR SOLUTION OF COGNITION FOR ALL SUBJECTS

	SUBJECTS									
SUBJECTS	1	2	3	4	5	6	7	8	9	10
1	100	96	93	93	94	93	96	88	96	96
2	96	100	95	97	97	95	97	95	96	99
3	93	95	100	96	95	98	95	94	96	98
4	93	97	96	100	95	95	99	97	95	98
5	94	97	95	95	100	97	94	92	96	98
6	93	95	98	95	97	100	94	93	97	97
7	96	97	95	99	94	94	100	95	95	98
8	88	95	94	97	92	93	95	100	90	96
9	96	96	96	95	96	97	95	90	100	98
10	96	99	98	98	98	97	98	96	98	100

Note: Values have been rounded to two decimal places and multiplied by one hundred.

TABLE 16

PROPORTIONALITY COEFFICIENTS OF DYNAMISM FROM TWO-FACTOR SOLUTION OF COGNITION FOR ALL SUBJECTS

	SUBJECTS									
SUBJECTS	1	2	3	4	5	6	7	8	9	10
1	100	93	89	91	87	87	93	81	86	93
2	93	100	97	96	89	95	93	88	94	96
3	89	97	100	97	91	97	95	92	92	98
4	91	96	97	100	94	96	96	91	94	99
5	87	89	91	94	100	89	92	91	91	96
6	87	95	97	96	89	100	94	87	89	97
7	93	93	95	96	92	94	100	86	90	98
8	81	88	92	91	91	87	86	100	88	91
9	86	94	92	94	91	89	90	88	100	93
10	93	96	98	99	96	97	98	91	93	100

Note: Values have been rounded to two decimal places and multiplied by one hundred.

Three-Factor Solution of Cognition. Although the two-factor solution for the cognitive variables was extremely sound and generalized very highly across subjects, it was not the most informative for a majority of the subjects. For Subjects One, Five, Nine, and Ten (the average subject), the two-factor solution was the maximally differentiated solution warranted by their data, but for all the other subjects--Subject Two, Subject Three, Subject Four, Subject Six, Subject Seven, and Subject Eight--a three-factor solution was considered the best for those subjects as individuals. Tables 17-22 display the factor patterns of the three-factor solution for each of those subjects in which the three-factor solution was considered justified--that is, for Subject Two, Subject Three, Subject Four, Subject Six, Subject Seven, and Subject Eight, respectively.

For those subjects in which a three-factor solution was considered warranted, however, the same three factors did not generalize across those subjects as a set, though there appeared to be an order underlying those factorial solutions. In general, one of the factors appeared to be the same as one of the factors in the two-factor solution, i.e., either Evaluation or Dynamism, and the remaining two factors in the three-factor solution appeared to be distinct factors which at the higher-level of generality of the two-factor solution would compose the other factor.

TABLE 17

THREE-FACTOR SOLUTION OF COGNITION FOR SUBJECT TWO

		I	II	III
		PLEASANTNESS	SUBLIMITY	DYNAMISM
1	ACTIVE-PASSIVE	-0.48*	+0.17	+0.74*
2	FAST-SLOW	-0.34	+0.13	+0.82*
3	SHARP-DULL	+0.13	+0.19	+0.76*
4	AGITATED-CALM	-0.96*	+0.18	+0.09
5	HOT-COLD	-0.13	+0.85*	+0.07
6	STRONG-WEAK	-0.06	+0.00	+0.92*
7	POWERFUL-POWERLESS	-0.24	-0.48*	+0.92*
8	RUGGED-DELICATE	-0.46	+0.09	+0.70*
9	LARGE-SMALL	+0.44	+0.30	+0.52*
10	HARD-SOFT	-0.05	-0.64*	+0.52*
11	PLEASANT-UNPLEASANT	+0.50*	+0.21	+0.59*
12	POLITE-IMPOLITE	+0.45	+0.42	+0.26
13	NICE-AWFUL	+0.48*	+0.39	+0.36
14	MILD-HARSH	+0.77*	+0.08	-0.30
15	AGREEABLE-DISAGREEABLE	+0.32	+0.57*	-0.08
16	FAIR-UNFAIR	+0.01	+0.80*	+0.06
17	HONEST-DISHONEST	-0.02	+0.81*	+0.03
18	WHOLESOME-UNWHOLESOME	+0.74*	+0.19	+0.03
19	NOBLE-IGNOBLE	+0.56*	+0.34	+0.26
20	JUST-UNJUST	+0.32	+0.66*	-0.02

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 18

THREE-FACTOR SOLUTION OF COGNITION FOR SUBJECT THREE

		I	II	III
		PLEASANTNESS	SUBLIMITY	DYNAMISM
1	ACTIVE-PASSIVE	-0.01	-0.05	+0.88*
2	FAST-SLOW	-0.04	+0.10	+0.86*
3	SHARP-DULL	+0.14	+0.01	+0.91*
4	AGITATED-CALM	-0.07	-0.45	+0.30
5	HOT-COLD	+0.03	+0.08	+0.26
6	STRONG-WEAK	+0.20	+0.01	+0.90*
7	POWERFUL-POWERLESS	+0.02	+0.14	+0.86*
8	RUGGED-DELICATE	-0.08	-0.04	+0.84*
9	LARGE-SMALL	+0.14	+0.38	+0.61*
10	HARD-SOFT	-0.16	-0.48*	+0.60*
11	PLEASANT-UNPLEASANT	+0.78*	+0.02	+0.32
12	POLITE-IMPOLITE	+0.89*	+0.05	+0.00
13	NICE-AWFUL	+0.93*	+0.07	-0.01
14	MILD-HARSH	+0.30	+0.55*	-0.33
15	AGREEABLE-DISAGREEABLE	+0.58*	+0.28	-0.26
16	FAIR-UNFAIR	+0.91*	+0.07	+0.04
17	HONEST-DISHONEST	+0.20	+0.62*	+0.12
18	WHOLESOME-UNWHOLESOME	+0.01	+0.95*	+0.00
19	NOBLE-IGNOBLE	+0.06	+0.86*	+0.17
20	JUST-UNJUST	+0.08	+0.89*	+0.05

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 19

THREE-FACTOR SOLUTION OF COGNITION FOR SUBJECT FOUR

		I	II	III
		EVALUATION	DOMINANCE	CHARACTER
1	ACTIVE-PASSIVE	-0.14	+0.71*	+0.19
2	FAST-SLOW	-0.06	+0.86*	+0.08
3	SHARP-SLOW	+0.07	+0.10	+0.81*
4	AGITATED-CALM	-0.01	+0.66*	-0.63*
5	HOT-COLD	+0.80*	+0.42	-0.26
6	STRONG-WEAK	+0.29	+0.29	+0.66*
7	POWERFUL-POWERLESS	-0.10	+0.10	+0.87*
8	RUGGED-DELICATE	+0.08	+0.60*	+0.39
9	LARGE-SMALL	+0.60*	+0.52*	+0.16
10	HARD-SOFT	-0.17	+0.61*	+0.19
11	PLEASANT-UNPLEASANT	+0.84*	-0.10	+0.26
12	POLITE-IMPOLITE	+0.84*	-0.14	+0.08
13	NICE-AWFUL	+0.90*	+0.00	+0.11
14	MILD-HARSH	+0.74*	-0.46	-0.03
15	AGREEABLE-DISAGREEABLE	+0.83*	-0.20	+0.14
16	FAIR-UNFAIR	+0.91*	-0.04	+0.00
17	HONEST-DISHONEST	+0.76*	+0.05	+0.16
18	WHOLESOME-UNWHOLESOME	+0.97*	+0.00	-0.06
19	NOBLE-IGNOBLE	+0.92*	+0.04	+0.02
20	JUST-UNJUST	+0.90*	-0.05	-0.05

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 20

THREE-FACTOR SOLUTION OF COGNITION FOR SUBJECT SIX

		I	II	III
		EVALUATION	DYNAMISM	DOMINANCE
1	ACTIVE-PASSIVE	-0.06	+0.58*	+0.36
2	FAST-SLOW	-0.03	+0.87*	+0.05
3	SHARP-DULL	+0.38	+0.70*	+0.12
4	AGITATED-CALM	-0.48*	+0.23	+0.29
5	HOT-COLD	+0.08	+0.53*	+0.10
6	STRONG-WEAK	+0.01	+0.94*	-0.01
7	POWERFUL-POWERLESS	+0.20	+0.32	+0.59*
8	RUGGED-DELICATE	-0.51	+0.73*	+0.10
9	LARGE-SMALL	+0.16	+0.72*	+0.03
10	HARD-SOFT	+0.08	+0.19	+0.85*
11	PLEASANT-UNPLEASANT	+0.61*	+0.42	-0.14
12	POLITE-IMPOLITE	+0.56*	+0.24	-0.34
13	NICE-AWFUL	+0.55*	+0.40	-0.34
14	MILD-HARSH	+0.50*	-0.24	-0.45
15	AGREEABLE-DISAGREEABLE	+0.96*	-0.13	-0.06
16	FAIR-UNFAIR	+0.50*	+0.35	-0.37
17	HONEST-DISHONEST	+0.06	+0.53	-0.66*
18	WHOLESOME-UNWHOLESOME	+0.99*	-0.04	+0.09
19	NOBLE-IGNOBLE	+0.91*	+0.22	+0.15
20	JUST-UNJUST	+0.94*	+0.00	-0.05

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 21

THREE-FACTOR SOLUTION OF COGNITION FOR SUBJECT SEVEN

		I	II	III
		EVALUATION	DYNAMISM	IRASCIBILITY
1	ACTIVE-PASSIVE	-0.29	+0.71*	+0.04
2	FAST-SLOW	-0.29	+0.92*	-0.02
3	SHARP-DULL	+0.16	+0.77*	-0.03
4	AGITATED-CALM	+0.23	-0.08	+0.82*
5	HOT-COLD	+0.48	+0.52*	-0.22
6	STRONG-WEAK	+0.36	+0.81*	-0.05
7	POWERFUL-POWERLESS	+0.08	+0.79*	-0.07
8	RUGGED-DELICATE	+0.01	+0.71*	+0.43
9	LARGE-SMALL	+0.75*	+0.37	+0.27
10	HARD-SOFT	-0.23	+0.69*	+0.28
11	PLEASANT-UNPLEASANT	+0.67*	+0.13	-0.30
12	POLITE-IMPOLITE	+0.97*	-0.16	+0.08
13	NICE-AWFUL	+0.95*	-0.18	+0.00
14	MILD-HARSH	+0.38	-0.32	-0.51*
15	AGREEABLE-DISAGREEABLE	+0.55*	+0.05	-0.42
16	FAIR-UNFAIR	+0.85*	+0.11	-0.03
17	HONEST-DISHONEST	+1.01*	-0.17	+0.15
18	WHOLESOME-UNWHOLESOME	+0.71*	-0.08	-0.27
19	NOBLE-IGNOBLE	-0.82*	+0.27	-0.08
20	JUST-UNJUST	+0.74*	+0.21	-0.26

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 22

THREE-FACTOR SOLUTION OF COGNITION FOR SUBJECT EIGHT

		I	II	III
		PLEASANTNESS	SUBLIMITY	DYNAMISM
1	ACTIVE-PASSIVE	-0.18	+0.00	+0.79*
2	FAST-SLOW	-0.04	-0.44*	+0.44
3	SHARP-DULL	+0.15	+0.08	+0.77*
4	AGITATED-CALM	+0.24	-0.53*	+0.11
5	HOT-COLD	+0.30	+0.41	+0.12
6	STRONG-WEAK	-0.08	-0.03	+0.87*
7	POWERFUL-POWERLESS	+0.16	-0.28	+0.55*
8	RUGGED-DELICATE	-0.45*	+0.50*	+0.34
9	LARGE-SMALL	+0.32	+0.27	+0.48*
10	HARD-SOFT	-0.69*	-0.03	+0.18
11	PLEASANT-UNPLEASANT	+0.71*	+0.22	+0.03
12	POLITE-IMPOLITE	+0.90*	-0.13	-0.04
13	NICE-AWFUL	+0.82*	-0.09	+0.05
14	MILD-HARSH	+0.63*	+0.25	-0.09
15	AGREEABLE-DISAGREEABLE	+0.67*	+0.36	+0.11
16	FAIR-UNFAIR	+0.38	+0.63*	+0.01
17	HONEST-DISHONEST	-0.17	+0.94*	-0.08
18	WHOLESOME-UNWHOLESOME	+0.09	+0.80*	+0.11
19	NOBLE-IGNOBLE	+0.30	+0.68*	+0.00
20	JUST-UNJUST	+0.40	+0.60*	-0.09

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

For Subject Four, Subject Five, Subject Six, and Subject Seven, the factor of Evaluation found in the two-factor solution also appeared in the three-factor solution, as evidenced by the fact that the majority of the variables indicative of that factor from the two-factor solution had salient and highest loadings on that factor interpreted as Evaluation in those three-factor solutions. For Subject Two, Subject Three, and Subject Eight, the factor of Dynamism found in the two-factor solution emerged in the three-factor solution for those subjects, as indicated by the majority of variables indicating Dynamism in the two-factor solution also loading saliently and highest on the factor interpreted as the same in the three-factor solution.

Of the subjects in which a three-factor solution of the cognitive variables was considered most appropriate, the three subjects whose solution included the factor of Dynamism also had two evaluative factors which were interpreted as the manifestations of the two hypothesized factors of Pleasantness, represented by Variables 11-15, and Sublimity, represented by Variables 16-20. The majority of the variables representative of those hypothesized factors had salient and highest loadings on those factors so labelled. Table 23 presents the proportionality coefficients of the three-factor solution for those three subjects--Subject Two, Subject Three, and Subject Eight.

TABLE 23

PROPORTIONALITY COEFFICIENTS OF THE THREE COGNITIVE FACTORS FOR THE THREE SUBJECTS ONE, TWO, AND THREE

PLEASANTNESS

	SUBJECTS		
	TWO	THREE	EIGHT
SUBJECTS			
TWO	+100	+049	+058
THREE	+049	+100	+082
EIGHT	+058	+082	+100

SUBLIMITY

	SUBJECTS		
	TWO	THREE	EIGHT
SUBJECTS			
TWO	+100	+056	+066
THREE	+056	+100	+077
EIGHT	+066	+077	+100

DYNAMISM

	SUBJECTS		
	TWO	THREE	EIGHT
SUBJECTS			
TWO	+100	+096	+089
THREE	+096	+100	+092
EIGHT	+089	+092	+100

As can be observed from Table 23, however, the two cognitive factors interpreted as Pleasantness and Sublimity in the three-factor solution for Subject Two, do not seem to be related enough to the two factors interpreted as the same in the three-factor solutions for Subject Three and Subject Eight. A second-order three-factor solution of the factor scores of those three subjects for their three-factor solutions, using a multiple regression formula in calculating those factor scores, did, in fact, demonstrate that the two evaluative factors for Subject Two--Pleasantness and Sublimity--were not similar enough, phenotypically at least, to those factors interpreted the same for Subject Three and Subject Eight.

Table 24 presents a second-order three-factor solution of the factor scores from the three-factor solutions of the cognitive variables for Subject Three and Subject Eight. In obtaining that solution, the various internal criteria for determining the number of factors jointly indicated the existence of the three second-order factors, and, as is clearly demonstrated by the obtained solution, the three-factor solution of cognitive variables does, in fact, generalize quite highly from one subject to the other. In all cases, the primary factors from both subjects interpreted as Pleasantness, Sublimity, or Dynamism have a salient and highest loading of at least +0.77 on that second-order factor interpreted as the same. Additionally,

as a matter of further interest, it should be reported that the three second-order factors were exactly orthogonal, despite the fact that the rotational procedure employed permitted an oblique solution.

Notably, the hypothesized cognitive factors of Pleasantness and Sublimity emerged best in the three-factor solution of Subject Eight, as shown previously in Table 22. All the variables representative of the hypothesized factor of Pleasantness (Variables 11-15) loaded saliently and highest that obtained factor interpreted as Pleasantness. Similarly, all the variables representative of the hypothesized factor of Sublimity (Variables 16-20), in fact, loaded saliently and most highly that emerged factor interpreted as Sublimity. The correlation for those two obtained factors for Subject Eight (their pure correlation, not correlation of factor scores), it might be further noted, was +0.53; whereas, for Subject Three, they were slightly more correlated at +0.64.

Emotional Factors

For all the subjects--the nine real subjects and the hypothetically average subject--a sequential range of factorial solutions from two to four factors was obtained for the fifteen emotional variables listed in Table 1 (Variables 21-35) which represented the three hypothesized factors of Arousal (Variables 21-25), Control (Variables

26-30), and Pleasure (Variables 31-35). Considerations external to the data suggested the range of factorial solutions from two to four factors for each subject, the same range as used in analyzing the cognitive variables: Three factors had of course been hypothesized, based upon the research of Mehrabian and Russell (1974), as stated previously. But it was thought that for some subjects the emotional factor of Control might not emerge because it would be too weak or too difficult to assess. And it was thought that for other subjects who evaluated focal-stimulus persons along the two factorial dimensions of Pleasantness and Sublimity, that there might also be some corresponding bifurcation of the emotional factor of Pleasure corresponding to the existence of the two evaluative cognitive factors, though for physiological and other reasons discussed previously, it was believed only a single, general emotional factor of Pleasure would ultimately be justified. Thus, a range of factorial solutions from two to four factors was suggested by considerations external to the data.

Table 25 presents the percentage and cumulative percentage of the common variance of the emotional variables attributable to the extraction of successive factors. For the average subject, Subject Ten, the first three factors account for 92% of the common variance, with the third factor accounting for a substantial but small 11% of that

variance. For all subjects, the extraction of four factors accounted for over 90% of the common variance, except for Subject Nine in which only 87% of that variance was attributable to those first four factors.

Table 26 presents the more objective internal criteria for deciding upon the range of the factorial solutions of the emotional variables for the subjects. As is shown, the range of factorial solutions chosen is supported by those criteria when they are considered jointly, except possibly for Subject Nine in which a five-factor solution may initially have been warranted. An inspection of the obtained factorial solutions ranging from two to four factors, however, indicated that no more factors than three were justified for any of the subjects, and for Subject Two and Subject Three, no more factors than two were justified. Factorial solutions for the subjects with more factors than indicated by the criterion of Importance, included form factors, i.e., were methodological artifacts.

Two-Factor Solution of Emotion. Tables 27-36 display the factor patterns of the two-factor solution of the emotional variables for Subjects 1-10, respectively. The first factor in the two-factor solutions for all the subjects is clearly the hypothesized factor of Pleasure, because for all subjects all of the variables representative of the hypothesized factor of Pleasure (Variables 31-35) loaded

that factor saliently and highest. The second factor in the two-factor solutions for all the subjects except Subject Six and Subject Eight was interpreted as the hypothesized factor of Arousal. For those seven subjects, a majority of the variables representative of the hypothesized factor or Arousal (Variables 21-25) loaded that factor saliently and highest (four of five for Subjests Two, Four, Seven, and Nine, and unanimously for Subjects One, Three, Five, and Ten). For the average subject, Subject Ten, the two derived factors had a correlation of +0.17.

As Table 32 above indicates, the second factor in the two-factor solution of emotional variables for Subject Six was interpreted as Arousal/Helplessness, though appearing to be more Helplessness (the opposite of Control) than Arousal. Of the five variables representative of Arousal, one loaded highest and saliently on that factor, another loaded highest and substantially (+0.46), and another loaded substantially (+0.32), though loaded the other factor equally as well. In the three-factor solution for Subject Six, however, the hypothesized factor of Arousal emerged quite clearly and distinctly from the third factor of Control (vs. Helplessness), as will be shown later, and the three factor solution was actually the most appropriate one for Subject Six.

TABLE 24

SECOND-ORDER FACTOR PATTERN OF THREE COGNITIVE FACTORS FOR SUBJECT THREE AND SUBJECT EIGHT

	I PLEASANTNESS	II SUBLIMITY	III DYNAMISM
SUBJECT THREE			
PLEASANTNESS	+0.83*	+0.33	+0.07
SUBLIMITY	+0.48	+0.77*	-0.03
DYNAMISM	+0.06	+0.04	+0.87*
SUBJECT EIGHT			
PLEASANTNESS	+0.80*	+0.37	-0.04
SUBLIMITY	+0.28	+0.86*	+0.00
DYNAMISM	-0.03	-0.06	+0.86*

Note: Values greater than the square root of the mean of the squared values have be flagged. Also second-order factors are uncorrelated.

TABLE 25

PERCENTAGE OF COMMON VARIANCE OF EMOTIONAL VARIABLES ATTRIBUTABLE TO EXTRACTION OF SUCCESSIVE FACTORS

	SUBJECTS									
FACTORS	1	2	3	4	5	6	7	8	9	10
1	53	64	62	48	45	54	49	48	46	51
	53	64	62	48	45	54	49	48	46	51
2	29	24	19	29	28	18	26	21	18	30
	82	88	81	77	73	72	75	68	64	81
3	11	04	11	11	11	11	14	04	14	11
	92	92	92	88	84	83	89	83	78	92
4	03	04	04	07	09	08	05	07	09	03
	96	96	96	95	93	91	94	90	87	95
5	02	03	02	04	04	05	03	06	07	02
	97	98	98	99	97	96	97	96	94	98
6	02	02	02	02	02	02	02	03	04	01
	99	100	99	100	99	98	99	99	99	99
7	01	--	01	--	02	02	01	03	03	01
	100	--	100	--	100	100	100	100	100	99
8	--	--	--	--	--	--	--	--	--	01
	--	--	--	--	--	--	--	--	--	100

Note: Upper value and lower value are, respectively, the percentage and cumulative percentage of common variance attributable to that corresponding factor.

TABLE 26

CRITERIA FOR DETERMINING NUMBER OF EMOTIONAL FACTORS

	CRITERIA						
	SCREE	KG	INCREMENT	CUMULATIVE	NK	HK	IMPORTANCE
SUBJECTS							
1	3	3	3	3	3	3	3
2	2	2	2	3	4	2	2
3	4	3	3	3	4	3	2
4	4	4	4	4	4	4	3
5	4	4	4	4	4	4	3
6	4	4	5	4	5	4	3
7	3	3	4	7	4	4	3
8	3	4	5	4	3	3	3
9	5	5	5	5	5	4	3

TABLE 27

TWO-FACTOR SOLUTION OF EMOTION FOR SUBJECT ONE

	I	II
	PLEASURE	AROUSAL
21 STIMULATED-RELAXED	-0.26	+0.81*
22 EXCITED-CALM	-0.32	+0.70*
23 FRENZIED-SLUGGISH	-0.20	+0.89*
24 WIDE-AWAKE--SLEEPY	+0.28	+0.86*
25 AROUSED-UNAROUSED	+0.17	+0.91*
26 CONTROLLING-CONTROLLED	-0.34	-0.28
27 INFLUENTIAL-INFLUENCED	-0.53	-0.07
28 IN-CONTROL--CARED-FOR	-0.78*	-0.29
29 IMPORTANT-AWED	0.78*	-0.13
30 AUTONOMOUS-GUIDED	-0.64*	-0.03
31 HAPPY-UNHAPPY	+0.94*	-0.10
32 PLEASED-ANNOYED	+0.94*	-0.12
33 SATISFIED-UNSATISFIED	+0.93*	-0.07
34 CONTENTED-MELANCHOLIC	+0.91*	-0.11
35 HOPEFUL-DESPAIRING	+0.89*	+0.02

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 28

TWO-FACTOR SOLUTION OF EMOTION FOR SUBJECT TWO

	I	II
	PLEASURE	AROUSAL
21 STIMULTATED-RELAXED	-0.01	+0.89*
22 EXCITED-CALM	-0.20	+0.82*
23 FRENZIED-SLUGGISH	-0.63*	+0.67*
24 WIDE-AWAKE--SLEEPY	+0.10	+0.68*
25 AROUSED-UNAROUSED	+0.34	+0.47
26 CONTROLLING-CONTROLLED	-0.24	-0.76*
27 INFLUENTIAL-INFLUENCED	-0.53	-0.43
28 IN-CONTROL--CARED-FOR	-0.67*	-0.26
29 IMPORTANT-AWED	-0.40	-0.50
30 AUTONOMOUS-GUIDED	-0.58*	-0.30
31 HAPPY-UNHAPPY	+0.94*	+0.00
32 PLEASED-ANNOYED	+0.94*	+0.01
33 SATISFIED-UNSATISFIED	+0.92*	+0.02
34 CONTENTED-MELANCHOLIC	+0.92*	-0.01
35 HOPEFUL-DESPAIRING	+0.94*	-0.10

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 29

TWO-FACTOR SOLUTION OF EMOTION FOR SUBJECT THREE

	I	II
	PLEASURE	AROUSAL
21 STIMULATED-RELAXED	-0.23	+0.69*
22 EXCITED-CALM	-0.26	+0.65*
23 FRENZIED-SLUGGISH	-0.26	+0.83*
24 WIDE-AWAKE--SLEEPY	+0.08	+0.88*
25 AROUSED-UNAROUSED	+0.20	+0.83*
26 CONTROLLING-CONTROLLED	-0.53	-0.12
27 INFLUENTIAL-INFLUENCED	-0.54	-0.27
28 IN-CONTROL--CARED-FOR	-0.46	-0.41
29 IMPORTANT-AWED	+0.44	+0.65*
30 AUTONOMOUS-GUIDED	-0.65*	-0.34
31 HAPPY-UNHAPPY	+0.99*	-0.13
32 PLEASED-ANNOYED	+0.98*	-0.06
33 SATISFIED-UNSATISFIED	+1.00*	-0.12
34 CONTENTED-MELANCHOLIC	+0.76*	+0.26
35 HOPEFUL-DESPAIRING	+0.75*	+0.27

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 30

TWO-FACTOR SOLUTION OF EMOTION FOR SUBJECT FOUR

	I	II
	PLEASURE	AROUSAL
21 STIMULATED-RELAXED	-0.05	+0.61*
22 EXCITED-CALM	-0.08	+0.81*
23 FRENZIED-SLUGGISH	-0.34	+0.74*
24 WIDE-AWAKE--SLEEPY	-0.03	+0.78*
25 AROUSED-UNAROUSED	+0.19	+0.52
26 CONTROLLING-CONTROLLED	-0.28	-0.38
27 INFLUENTIAL-INFLUENCED	-0.41	-0.57*
28 IN-CONTROL--CARED-FOR	-0.74*	-0.34
29 IMPORTANT-AWED	+0.31	-0.30
30 AUTONOMOUS-GUIDED	-0.45	-0.45
31 HAPPY-UNHAPPY	+0.95*	-0.05
32 PLEASED-ANNOYED	+0.95*	-0.05
33 SATISFIED-UNSATISFIED	+0.93*	+0.00
34 CONTENTED-MELANCHOLIC	+0.75*	-0.01
35 HOPEFUL-DESPAIRING	+0.87*	-0.21

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 31

TWO-FACTOR SOLUTION OF EMOTION FOR SUBJECT FIVE

	I	II
	PLEASURE	AROUSAL
21 STIMULATED-RELAXED	+0.15	+0.57*
22 EXCITED-CALM	-0.37	+0.69*
23 FRENZIED-SLUGGISH	-0.01	+0.75*
24 WIDE-AWAKE--SLEEPY	+0.07	+0.55*
25 AROUSED-UNAROUSED	+0.24	+0.73*
26 CONTROLLING-CONTROLLED	+0.52	-0.53*
27 INFLUENTIAL-INFLUENCED	-0.12	-0.64*
28 IN-CONTROL--CARED-FOR	+0.28	-0.39
29 IMPORTANT-AWED	-0.41	-0.63*
30 AUTONOMOUS-GUIDED	+0.00	+0.08
31 HAPPY-UNHAPPY	+0.96*	+0.04
32 PLEASED-ANNOYED	+0.96*	+0.04
33 SATISFIED-UNSATISFIED	+0.94*	+0.03
34 CONTENTED-MELANCHOLIC	+0.83*	+0.06
35 HOPEFUL-DESPAIRING	+0.93*	+0.01

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 32

TWO-FACTOR SOLUTION OF EMOTION FOR SUBJECT SIX

	I	II
	PLEASURE	AROUSAL/HELPLESS
21 STIMULATED-RELAXED	+0.18	+0.83*
22 EXCITED-CALM	+0.32	+0.32
23 FRENZIED-SLUGGISH	+0.77*	-0.09
24 WIDE-AWAKE--SLEEPY	+0.35	+0.46
25 AROUSED-UNAROUSED	+0.57*	+0.34
26 CONTROLLING-CONTROLLED	+0.12	-0.90*
27 INFLUENTIAL-INFLUENCED	+0.06	-0.90*
28 IN-CONTROL--CARED-FOR	-0.25	-0.50
29 IMPORTANT-AWED	+0.18	-0.64*
30 AUTONOMOUS-GUIDED	-0.24	-0.29
31 HAPPY-UNHAPPY	+0.80*	+0.19
32 PLEASED-ANNOYED	+0.86*	+0.07
33 SATISFIED-UNSATISFIED	+0.69*	+0.18
34 CONTENTED-MELANCHOLIC	+0.76*	-0.12
35 HOPEFUL-DESPAIRING	+0.95*	-0.20

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 33

TWO-FACTOR SOLUTION OF EMOTION FOR SUBJECT SEVEN

	I	II
	PLEASURE	AROUSAL
21 STIMULATED-RELAXED	-0.04	+0.83*
22 EXCITED-CALM	-0.19	+0.72*
23 FRENZIED-SLUGGISH	-0.20	+0.71*
24 WIDE-AWAKE--SLEEPY	+0.27	+0.58*
25 AROUSED-UNAROUSED	+0.50	+0.39
26 CONTROLLING-CONTROLLED	+0.17	-0.51
27 INFLUENTIAL-INFLUENCED	-0.06	-0.61*
28 IN-CONTROL--CARED-FOR	-0.28	-0.39
29 IMPORTANT-AWED	+0.87*	-0.16
30 AUTONOMOUS-GUIDED	-0.77*	-0.35
31 HAPPY-UNHAPPY	+0.95*	+0.02
32 PLEASED-ANNOYED	+0.90*	+0.05
33 SATISFIED-UNSATISFIED	+0.96*	-0.03
34 CONTENTED-MELANCHOLIC	+0.84*	-0.27
35 HOPEFUL-DESPAIRING	+0.85*	-0.12

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 34

TWO-FACTOR SOLUTION OF EMOTION FOR SUBJECT EIGHT

	I	II
	PLEASURE	AROUSAL/CONTROL
21 STIMULATED-RELAXED	+0.20	+0.34
22 EXCITED-CALM	0.46	+0.30
23 FRENZIED-SLUGGISH	-0.32	+0.79*
24 WIDE-AWAKE--SLEEPY	+0.17	+0.65*
25 AROUSED-UNAROUSED	+0.59*	+0.30
26 CONTROLLING-CONTROLLED	+0.16	+0.51*
27 INFLUENTIAL-INFLUENCED	+0.31	+0.56*
28 IN-CONTROL--CARED-FOR	-0.35	+0.27
29 IMPORTANT-AWED	+0.08	+0.15
30 AUTONOMOUS-GUIDED	+0.05	+0.38
31 HAPPY-UNHAPPY	+0.87*	-0.10
32 PLEASED-ANNOYED	+0.93*	+0.01
33 SATISFIED-UNSATISFIED	+0.88*	-0.06
34 CONTENTED-MELANCHOLIC	+0.80*	+0.02
35 HOPEFUL-DESPAIRING	+0.74*	+0.08

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 35

TWO-FACTOR SOLUTION OF EMOTION FOR SUBJECT NINE

	I	II
	PLEASURE	AROUSAL
21 STIMULATED-RELAXED	+0.10	+0.42
22 EXCITED-CALM	-0.33	+0.56*
23 FRENZIED-SLUGGISH	-0.05	+0.67*
24 WIDE-AWAKE--SLEEPY	+0.35	+0.54*
25 AROUSED-UNAROUSED	+0.09	+0.82*
26 CONTROLLING-CONTROLLED	-0.36	+0.02
27 INFLUENTIAL-INFLUENCED	+0.32	-0.11
28 IN-CONTROL--CARED-FOR	-0.19	+0.11
29 IMPORTANT-AWED	+0.72*	-0.24
30 AUTONOMOUS-GUIDED	-0.79*	-0.21
31 HAPPY-UNHAPPY	+0.81*	-0.01
32 PLEASED-ANNOYED	+0.85*	+0.05
33 SATISFIED-UNSATISFIED	+0.85*	-0.01
34 CONTENTED-MELANCHOLIC	+0.72*	+0.00
35 HOPEFUL-DESPAIRING	+0.67*	+0.16

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 36

TWO-FACTOR SOLUTION OF EMOTION FOR SUBJECT TEN

	I	II
	PLEASURE	AROUSAL
21 STIMULATED-RELAXED	-0.06	+0.90*
22 EXCITED-CALM	-0.34	+0.84*
23 FRENZIED-SLUGGISH	-0.30	+0.77*
24 WIDE-AWAKE--SLEEPY	+0.19	+0.78*
25 AROUSED-UNAROUSED	+0.39	+0.68*
26 CONTROLLING-CONTROLLED	-0.13	-0.76*
27 INFLUENTIAL-INFLUENCED	-0.31	-0.67*
28 IN-CONTROL--CARED-FOR	-0.56	-0.49
29 IMPORTANT-AWED	+0.19	-0.57
30 AUTONOMOUS-GUIDED	-0.68*	-0.36
31 HAPPY-UNHAPPY	+0.98*	+0.00
32 PLEASED-ANNOYED	+0.97*	-0.01
33 SATISFIED-UNSATISFIED	+0.98*	+0.00
34 CONTENTED-MELANCHOLIC	+0.97*	-0.06
35 HOPEFUL-DESPAIRING	+0.98*	-0.07

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

For Subject Eight, the second factor in the two-factor solution was interpreted as Arousal/Control. For each of the two hypothesized factors of Arousal and Control, two variables representative of those hypothesized factors loaded the second obtained factor most highly and saliently. Notably, another variable representative of Arousal had a substantial and its highest loading on that second factor (+0.34). And, as for Subject Six, the more appropriate three-factor solution for Subject Eight contained a factor which was quite clearly the factor of Arousal, which was patently distinct from a third factor interpreted as Control. The hypothesized factor of Arousal, therefore, did emerge for all the subjects, though for Subject Six and Subject Eight only unambiguously in the three-factor solution.

Table 37 and Table 38 present the matrix of the proportionality coefficients of the emotional factors in the two-factor solution interpreted generally as Pleasure and Arousal, respectively. An inspection of the last row of those two matrices indicates that both of those factors easily surpass the criterion of generalizability established earlier (i.e., at least 7 of the first nine coefficients are +0.71 or greater). Had the factor interpreted as Arousal in the three-factor solution for Subject Eight been substituted for the second factor interpreted as Arousal/Control in the two-factor solution for that subject, then likely the

corresponding coefficient in Table 38 would have been above the critical value of +0.71.

Three-Factor Solution of Emotion. Tables 39-48 present the factor patterns for the three-factor solutions for the emotional variables for Subjects 1-10, respectively. The general character of the three-factor solution is epitomized in the factor pattern for the average subject, Subject Ten, presented in Table 48. As is demonstrated, all of the variables representative of the hypothesized factor of Pleasure (Variables 31-35) and all of the variables representative of the hypothesized factor of Arousal (Variables 21-25) have salient and highest loadings on the first two obtained factors interpreted as Pleasure and Arousal, respectively. The variables representative of the hypothesized factor of Control (Variables 26-30) all have salient and highest loadings on the derived factor interpreted as Control, except for Variable 30, Autonomous-Guided, which has a salient and highest negative loading on the first derived factor of Pleasure (with feeling "cared for" apparently construed more as pleasure than as loss of emotional control). With regard to the correlations among those three derived factors, for the average subject, Pleasure and Arousal have a correlation of +0.09, Pleasure and Control have a correlation of -0.21, and Arousal and Control have a correlation of -0.37.

TABLE 37

PROPORTIONALITY COEFFICIENTS OF PLEASURE FROM TWO-FACTOR SOLUTION OF EMOTION FOR ALL SUBJECTS

	SUBJECTS									
SUBJECTS	1	2	3	4	5	6	7	8	9	10
1	100	96	86	88	76	68	71	76	69	91
2	96	100	91	94	79	68	80	83	74	95
3	86	91	100	97	70	71	90	79	88	96
4	88	94	97	100	73	75	90	84	85	97
5	76	79	70	73	100	77	74	87	66	81
6	68	68	71	75	77	100	80	77	75	79
7	71	80	90	90	74	80	100	85	93	93
8	76	83	79	94	87	77	85	100	80	89
9	69	74	88	85	66	75	93	80	100	89
10	91	95	96	97	81	79	93	89	89	100

Note: Values have been rounded to two decimal places and multiplied by one hundred.

TABLE 38

PROPORTIONALITY COEFFICIENTS OF FACTOR OF AROUSAL

FROM TWO-FACTOR SOLUTION FOR ALL SUBJECTS

	SUBJECTS									
	1	2	3	4	5	6	7	8	9	10
SUBJECTS										
1	100	88	87	89	87	56	87	61	92	88
2	88	100	71	95	93	82	96	27	79	99
3	87	71	100	79	68	39	77	54	80	73
4	89	95	79	100	91	75	96	32	83	97
5	87	93	68	91	100	78	89	28	82	96
6	56	82	39	75	78	100	80	-23	44	84
7	87	96	77	96	89	80	100	25	76	97
8	61	27	54	32	28	-23	25	100	62	23
9	92	79	80	83	82	44	76	62	100	80
10	88	99	73	97	96	84	97	23	80	100

Note: Values have been rounded to two decimal places and multiplied by one hundred.

TABLE 39

THREE-FACTOR SOLUTION OF EMOTION FOR SUBJECT ONE

		I	II	III
		PLEASURE	AROUSAL	CONTROL
21	STIMULATED-RELAXED	-0.37	+0.74*	-0.11
22	EXCITED-CALM	-0.45	+0.63*	-0.12
23	FRENZIED-SLUGGISH	-0.20	+0.89*	+0.04
24	WIDE-AWAKE--SLEEPY	+0.31	+0.92*	+0.05
25	AROUSED-UNAROUSED	+0.18	+0.95*	+0.02
26	CONTROLLING-CONTROLLED	+0.18	-0.06	+0.76*
27	INFLUENTIAL-INFLUENCED	+0.01	+0.13	+0.80*
28	IN-CONTROL--CARED-FOR	-0.32	-0.15	+0.69*
29	IMPORTANT-AWED	-0.57*	-0.11	+0.34
30	AUTONOMOUS-GUIDED	-0.20	+0.11	+0.65*
31	HAPPY-UNHAPPY	+0.93*	-0.02	-0.07
32	PLEASED-ANNOYED	+0.96*	-0.02	-0.03
33	SATISFIED-UNSATISFIED	+0.98*	+0.03	+0.00
34	CONTENTED-MELANCHOLIC	+0.95*	-0.01	+0.00
35	HOPEFUL-DESPAIRING	+0.84*	+0.09	-0.11

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 40

THREE-FACTOR SOLUTION OF EMOTION FOR SUBJECT TWO

		I	II	III
		PLEASURE	FORM A	FORM B
21	STIMULATED-RELAXED	-0.02	+0.80*	+0.17
22	EXCITED-CALM	-0.20	+0.91*	-0.04
23	FRENZIED-SLUGGISH	-0.64*	+0.20	+0.58*
24	WIDE-AWAKE--SLEEPY	+0.08	+0.01	+0.80*
25	AROUSED-UNAROUSED	+0.33	+0.04	+0.52*
26	CONTROLLING-CONTROLLED	-0.24	-0.58*	-0.25
27	INFLUENTIAL-INFLUENCED	-0.53*	-0.49*	+0.03
28	IN-CONTROL--CARED-FOR	-0.66*	-0.09	-0.20
29	IMPORTANT-AWED	-0.40	-0.49*	-0.05
30	AUTONOMOUS-GUIDED	-0.58*	-0.13	-0.20
31	HAPPY-UNHAPPY	+0.94*	+0.04	-0.05
32	PLEASED-ANNOYED	+0.94*	+0.00	+0.03
33	SATISFIED-UNSATISFIED	+0.92*	+0.08	-0.06
34	CONTENTED-MELANCHOLIC	+0.92*	-0.06	+0.07
35	HOPEFUL-DESPAIRING	+0.94*	-0.15	+0.05

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 41

THREE-FACTOR SOLUTION OF EMOTION FOR SUBJECT THREE

		I	II	III
		PLEASURE	FORM B	FORM A
21	STIMULATED-RELAXED	-0.04	+0.07	+0.79*
22	EXCITED-CALM	-0.08	+0.07	+0.73*
23	FRENZIED-SLUGGISH	-0.34	+0.64*	+0.38
24	WIDE-AWAKE--SLEEPY	-0.15	+0.97*	+0.15
25	AROUSED-UNAROUSED	-0.03	+0.93*	+0.14
26	CONTROLLING-CONTROLLED	-0.63*	+0.07	-0.30
27	INFLUENTIAL-INFLUENCED	-0.66*	+0.03	-0.45
28	IN-CONTROL--CARED-FOR	-0.52*	-0.14	-0.43
29	IMPORTANT-AWED	+0.17	+0.87*	+0.00
30	AUTONOMOUS-GUIDED	-0.52*	-0.46	-0.04
31	HAPPY-UNHAPPY	+0.96*	+0.00	-0.05
32	PLEASED-ANNOYED	+0.92*	+0.08	-0.04
33	SATISFIED-UNSATISFIED	+0.97*	+0.02	-0.05
34	CONTENTED-MELANCHOLIC	+0.49	+0.68*	-0.26
35	HOPEFUL-DESPAIRING	+0.46	+0.70*	-0.27

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 42

THREE-FACTOR SOLUTION OF EMOTION FOR SUBJECT FOUR

		I	II	III
		PLEASURE	AROUSAL	CONTROL
21	STIMULATED-RELAXED	-0.18	+0.35	-0.44
22	EXCITED-CALM	-0.06	+0.83*	-0.06
23	FRENZIED-SLUGGISH	-0.30	+0.77*	-0.01
24	WIDE-AWAKE--SLEEPY	-0.01	+0.79*	-0.07
25	AROUSED-UNAROUSED	+0.26	+0.64*	+0.10
26	CONTROLLING-CONTROLLED	-0.05	+0.05	+0.73*
27	INFLUENTIAL-INFLUENCED	-0.15	-0.07	+0.86*
28	IN-CONTROL--CARED-FOR	-0.62*	-0.14	+0.42
29	IMPORTANT-AWED	+0.49*	+0.05	+0.54*
30	AUTONOMOUS-GUIDED	-0.48*	-0.52*	+0.00
31	HAPPY-UNHAPPY	+0.93*	-0.05	-0.09
32	PLEASED-ANNOYED	+0.90*	-0.11	-0.17
33	SATISFIED-UNSATISFIED	+0.86*	-0.07	-0.21
34	CONTENTED-MELANCHOLIC	+0.80*	+0.12	+0.12
35	HOPEFUL-DESPAIRING	+0.93*	-0.05	+0.17

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 43

THREE-FACTOR SOLUTION OF EMOTION FOR SUBJECT FIVE

		I	II	III
		PLEASURE	AROUSAL	CONTROL
21	STIMULATED-RELAXED	+0.23	+0.09	-0.61*
22	EXCITED-CALM	-0.35	+0.40	-0.44
23	FRENZIED-SLUGGISH	-0.13	+0.90*	+0.00
24	WIDE-AWAKE--SLEEPY	+0.05	+0.41	-0.25
25	AROUSED-UNAROUSED	+0.10	+0.95*	+0.07
26	CONTROLLING-CONTROLLED	+0.45	-0.10	+0.56*
27	INFLUENTIAL-INFLUENCED	-0.24	-0.02	+0.79*
28	IN-CONTROL--CARED-FOR	+0.15	+0.21	+0.72*
29	IMPORTANT-AWED	-0.35	-0.62*	+0.16
30	AUTONOMOUS-GUIDED	+0.05	-0.11	-0.22
31	HAPPY-UNHAPPY	+0.96*	+0.05	+0.00
32	PLEASED-ANNOYED	+0.98*	-0.03	-0.08
33	SATISFIED-UNSATISFIED	+0.91*	+0.11	+0.08
34	CONTENTED-MELANCHOLIC	+0.85*	+0.00	-0.07
35	HOPEFUL-DESPAIRING	+0.93*	+0.02	+0.01

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 44

THREE-FACTOR SOLUTION OF EMOTION FOR SUBJECT SIX

		I	II	III
		PLEASURE	AROUSAL	CONTROL
21	STIMULATED-RELAXED	+0.10	+0.39	-0.66*
22	EXCITED-CALM	+0.39	-0.02	-0.33
23	FRENZIED-SLUGGISH	+0.43	+0.64*	+0.35
24	WIDE-AWAKE--SLEEPY	+0.00	+0.82*	-0.11
25	AROUSED-UNAROUSED	+0.28	+0.66*	-0.07
26	CONTROLLING-CONTROLLED	+0.00	-0.03	+0.88*
27	INFLUENTIAL-INFLUENCED	-0.01	-0.09	+0.84*
28	IN-CONTROL--CARED-FOR	-0.46*	+0.24	+0.60*
29	IMPORTANT-AWED	+0.45	-0.66*	+0.35
30	AUTONOMOUS-GUIDED	-0.08	-0.38	+0.13
31	HAPPY-UNHAPPY	+0.85*	+0.01	-0.20
32	PLEASED-ANNOYED	+0.87*	+0.05	-0.07
33	SATISFIED-UNSATISFIED	+0.78*	-0.05	-0.22
34	CONTENTED-MELANCHOLIC	+0.73*	+0.06	+0.13
35	HOPEFUL-DESPAIRING	+0.73*	+0.40	+0.35

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 45

THREE-FACTOR SOLUTION OF EMOTION FOR SUBJECT SEVEN

		I	II	III
		PLEASURE	AROUSAL	CONTROL
21	STIMULATED-RELAXED	-0.04	+0.61*	-0.46
22	EXCITED-CALM	-0.20	+0.75*	-0.08
23	FRENZIED-SLUGGISH	-0.21	+0.82*	+0.02
24	WIDE-AWAKE--SLEEPY	+0.25	+0.81*	+0.20
25	AROUSED-UNAROUSED	+0.50*	+0.45	+0.01
26	CONTROLLING-CONTROLLED	+0.15	+0.10	+0.94*
27	INFLUENTIAL-INFLUENCED	-0.07	-0.05	+0.87*
28	IN-CONTROL--CARED-FOR	-0.29	-0.04	+0.55*
29	IMPORTANT-AWED	+0.87*	-0.08	+0.15
30	AUTONOMOUS-GUIDED	-0.77*	-0.33	+0.09
31	HAPPY-UNHAPPY	+0.95*	+0.04	+0.03
32	PLEASED-ANNOYED	+0.90*	+0.11	+0.08
33	SATISFIED-UNSATISFIED	+0.96*	-0.04	-0.01
34	CONTENTED-MELANCHOLIC	+0.84*	-0.32	+0.00
35	HOPEFUL-DESPAIRING	+0.86*	-0.20	-0.07

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 46

THREE-FACTOR SOLUTION OF EMOTION FOR SUBJECT EIGHT

		I	II	III
		PLEASURE	AROUSAL	CONTROL
21	STIMULATED-RELAXED	+0.28	+0.36	+0.06
22	EXCITED-CALM	-0.16	+0.68*	-0.38
23	FRENZIED-SLUGGISH	-0.13	+0.87*	+0.11
24	WIDE-AWAKE--SLEEPY	+0.29	+0.64*	+0.18
25	AROUSED-UNAROUSED	+0.52	+0.09	+0.34
26	CONTROLLING-CONTROLLED	-0.05	+0.05	+0.73*
27	INFLUENTIAL-INFLUENCED	+0.18	+0.22	+0.60*
28	IN-CONTROL--CARED-FOR	-0.40	+0.14	+0.24
29	IMPORTANT-AWED	-0.15	-0.24	+0.55*
30	AUTONOMOUS-GUIDED	-0.09	+0.06	+0.52*
31	HAPPY-UNHAPPY	+0.91*	-0.05	-0.09
32	PLEASED-ANNOYED	+0.90*	-0.06	+0.09
33	SATISFIED-UNSATISFIED	+0.95*	+0.02	-0.13
34	CONTENTED-MELANCHOLIC	+0.74*	-0.10	+0.15
35	HOPEFUL-DESPAIRING	+0.69*	-0.03	+0.17

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 47

THREE-FACTOR SOLUTION OF EMOTION FOR SUBJECT NINE

		I	II	III
		PLEASURE	AROUSAL	CONTROL
21	STIMULATED-RELAXED	+0.32	+0.31	-0.49*
22	EXCITED-CALM	-0.21	+0.50*	-0.33
23	FRENZIED-SLUGGISH	-0.11	+0.69*	+0.03
24	WIDE-AWAKE--SLEEPY	+0.28	+0.56*	+0.08
25	AROUSED-UNAROUSED	+0.03	+0.84*	+0.00
26	CONTROLLING-CONTROLLED	-0.49*	+0.09	+0.25
27	INFLUENTIAL-INFLUENCED	+0.00	+0.03	+0.72*
28	IN-CONTROL--CARED-FOR	-0.45	+0.23	+0.50*
29	IMPORTANT-AWED	+0.49	-0.13	+0.54*
30	AUTONOMOUS-GUIDED	-0.68*	-0.26	-0.22
31	HAPPY-UNHAPPY	+0.86*	-0.04	-0.05
32	PLEASED-ANNOYED	+0.89*	+0.03	-0.02
33	SATISFIED-UNSATISFIED	+0.88*	-0.02	+0.00
34	CONTENTED-MELANCHOLIC	+0.67*	+0.02	+0.14
35	HOPEFUL-DESPAIRING	+0.46*	+0.26	+0.44

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 48

THREE-FACTOR SOLUTION OF EMOTION FOR SUBJECT TEN

		I	II	III
		PLEASURE	AROUSAL	CONTROL
21	STIMULATED-RELAXED	-0.04	+0.71*	-0.34
22	EXCITED-CALM	-0.27	+0.85*	-0.08
23	FRENZIED-SLUGGISH	-0.19	+0.92*	+0.08
24	WIDE-AWAKE--SLEEPY	+0.27	+0.84*	-0.03
25	AROUSED-UNAROUSED	+0.46	+0.71*	-0.04
26	CONTROLLING-CONTROLLED	-0.01	-0.13	+0.87*
27	INFLUENTIAL-INFLUENCED	-0.18	-0.03	+0.87*
28	IN-CONTROL--CARED-FOR	-0.47	-0.06	+0.60*
29	IMPORTANT-AWED	+0.33	+0.05	+0.84*
30	AUTONOMOUS-GUIDED	-0.66*	-0.19	+0.26
31	HAPPY-UNHAPPY	+0.98*	-0.02	-0.02
32	PLEASED-ANNOYED	+0.97*	-0.01	-0.01
33	SATISFIED-UNSATISFIED	+0.98*	-0.01	-0.03
34	CONTENTED-MELANCHOLIC	+0.97*	-0.06	+0.01
35	HOPEFUL-DESPAIRING	+0.99*	-0.02	+0.06

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

As the three-factor solutions of the emotional variables for the subjects in Tables 39-48 above indicate, the variables representative of the hypothesized factor of Pleasure all have salient and highest loadings on the first derived factor interpreted as Pleasure for all subjects except Subject Three, though a majority of those variables do have salient and highest loadings on that factor for Subject Three. As may also be ascertained from those solutions, a majority of the variables representative of the hypothesized factor of Arousal and a majority of the variables of the hypothesized factor of Control have salient and highest loadings on those two obtained factors of Arousal and Control for all subjects, except Subject Two and Subject Three. For Subject Two and Subject Three, the two-factor solution of the emotional variables was most appropriate, because in the three-factor solution for those subjects the factor of Pleasure emerged but the other two factors were simply form factors of Arousal (indicating over-factoring).

Table 49 displays the proportionality coefficients of the three-factor solution with the two-factor solution for the emotional variables for the average subject, Subject Ten. The two factors interpreted as Pleasure and Arousal in the two-factor solution match their counterparts in the three-factor solution, according to the previously stated criterion. Notably, the factor of Arousal in the two-factor

solution is considerably inversely related to the factor of Control in the three-factor solution, though they are probably more dissimilar than similar.

TABLE 49

PROPORTIONALITY COEFFICIENTS OF EMOTIONAL FACTORS FROM TWO-FACTOR SOLUTION WITH THREE-FACTOR SOLUTION FOR THE AVERAGE SUBJECT

		I PLEASURE	II AROUSAL
I	PLEASURE	99	07
II	AROUSAL	-02	84
III	CONTROL	-18	-67

Note: Values have been rounded to two decimals places and then multiplied by one hundred.

All three emotional factors of Pleasure, Arousal, and Control in the three-factor solution exceed the previously stated criterion of generalizability, though with some further qualification. Table 50 presents the proportionality coefficients of the first factor of Pleasure from the three-factor solution, and, as indicated, that factor is highly generalizable. An inspection of the last row of that coefficient matrix in particular, containing the

coefficients of that factor for the average subject (Subject Ten) with that factor for the real subjects (Subjects 1-9) reveals that all of the first nine coefficients are +0.83 or greater, easily surpassing the criterion of generalizability stated earlier (i.e., 7 of 9 at least +0.71).

Table 51 provides the matrix of proportionality coefficients of the second factor of Arousal in the three-factor solution for all subjects. As row 10A of that matrix indicates, the factor of Arousal in the three-factor solution just barely fails the previously stated criterion of generalizability (just missing by +0.01 for Subject Six). But recognizing that the factor of Arousal is best represented for Subject Two and Subject Three in the <u>two-factor</u> solution as stated earlier (because only two factors are warranted for those subjects and a three-factor solution results in a splitting of that factor of Arousal), then substituting Arousal in the two-factor solution for the corresponding one in the three-factor solution for those two subjects results in the attainment of the criterion of generalizability, as indicated in row 10B of the coefficient matrix in Table 51. For, the coefficients of the average subject (Subject Ten) with Subject Two and Subject Three then become +0.85 and +0.89, respectively, rather than those two corresponding coefficients in row 10A which fail the criterion for factor matching. Table 52 presents the proportionality coefficients of the emotional factor of

Arousal from the three-factor solution for the subjects, except for Subject Two and Subject Three in which the factor of Arousal from the two-factor solution is substituted.

Table 53 presents the proportionality coefficients of the third factor of Control in the three-factor solution for the emotional variables. As row Ten of the matrix indicates, that factor of Control exceeds the criterion of generalizability (7 of 9 of the coefficients at least +0.71), though it fails to generalize for Subject Two and Subject Three. As stated previously, the emotional factor of Control did not emerge for those two subjects.

It may be stated from the above, therefore, that the emotional factors of Pleasure, Arousal, and Control generalize across subjects (for over 7 of 9 subjects). However, for Subject Two and Subject Three whose descriptions of their emotions do not vary along a dimension of Control-Helplessness, the factor of Arousal in the two-factor solution is a better representative of the ideal or hypothesized factor of Arousal than is that factor which might be interpreted as Arousal in the three-factor solution and should therefore be substituted for it. Technically, then, the three-factor solution as a whole does not adequately generalize, though the factors of Pleasure, Arousal (from the two-factor solution for Subject Two and Subject Three), and Control do generalize.

TABLE 50

PROPORTIONALITY COEFFICIENTS OF FACTOR OF PLEASURE FROM THREE-FACTOR SOLUTION OF EMOTION FOR ALL SUBJECTS

	SUBJECTS									
	1	2	3	4	5	6	7	8	9	10
SUBJECTS										
1	100	90	74	83	91	73	76	91	73	88
2	90	100	90	90	82	73	80	88	82	92
3	74	90	100	88	69	75	79	77	89	85
4	83	90	88	100	78	89	95	87	90	97
5	91	82	69	78	100	75	75	88	69	83
6	73	73	75	89	75	100	85	85	82	87
7	76	80	79	95	75	85	100	84	90	96
8	91	88	77	87	88	85	84	100	85	92
9	73	82	89	90	69	82	90	85	100	91
10	88	92	85	97	83	87	96	92	91	100

Note: Values have been rounded to two decimal places and multiplied by one hundred.

TABLE 51

PROPORTIONALITY COEFFICIENTS OF FACTOR OF AROUSAL FROM THREE-FACTOR SOLUTION FOR EMOTION FOR ALL SUBJECTS

	SUBJECTS									
SUBJECTS	1	2	3	4	5	6	7	8	9	10
1	100	48	61	87	81	75	89	84	90	96
2	48	100	-08	50	42	33	57	50	38	59
3	61	-08	100	67	43	54	46	35	68	60
4	87	50	67	100	75	69	92	80	89	95
5	81	42	43	75	100	83	73	73	89	77
6	75	33	54	69	83	100	68	64	84	70
7	89	57	46	92	73	68	100	88	84	95
8	84	50	35	80	73	64	88	100	77	87
9	90	38	68	89	89	84	84	77	100	90
10A	96	59	60	95	77	70	95	87	90	100
10B	96	85*	89*	95	77	70	95	87	90	100

Note: Values have been rounded to two decimal places and multiplied by one hundred. Also, tenth subject is the average subject, and extra row for tenth subject contains coefficients relating factor of emotional arousal from two-factor solution for Subjects Two and Three.

TABLE 52

SPECIAL MATRIX OF PROPORTIONALITY COEFFICIENTS OF FACTOR OF AROUSAL FROM THREE-FACTOR SOLUTION OF EMOTION FOR SUBJECTS USING FACTOR OF AROUSAL FROM TWO-FACTOR SOLUTION OF EMOTION FOR SUBJECTS TWO AND THREE

	SUBJECTS									
	1	2	3	4	5	6	7	8	9	10
SUBJECTS										
1	100	79	85	87	81	75	89	84	90	96
2	79	100	71	77	68	66	80	70	68	85
3	85	71	100	89	56	57	78	62	79	89
4	87	77	89	100	75	69	92	80	89	95
5	81	68	56	75	100	83	73	73	89	77
6	75	66	57	69	83	100	68	64	84	70
7	89	80	78	92	73	68	100	88	84	95
8	84	70	62	80	73	64	88	100	77	87
9	90	68	79	89	89	84	84	77	100	90
10	96	85	89	95	77	70	95	87	90	100

Note: Values have been rounded to two decimal places and multiplied by one hundred.

TABLE 53

PROPORTIONALITY COEFFICIENTS OF FACTOR OF CONTROL FROM THREE-FACTOR SOLUTION OF EMOTION FOR ALL SUBJECTS

	SUBJECTS									
SUBJECTS	1	2	3	4	5	6	7	8	9	10
1	100	22	48	81	71	80	87	85	60	90
2	22	100	38	19	27	16	14	-06	05	23
3	48	38	100	61	79	70	61	41	73	53
4	81	19	61	100	84	92	89	77	86	94
5	71	27	79	84	100	86	85	54	83	78
6	80	16	70	92	86	100	88	74	85	88
7	87	14	61	89	85	88	100	73	72	88
8	85	-06	41	77	54	74	73	100	62	83
9	60	05	73	86	83	85	72	62	100	80
10	90	23	53	94	78	88	88	83	80	100

Note: Values have been rounded to two decimal places and multiplied by one hundred.

Behavioral Factors

For all subjects, a range of factorial solutions from one to four factors were obtained for the fifteen behavioral variables in Table 1 putatively representative of the hypothesized homogeneous behavioral factors of Inclusion, Dominance, and Dependence (Variables 36-40, 41-45, and 46-50, respectively). Considerations external to the data had suggested initially a range of factorial solutions from two to four factors: The popular three-dimensional model of interpersonal relations had suggested the three hypothesized factors alluded to above, and the behavioral variables selected were intended to represent those factors, thus making additional factors of a homogeneous nature unlikely. Another heterogeneous behavioral factor related to moral motivation, however, was conceived as possible in which the behavioral variables loading that factor would be variegated but theoretically unified. But it was also considered that the forth morally-related behavioral factor which had been thought possible might not emerge from the data, and the two hypothesized homogeneous behavioral factors of Inclusion and Dependence (or Affection) might not be distinguishable but emerge rather as one more general factor.

Table 54 provides the percentage and cumulative percentage of common variance of the behavioral variables attributable to the extraction of successive factors. For

the average subject, Subject Ten, 96% of the common variance was accounted for by the extraction of just the first two factors, with the extraction of the third factor accounting for a neglible 2% more. And for all subjects, 89% or greater of the common variance was attributable to the first three factors.

Table 55 presents the criteria internal to the investigation itself for deciding upon the range of factorial solutions. As can be seen, all of the criteria except the post hoc criterion of Importance when those criteria were considered jointly indicated a factorial range from two to four factors for the subjects. When such a range of solutions was obtained for the subjects, however, the Importance criterion was then applied and the range of factorial solutions then extended downward to include a single-factor solution which was eventually considered acceptable and best for Subject Two, Subject Three, and Subject Nine. The final range of factorial solutions obtained for all the subjects, therefore, was from one to four factors, though only for Subject Four was a solution with as many as three factors warranted.

One-Factor Solution of Behavior. Tables 56-65 present the one-factor solutions of the behavioral variables for Subjects 1-10, respectively. For each one-factor solution, of course, the single factor was simply the first principal

axis, which could not be rotated more meaningfully due to the fact that it consisted only of the single factor. It therefore had the property of accounting for the greatest amount of common variance possible within the reduced correlation matrix.

The one-factor solution for the average subject, Subject Ten, exemplifies the general character of the one-factor solutions for the other subjects. From that one-factor solution in Table 65, it may be seen that the variables representative of the hypothesized factor of Inclusion (Variables 36-40) and the variables representative of the hypothesized factor of Dependence (Variables 46-50) tend to load that factor positively and very highly (all above +0.92, except for Variable 46 at +0.78). The remaining variables representative of the hypothesized factor of Dominance (Variables 41-45), in contrast, tend to have loadings of a high absolute magnitude on that factor, but they tend to have loadings which are negative (i.e., all less than or equal to -0.74). That factor, therefore, may be characterized as "Inclusion-Submission-Dependence" versus "Exclusion-Dominance-Independence" and is here labelled simply "Association-Disassociation." For the average subject, it accounts for 84% of the common variance of the variables for the absolute maximum number of factors (non-negative eigenvalues of the initially reduced correlation matrix).

TABLE 54

PERCENTAGE OF COMMON VARIANCE OF BEHAVIORAL VARIABLES ATTRIBUTABLE TO EXTRACTION OF SUCCESSIVE FACTORS

	SUBJECTS									
FACTORS	1	2	3	4	5	6	7	8	9	10
1	84	63	79	80	71	67	64	62	64	84
	84	63	79	80	71	67	64	62	64	84
2	09	16	12	07	11	17	20	19	16	11
	93	79	91	87	82	84	84	81	80	96
3	03	13	05	07	10	07	09	09	08	02
	96	92	97	94	92	91	93	89	89	97
4	01	05	02	04	04	06	03	06	05	01
	97	98	99	98	96	97	96	95	93	99
5	01	04	01	03	02	01	02	04	03	01
	98	100	100	100	98	98	99	98	96	99
6	01	--	--	--	01	01	01	02	02	00
	99	--	--	--	99	99	100	100	98	100
7	01	--	--	--	01	01	--	--	02	--
	100	--	--	--	100	100	--	--	99	--
8	--	--	--	--	--	--	--	--	01	--
	--	--	--	--	--	--	--	--	100	--

Note: Upper value and lower value are, respectively, the percentage and cumulative percentage of common variance attributable to that corresponding factor.

TABLE 55

CRITERIA FOR DETERMINING NUMBER OF BEHAVIORAL FACTORS

	CRITERIA						
SUBJECTS	SCREE	KG	INCREMENT	CUMULATIVE	NK	HK	IMPORTANCE
1	2	2	2	2	3	2	2
2	3	3	4	3	5	4	1
3	3	2	3	2	3	3	1
4	3	3	3	3	4	3	3
5	3	3	3	3	4	4	2
6	4	3	4	3	4	4	2
7	3	3	3	3	3	3	2
8	3	3	5	7	3	4	2
9	3	3	4	4	4	3	1
10	2	2	2	2	2	2	2

Note: Increment criterion is greater than or equal to 5 per cent of the common variance, and cumulative criterion is less than or equal to 90 per cent of the common variance.

TABLE 56

ONE-FACTOR SOLUTION OF BEHAVIOR FOR SUBJECT ONE

		I
		ASSOCIATION
36	INCLUSIVE-EXCLUSIVE	+0.94
37	ENTERING-EXITING	+0.94
38	COMING-LEAVING	+0.91
39	ARRIVING-DEPARTING	+0.95
40	ASSOCIATING-DISASSOCIATING	+0.96
41	DOMINANT-SUBMISSIVE	-0.80
42	LEADING-FOLLOWING	-0.59
43	COMMANDING-OBEYING	-0.80
44	RESISTING-YIELDING	-0.94
45	DEMANDING-COMPLYING	-0.80
46	RELYING-ON-OTHER ---RELYING-ON-ONESELF	+0.52
47	ATTACHING-DETACHING	+0.94
48	AFFECTIONATE-UNAFFECTIONATE	+0.96
49	PERSONAL-IMPERSONAL	+0.93
50	COMFORTING-UNCOMFORTING	+0.95

TABLE 57

ONE-FACTOR SOLUTION OF BEHAVIOR FOR SUBJECT TWO

		I
		ASSOCIATION
36	INCLUSIVE-EXCLUSIVE	+0.78
37	ENTERING-EXITING	+0.69
38	COMING-LEAVING	+0.72
39	ARRIVING-DEPARTING	+0.76
40	ASSOCIATING-DISASSOCIATING	+0.74
41	DOMINANT-SUBMISSIVE	-0.49
42	LEADING-FOLLOWING	-0.55
43	COMMANDING-OBEYING	-0.59
44	RESISTING-YIELDING	-0.60
45	DEMANDING-COMPLYING	-0.70
46	RELYING-ON-OTHER	
	---RELYING-ON-ONESELF	+0.50
47	ATTACHING-DETACHING	+0.79
48	AFFECTIONATE-UNAFFECTIONATE	+0.82
49	PERSONAL-IMPERSONAL	+0.69
50	COMFORTING-UNCOMFORTING	+0.77

TABLE 58

ONE-FACTOR SOLUTION OF BEHAVIOR FOR SUBJECT THREE

		I
		ASSOCIATION
36	INCLUSIVE-EXCLUSIVE	+0.89
37	ENTERING-EXITING	+0.78
38	COMING-LEAVING	+0.86
39	ARRIVING-DEPARTING	+0.90
40	ASSOCIATING-DISASSOCIATING	+0.88
41	DOMINANT-SUBMISSIVE	-0.75
42	LEADING-FOLLOWING	-0.80
43	COMMANDING-OBEYING	-0.85
44	RESISTING-YIELDING	-0.94
45	DEMANDING-COMPLYING	-0.85
46	RELYING-ON-OTHER	
	---RELYING-ON-ONESELF	+0.74
47	ATTACHING-DETACHING	+0.90
48	AFFECTIONATE-UNAFFECTIONATE	+0.88
49	PERSONAL-IMPERSONAL	+0.91
50	COMFORTING-UNCOMFORTING	+0.89

TABLE 59

ONE-FACTOR SOLUTION OF BEHAVIOR FOR SUBJECT FOUR

		I
		ASSOCIATION
36	INCLUSIVE-EXCLUSIVE	+0.90
37	ENTERING-EXITING	+0.85
38	COMING-LEAVING	+0.86
39	ARRIVING-DEPARTING	+0.71
40	ASSOCIATING-DISASSOCIATING	+0.90
41	DOMINANT-SUBMISSIVE	-0.83
42	LEADING-FOLLOWING	-0.74
43	COMMANDING-OBEYING	-0.64
44	RESISTING-YIELDING	-0.89
45	DEMANDING-COMPLYING	-0.75
46	RELYING-ON OTHER	
	---RELYING-ON-ONESELF	+0.76
47	ATTACHING-DETACHING	+0.91
48	AFFECTIONATE-UNAFFECTIONATE	+0.68
49	PERSONAL-IMPERSONAL	+0.82
50	COMFORTING-UNCOMFORTING	+0.88

TABLE 60

ONE-FACTOR SOLUTION OF BEHAVIOR FOR SUBJECT FIVE

		I
		ASSOCIATION
36	INCLUSIVE-EXCLUSIVE	+0.87
37	ENTERING-EXITING	+0.88
38	COMING-LEAVING	+0.88
39	ARRIVING-DEPARTING	+0.89
40	ASSOCIATING-DISASSOCIATING	+0.87
41	DOMINANT-SUBMISSIVE	-0.54
42	LEADING-FOLLOWING	-0.50
43	COMMANDING-OBEYING	-0.51
44	RESISTING-YIELDING	-0.79
45	DEMANDING-COMPLYING	-0.72
46	RELYING-ON-OTHER	
	---RELYING-ON-ONESELF	+0.35
47	ATTACHING-DETACHING	+0.88
48	AFFECTIONATE-UNAFFECTIONATE	+0.90
49	PERSONAL-IMPERSONAL	+0.91
50	COMFORTING-UNCOMFORTING	+0.93

TABLE 61

ONE-FACTOR SOLUTION OF BEHAVIOR FOR SUBJECT SIX

		I
		ASSOCIATION
36	INCLUSIVE-EXCLUSIVE	+0.91
37	ENTERING-EXITING	+0.90
38	COMING-LEAVING	+0.92
39	ARRIVING-DEPARTING	+0.91
40	ASSOCIATING-DISASSOCIATING	+0.84
41	DOMINANT-SUBMISSIVE	-0.63
42	LEADING-FOLLOWING	-0.56
43	COMMANDING-OBEYING	-0.70
44	RESISTING-YIELDING	-0.58
45	DEMANDING-COMPLYING	-0.69
46	RELYING-ON-OTHER ---RELYING-ON-ONESELF	+0.40
47	ATTACHING-DETACHING	+0.90
48	AFFECTIONATE-UNAFFECTIONATE	+0.90
49	PERSONAL-IMPERSONAL	+0.83
50	COMFORTING-UNCOMFORTING	+0.82

TABLE 62

ONE-FACTOR SOLUTION OF BEHAVIOR FOR SUBJECT SEVEN

		I ASSOCIATION
36	INCLUSIVE-EXCLUSIVE	+0.87
37	ENTERING-EXITING	+0.86
38	COMING-LEAVING	+0.88
39	ARRIVING-DEPARTING	+0.84
40	ASSOCIATING-DISASSOCIATING	+0.83
41	DOMINANT-SUBMISSIVE	-0.60
42	LEADING-FOLLOWING	-0.58
43	COMMANDING-OBEYING	-0.52
44	RESISTING-YIELDING	-0.82
45	DEMANDING-COMPLYING	-0.66
46	RELYING-ON-OTHER ---RELYING-ON-ONESELF	+0.57
47	ATTACHING-DETACHING	+0.88
48	AFFECTIONATE-UNAFFECTIONATE	+0.84
49	PERSONAL-IMPERSONAL	+0.79
50	COMFORTING-UNCOMFORTING	+0.83

TABLE 63

ONE-FACTOR SOLUTION OF BEHAVIOR FOR SUBJECT EIGHT

		I
		ASSOCIATION
36	INCLUSIVE-EXCLUSIVE	+0.86
37	ENTERING-EXITING	+0.81
38	COMING-LEAVING	+0.81
39	ARRIVING-DEPARTING	+0.85
40	ASSOCIATING-DISASSOCIATING	+0.87
41	DOMINANT-SUBMISSIVE	-0.24
42	LEADING-FOLLOWING	-0.34
43	COMMANDING-OBEYING	-0.31
44	RESISTING-YIELDING	-0.71
45	DEMANDING-COMPLYING	-0.54
46	RELYING-ON-OTHER	
	---RELYING-ON-ONESELF	+0.64
47	ATTACHING-DETACHING	+0.82
48	AFFECTIONATE-UNAFFECTIONATE	+0.61
49	PERSONAL-IMPERSONAL	+0.68
50	COMFORTING-UNCOMFORTING	+0.80

TABLE 64

ONE-FACTOR SOLUTION OF BEHAVIOR FOR SUBJECT NINE

		I
		ASSOCIATION
36	INCLUSIVE-EXCLUSIVE	+0.75
37	ENTERING-EXITING	+0.71
38	COMING-LEAVING	+0.73
39	ARRIVING-DEPARTING	+0.86
40	ASSOCIATING-DISASSOCIATING	+0.75
41	DOMINANT-SUBMISSIVE	-0.72
42	LEADING-FOLLOWING	-0.40
43	COMMANDING-OBEYING	-0.63
44	RESISTING-YIELDING	-0.84
45	DEMANDING-COMPLYING	-0.70
46	RELYING-ON-OTHER	
	---RELYING-ON-ONESELF	+0.53
47	ATTACHING-DETACHING	+0.70
48	AFFECTIONATE-UNAFFECTIONATE	+0.81
49	PERSONAL-IMPERSONAL	+0.71
50	COMFORTING-UNCOMFORTING	+0.75

TABLE 65

ONE-FACTOR SOLUTION OF BEHAVIOR FOR SUBJECT TEN

		I
		ASSOCIATION
36	INCLUSIVE-EXCLUSIVE	+0.95
37	ENTERING-EXITING	+0.94
38	COMING-LEAVING	+0.97
39	ARRIVING-DEPARTING	+0.97
40	ASSOCIATING-DISASSOCIATING	+0.95
41	DOMINANT-SUBMISSIVE	-0.79
42	LEADING-FOLLOWING	-0.74
43	COMMANDING-OBEYING	-0.80
44	RESISTING-YIELDING	-0.96
45	DEMANDING-COMPLYING	-0.88
46	RELYING-ON-OTHER	
	---RELYING-ON-ONESELF	+0.78
47	ATTACHING-DETACHING	+0.95
48	AFFECTIONATE-UNAFFECTIONATE	+0.93
49	PERSONAL-IMPERSONAL	+0.92
50	COMFORTING-UNCOMFORTING	+0.95

For all the subjects, the absolute magnitudes of all the loadings of those variables on the single factor of Association are equal to or greater than +0.40, except for Subject Six and Subject Eight. Subject Five has only one loading of +0.35 below that value, and Subject Eight has three loadings with absolute magnitudes below +0.40.

Table 66 presents the proportionality coefficients of the factor of Association-Disassociation in the one-factor solutions for all the subjects. The coefficients are all remarkably highly positive, and the criterion of generalizability previously established is easily met: The proportionality coefficients of the factor for the average subject (Subject Ten) with nine real subjects are all above +0.99, except for Subject Eight, which is +0.97.

Two-Factor Solution of Behavior. Tables 67-76 present the factor patterns of the two-factor solutions for the behavioral variables for Subjects 1-10, respectively. As stated previously, for Subject Two, Subject Three, and Subject Nine, only the one-factor of Association-Disassociation was considered justified. For those subjects, the two-factor solution was quite obviously merely the same factor of Association-Disassociation represented by the two different response forms.

TABLE 66

PROPORTIONALITY COEFFICIENTS OF FACTOR OF ASSOCIATION FROM ONE-FACTOR SOLUTION OF BEHAVIOR FOR ALL SUBJECTS

	SUBJECTS									
SUBJECTS	1	2	3	4	5	6	7	8	9	10
1	100	99	99	99	99	99	100	97	100	100
2	99	100	99	99	99	99	100	98	99	100
3	99	99	100	99	98	98	99	96	99	100
4	99	99	99	100	98	98	99	97	99	100
5	99	99	98	98	100	99	98	98	99	99
6	99	99	98	98	99	100	99	97	99	99
7	100	100	99	99	99	99	100	98	99	100
8	97	98	96	97	98	97	98	100	97	97
9	100	99	99	99	99	99	99	97	100	99
10	100	100	100	100	99	99	100	97	99	100

Note: Values have been rounded to two decimal places and multiplied by one hundred.

TABLE 67

TWO-FACTOR SOLUTION OF BEHAVIOR FOR SUBJECT ONE

		I	II
		SOCIABLENESS	DOMINANCE
36	INCLUSIVE-EXCLUSIVE	+0.90*	-0.08
37	ENTERING-EXITING	+0.99*	+0.02
38	COMING-LEAVING	+0.93*	+0.00
39	ARRIVING-DEPARTING	+0.86*	-0.14
40	ASSOCIATING-DISASSOCIATING	+0.94*	-0.04
41	DOMINANT-SUBMISSIVE	-0.24	+0.71*
42	LEADING-FOLLOWING	+0.04	+0.80*
43	COMMANDING-OBEYING	-0.14	+0.83*
44	RESISTING-YIELDING	-0.71*	+0.31
45	DEMANDING-COMPLYING	-0.15	+0.81*
46	RELYING-ON-OTHER		
	---RELYING-ON-ONESELF	-0.05	-0.71*
47	ATTACHING-DETACHING	+0.92*	-0.05
48	AFFECTIONATE-UNAFFECTIONATE	+0.85*	-0.16
49	PERSONAL-IMPERSONAL	+0.88*	-0.09
50	COMFORTING-UNCOMFORTING	+0.89*	-0.10

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 68

TWO-FACTOR SOLUTION OF BEHAVIOR FOR SUBJECT TWO

		I	II
		FORM A	FORM B
36	INCLUSIVE-EXCLUSIVE	+0.44	-0.48
37	ENTERING-EXITING	+0.24	-0.61*
38	COMING-LEAVING	+0.28	-0.60*
39	ARRIVING-DEPARTING	+0.79*	-0.05
40	ASSOCIATING-DISASSOCIATING	+0.88*	+0.07
41	DOMINANT-SUBMISSIVE	-0.01	+0.61*
42	LEADING-FOLLOWING	+0.13	+0.86*
43	COMMANDING-OBEYING	-0.32	+0.38
44	RESISTING-YIELDING	-0.86*	-0.23
45	DEMANDING-COMPLYING	-0.64*	+0.14
46	RELYING-ON-OTHER		
	---RELYING-ON-ONESELF	-0.21	-0.89*
47	ATTACHING-DETACHING	+0.40	-0.55*
48	AFFECTIONATE-UNAFFECTIONATE	+0.82*	-0.09
49	PERSONAL-IMPERSONAL	+0.54*	-0.26
50	COMFORTING-UNCOMFORTING	+0.86*	+0.00

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 69

TWO-FACTOR SOLUTION OF BEHAVIOR FOR SUBJECT THREE

		I	II
		FORM B	FORM A
36	INCLUSIVE-EXCLUSIVE	+0.34	-0.66*
37	ENTERING-EXITING	+0.29	-0.59
38	COMING-LEAVING	+0.16	-0.83*
39	ARRIVING-DEPARTING	+0.93*	-0.05
40	ASSOCIATING-DISASSOCIATING	+0.92*	-0.04
41	DOMINANT-SUBMISSIVE	+0.03	+0.90*
42	LEADING-FOLLOWING	+0.01	+0.93*
43	COMMANDING-OBEYING	-0.48	+0.46
44	RESISTING-YIELDING	-0.88*	+0.14
45	DEMANDING-COMPLYING	-0.73*	+0.20
46	RELYING-ON-OTHER ---RELYING-ON-ONESELF	-0.07	-0.94*
47	ATTACHING-DETACHING	+0.24	-0.79*
48	AFFECTIONATE-UNAFFECTIONATE	+0.95*	+0.00
49	PERSONAL-IMPERSONAL	+0.94*	-0.06
50	COMFORTING-UNCOMFORTING	+0.96*	-0.01

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 70

TWO-FACTOR SOLUTION OF BEHAVIOR FOR SUBJECT FOUR

		I	II
		SOCIABLENESS	DOMINANCE
36	INCLUSIVE-EXCLUSIVE	+0.46	-0.51
37	ENTERING-EXITING	+0.06	-0.82*
38	COMING-LEAVING	+0.12	-0.78*
39	ARRIVING-DEPARTING	+0.25	-0.50
40	ASSOCIATING-DISASSOCIATING	+0.70*	-0.29
41	DOMINANT-SUBMISSIVE	-0.16	+0.72*
42	LEADING-FOLLOWING	+0.03	+0.80*
43	COMMANDING-OBEYING	+0.30	+0.95*
44	RESISTING-YIELDING	-0.36	+0.60*
45	DEMANDING-COMPLYING	+0.05	+0.84*
46	RELYING-ON-OTHER ---RELYING-ON-ONESELF	+0.36	-0.46
47	ATTACHING-DETACHING	+0.30	-0.67*
48	AFFECTIONATE-UNAFFECTIONATE	+0.99*	+0.19
49	PERSONAL-IMPERSONAL	+0.87*	-0.06
50	COMFORTING-UNCOMFORTING	+0.38	-0.57*

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 71

TWO-FACTOR SOLUTION OF BEHAVIOR FOR SUBJECT FIVE

		I	II
		SOCIABLENESS	DOMINANCE
36	INCLUSIVE-EXCLUSIVE	+0.72*	+0.03
37	ENTERING-EXITING	+0.70*	+0.06
38	COMING-LEAVING	+0.72*	+0.06
39	ARRIVING-DEPARTING	+0.63*	+0.09
40	ASSOCIATING-DISASSOCIATING	+0.63*	+0.11
41	DOMINANT-SUBMISSIVE	+0.10	+0.67*
42	LEADING-FOLLOWING	+0.09	+0.67*
43	COMMANDING-OBEYING	+0.09	+0.59*
44	RESISTING-YIELDING	+0.17	+0.54*
45	DEMANDING-COMPLYING	+0.11	+0.61*
46	RELYING-ON-OTHER ---RELYING-ON-ONESELF	+0.28	+0.31
47	ATTACHING-DETACHING	+0.72*	+0.06
48	AFFECTIONATE-UNAFFECTIONATE	+0.66*	+0.03
49	PERSONAL-IMPERSONAL	+0.63*	+0.03
50	COMFORTING-UNCOMFORTING	+0.62*	+0.03

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 72

TWO-FACTOR SOLUTION OF BEHAVIOR FOR SUBJECT SIX

		I	II
		SOCIABLENESS	DOMINANCE
36	INCLUSIVE-EXCLUSIVE	+0.78*	-0.24
37	ENTERING-EXITING	+0.82*	-0.17
38	COMING-LEAVING	+0.78*	-0.26
39	ARRIVING-DEPARTING	+0.94*	-0.01
40	ASSOCIATING-DISASSOCIATING	+0.95*	+0.09
41	DOMINANT-SUBMISSIVE	-0.01	+0.91*
42	LEADING-FOLLOWING	+0.07	+0.94*
43	COMMANDING-OBEYING	-0.21	+0.74*
44	RESISTING-YIELDING	-0.36	+0.35
45	DEMANDING-COMPLYING	-0.27	+0.64*
46	RELYING-ON-OTHER		
	---RELYING-ON-ONESELF	-0.15	-0.79*
47	ATTACHING-DETACHING	+0.77*	-0.25
48	AFFECTIONATE-UNAFFECTIONATE	+0.91*	-0.04
49	PERSONAL-IMPERSONAL	+1.00*	+0.17
50	COMFORTING-UNCOMFORTING	+0.95*	+0.12

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 73

TWO-FACTOR SOLUTION OF BEHAVIOR FOR SUBJECT SEVEN

		I	II
		SOCIABLENESS	DOMINANCE
36	INCLUSIVE-EXCLUSIVE	+0.86*	-0.09
37	ENTERING-EXITING	+0.81*	-0.15
38	COMING-LEAVING	+0.82*	-0.16
39	ARRIVING-DEPARTING	+0.85*	-0.04
40	ASSOCIATING-DISASSOCIATING	+0.93*	+0.08
41	DOMINANT-SUBMISSIVE	+0.00	+0.94*
42	LEADING-FOLLOWING	+0.04	+0.97*
43	COMMANDING-OBEYING	+0.06	+0.92*
44	RESISTING-YIELDING	-0.55	+0.47
45	DEMANDING-COMPLYING	-0.15	+0.81*
46	RELYING-ON-OTHER		
	---RELYING-ON-ONESELF	+0.20	-0.58
47	ATTACHING-DETACHING	+0.83*	-0.14
48	AFFECTIONATE-UNAFFECTIONATE	+0.88*	-0.01
49	PERSONAL-IMPERSONAL	+0.91*	+0.10
50	COMFORTING-UNCOMFORTING	+0.97*	+0.14

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 74

TWO-FACTOR SOLUTION OF BEHAVIOR FOR SUBJECT EIGHT

		I	II
		SOCIABLENESS	DOMINANCE
36	INCLUSIVE-EXCLUSIVE	+0.85*	-0.06
37	ENTERING-EXITING	+0.80*	-0.06
38	COMING-LEAVING	+0.79*	-0.06
39	ARRIVING-DEPARTING	+0.91*	+0.08
40	ASSOCIATING-DISASSOCIATING	+0.87*	-0.04
41	DOMINANT-SUBMISSIVE	+0.14	+0.84*
42	LEADING-FOLLOWING	+0.04	+0.84*
43	COMMANDING-OBEYING	+0.00	+0.66*
44	RESISTING-YIELDING	-0.57	+0.34
45	DEMANDING-COMPLYING	-0.27	+0.61*
46	RELYING-ON-OTHER		
	---RELYING-ON-ONESELF	+0.41	-0.50
47	ATTACHING-DETACHING	+0.85*	+0.01
48	AFFECTIONATE-UNAFFECTIONATE	+0.73*	+0.23
49	PERSONAL-IMPERSONAL	+0.73*	+0.08
50	COMFORTING-UNCOMFORTING	+0.79*	-0.04

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 75

TWO-FACTOR SOLUTION OF BEHAVIOR FOR SUBJECT NINE

SUBJECT NINE

		I	II
		FORM A	FORM B
36	INCLUSIVE-EXCLUSIVE	+0.13	-0.79*
37	ENTERING-EXITING	+0.00	-0.88*
38	COMING-LEAVING	+0.04	-0.87*
39	ARRIVING-DEPARTING	+0.90*	-0.07
40	ASSOCIATING-DISASSOCIATING	+0.71*	-0.14
41	DOMINANT-SUBMISSIVE	-0.12	+0.76*
42	LEADING-FOLLOWING	-0.33	+0.11
43	COMMANDING-OBEYING	-0.58*	+0.12
44	RESISTING-YIELDING	-0.83*	+0.11
45	DEMANDING-COMPLYING	-0.69*	+0.08
46	RELYING-ON-OTHER		
	---RELYING-ON-ONESELF	+0.02	-0.64*
47	ATTACHING-DETACHING	+0.04	-0.83*
48	AFFECTIONATE-UNAFFECTIONATE	+0.92*	+0.01
49	PERSONAL-IMPERSONAL	+0.75*	-0.05
50	COMFORTING-UNCOMFORTING	+0.84*	+0.00

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 76

TWO-FACTOR SOLUTION OF BEHAVIOR FOR SUBJECT TEN

		I	II
		SOCIABLENESS	DOMINANCE
36	INCLUSIVE-EXCLUSIVE	+0.89*	-0.12
37	ENTERING-EXITING	+0.91*	-0.09
38	COMING-LEAVING	+0.86*	-0.19
39	ARRIVING-DEPARTING	+0.86*	-0.18
40	ASSOCIATING-DISASSOCIATING	+0.93*	-0.07
41	DOMINANT-SUBMISSIVE	-0.04	+0.94*
42	LEADING-FOLLOWING	+0.04	+1.00*
43	COMMANDING-OBEYING	-0.12	+0.87*
44	RESISTING-YIELDING	-0.69*	+0.38
45	DEMANDING-COMPLYING	-0.37	+0.67*
46	RELYING-ON-OTHER --RELYING-ON-ONESELF	+0.21	-0.72*
47	ATTACHING-DETACHING	+0.93*	-0.08
48	AFFECTIONATE-UNAFFECTIONATE	+0.97*	+0.00
49	PERSONAL-IMPERSONAL	+0.97*	+0.00
50	COMFORTING-UNCOMFORTING	+0.96*	-0.03

Note: Values greater than the square root of the mean of the squared loadings have been flagged.

The factorial solution for Subject Five shown in Table 71 is actually a specially calculated approximation to the reference vector structure with the confounding influence of the use of different response forms extracted. For Subject Five, the obtained two-factor solution consisted of a single substantive factor represented separately by the two different response forms (i.e., form factors), but the influence of the two substantive factors emerged in the four-factor solution, though they too were represented twice by the two different forms. For each pair of factors in that solution representative of the same substantive factor, therefore, the elements in their corresponding reference vectors were squared, the two reference vectors summed, and the elements of the new vector replaced by their square roots, thus leaving a vector approximately proportional to the idealized substantive factor with the confounding influences of the forms extracted.

The general character of the two-factor solutions for the subjects, excluding the three subjects for which only a one-factor solution was appropriate, is best represented by the factor pattern for the average subject, Subject Ten, in Table 76. In that factor pattern, the first factor is interpreted as Sociableness. All of the variables representative of the hypothesized factor of Inclusion (Variables 36-40) have salient and highest loading, all above +0.86, on that derived factor. Additionally, the

variables representative of the hypothesized factor of Dependence (Variables 46-50) nearly unanimously have salient and highest loadings on that factor (all above +0.93), with only Variable 46 failing to do so. The second derived factor is interpreted as Dominance, for all of the variables representative of the hypothesized factor of Dominance (Variables 41-45), except for one variable (Variable 44), have highest and salient loadings on that factor (with the four loadings +0.67 or greater). The two derived factors of Sociableness and Dominance had a correlation for the average subject of -0.56.

For the average subject, Variable 44, Resisting-Yielding, putatively representative of the hypothesized factor of Dominance actually loaded saliently and highest in absolute magnitude on the derived factor of Sociableness, though in a negative direction, and Variable 46, Relying-On-Others vs.Relying-On-Oneself, though putatively representative of the hypothesized factor of Dependence and hence should have loaded Sociableness--actually had a salient and highest loading in magnitude on the derived factor of Dominance, though also in a negative direction. Apparently, then, in general, the subjects construed "yielding" (vs. resisting) along a dimension of Sociableness rather than Submission (vs. Dominance), and they construed self-reliance (vs. relying on another) along a dimension of Dominance rather

than its opposite, reliance on others, along a dimension of Sociableness, which encompassed the hypothesized factor of Dependence.

For all of the subjects in which the two-factor solution of the behavioral variables was appropriate, of the ten variables representative of the two hypothesized factors of Inclusion and Dependence, all but one (Variable 46 alluded to previously) had salient and highest loadings on the first derived factor for those solutions interpreted as Sociableness. For the five variables representative of the hypothesized factor of Dominance, for Subject Four and Subject Five all of those variables and for the remainder of that group of subjects all but one of those variables (Variable 44 discussed previously) had salient and highest loadings on the second derived factor in the two-factor solution interpreted as Dominance.

Table 77 and Table 78 display the proportionality coefficients for the two behavioral factors of Sociableness and Dominance, respectively, for the subjects. Although for both of those factors the criterion of generalizability established previously is met, that fact must be disregarded, and it must be concluded instead that they do not generalize substantially enough to be considered common dimensions.

TABLE 77

PROPORTIONALITY COEFFICIENTS OF FACTOR OF SOCIABLENESS FROM TWO-FACTOR SOLUTION OF BEHAVIOR FOR ALL SUBJECTS

	SUBJECTS									
SUBJECTS	1	2	3	4	5	6	7	8	9	10
1	100	87	84	78	91	98	98	97	72	99
2	87	100	98	74	69	89	87	86	92	89
3	84	98	100	76	67	88	84	83	97	87
4	78	74	76	100	76	79	83	79	70	82
5	91	69	67	76	100	93	94	93	53	92
6	98	89	88	79	93	100	98	96	77	98
7	98	87	84	83	94	98	100	99	73	99
8	97	86	83	79	93	96	99	100	72	99
9	72	92	97	70	53	77	73	72	100	76
10	99	89	87	82	92	98	99	99	76	100

Note: Values have been rounded to two decimal places and multiplied by one hundred.

TABLE 78

PROPORTIONALITY COEFFICIENTS OF FACTOR OF DOMINANCE FROM TWO-FACTOR SOLUTION OF BEHAVIOR FOR ALL SUBJECTS

	SUBJECTS									
	1	2	3	4	5	6	7	8	9	10
SUBJECTS										
1	100	67	69	76	75	94	96	94	39	97
2	67	100	96	76	29	79	69	65	83	73
3	69	96	100	84	39	85	75	71	89	78
4	76	76	84	100	58	79	78	75	75	81
5	75	29	39	58	100	72	83	82	13	77
6	94	79	85	79	72	100	98	95	59	98
7	96	69	75	78	83	98	100	97	47	98
8	94	65	71	75	82	95	97	100	42	97
9	39	83	89	75	13	59	47	42	100	49
10	97	73	78	81	77	98	98	97	49	100

Note: Values have been rounded to two decimal places and multiplied by one hundred.

For Subject Two, Subject Three, and Subject Nine, as observed earlier, the two-factor solution was inappropriate because only alternate forms of the factor of Association-Disassociation found in the single-factor solution emerged, thus indicating that the two-factor solution failed to meet the criterion of generalizability (i.e., not failing to match for more than two subjects). The fact that the proportionality coefficients for the average subject with those three subjects all met the criterion for factor matching (at least +0.71) for both of the obtained factors, except the coefficient with Subject Nine for the second factor, was due to the similarity of the two derived factors for the average subject to the corresponding alternate-form factors of Association-Disassociation.

Sociableness and Dominance were both quite considerably related to Association-Disassociation, and, in fact, in the two factor solution, Dominance (actually, its opposite end of Submission) simply emerged from Association, with the remnant then being that of Sociableness--with both of those emergent factors being considerably correlated (a correlation of -0.56 between Sociableness and Dominance). The apparent matchings between the average subject and those three subjects, therefore, were predominantly due to those facts and consequently were discounted.

It might be noted at this point, however, that all the subjects were caucasian and most from the Mainland, except for Subject Two and Subject Three who where Chinese-American and Filipino-American, respectively, and both "local." Only those two subjects did not have an emotional factor of Control emerge, and only they and Subject Nine did not have a behavioral factor of Dominance, which quite obviously one would expect to be highly related to the emotional factor of Control. The inability of the two-factor behavioral model to generalize across subjects, therefore, may have been due to an ethnic/geographic difference, for the two-factor solution clearly did generalize across the caucasian subjects (only failing with Subject Nine).

Three-Factor Solution of Behavior. Only for Subject Four was a factorial solution of the behavioral variables with as many as three factors warranted by the data, as shown in Table 79. For Subject Four, four of five of the variables representative of Inclusion (Variables 36-40) had salient and highest loadings on the first obtained factor interpreted as Inclusion. Similarly, four of five of the variables representative of the hypothesized factor of Dominance had salient and highest loadings on the second derived factor interpreted as Dominance. Two of the five variables representative of the hypothesized factor of Dependence loaded saliently and highest on the third derived factor interpreted as Dependence, though it failed the

objective criterion established earlier for determining the emergence of a hypothesized factor (i.e., a majority of the variables representative of a hypothesized factor having salient loadings on a factor interpreted as that factor).

The third factor for Subject Four interpreted as Dependence is likely that factor, however, despite the inability to make such a conclusion on a more objective basis. Although only two of the variables representative of the hypothesized factor of Dependence had salient loadings on that third obtained factor, it should be noted that for all the subjects in which a two-factor solution was appropriate, Variable 46 purported to be representative of Dependence loaded saliently and highest on the obtained factor of Dominance instead of Sociablity, thus indicating that only four of the five variables purported to be representative of the hypothesized factor of Dependence could truely be said to be. And another of those variables, Variable 47 (Attaching-Detaching), could as easily be considered representative of the hypothesized factor of Inclusion which that variable did appear to load saliently and highest for Subject Four. Similarly, Variable 40, Associating-Disassociating, could easily be more construed along the hypothesized factor of Dependence rather than Inclusion as was first presumed, and that variable did have a salient and highest loading on the factor interpreted as Dependence for Subject Four. Given such considerations,

having three variables of the nature of associating, affectionate, and personal load saliently and highest on the third factor for Subject Four, then, is quite supportive of the contention that the factor is indeed Dependence (with affection considered its core).

Factorially-Based Models

In the theory of dyadic social transaction presented previously, psychological dimensions, such as the personal trait dimensions presently being investigated, were conceived as consisting of the three components of cognition, emotion, and behavior. For each of those dimensions, the cognitive component was conceived as consisting of one of the cognitive factors, and the nature of the remaining components of emotion and behavior were presumed to be determined by the factorial loadings of the emotional and behavioral factors on the cognitive factors identified as the cognitive component for that dimension.

A logical reason presented for basing a psychological dimension on a cognitive factor was predicated on the assumption that more cognitive factors existed than either emotional or behavioral factors. For, if cognition, emotion, and behavior were organically related and their inter-relatedness could be represented linearly, then the number of dimensions representing their relatedness would have to be at least as great as the number of cognitive

factors. Otherwise, the inter-relatedness among the different kinds of factors could not be adequately represented, just as one can not describe a box adequately in only two dimensions.

As the previous analyses have indicated, however, the presumption that more cognitive factors existed than either emotional or behavioral factors was not generally supported. Only for Subject Two and Subject Three, in fact, were more cognitive factors found then emotional or behavioral factors, and even for those two subjects, no more cognitive factors which were common to others (i.e., cognitive common traits) were found than emotional factors which were common to others (i.e., emotional common traits). For all the other subjects, the number of emotional factors was equal to or greater than the number of cognitive factors, and the general character of the data of the real subjects as represented by the average subject indicated more emotional factors then cognitive factors.

Given that the number of behavioral factors was always less than the number of emotional factors for all subjects, the alternative of basing the psychological dimensions, in this case the personality trait dimensions, upon emotional rather than cognitive factors was considered. However, although such an alternative was thought quite reasonable when common psychological dimensions were to be considered,

for the number of common emotional traits was always as great or greater than the number of common cognitive traits for each subject, it posed a problem in the determination of those psychological dimensions most appropriate to a particular subject (unique dimensions). For Subject Two and Subject Three, as mentioned before, had more cognitive factors than emotional factors, though the number of common cognitive traits and the number of common emotional traits for those two subjects were equal.

Instead of basing the psychological dimensions representative of the inter-relatedness of cognition, emotion, and behavior on either the cognitive or emotional factors, or even the behavioral factors, it was decided instead to define them factorially, i.e., through second-order factor analyses. Such an approach had the advantage of allowing the structure itself among the different sets of factors to determine the nature of the psychological dimensions so constructed, rather than superimposing dimensions constructed on a partially *a priori* basis upon that structure. Additionally, it was believed that ascertaining the nature of the dimensions underlying the covariation of the cognitive, emotional, and behavioral factors might provide information as to the manner in which they were organized.

TABLE 79

THREE-FACTOR SOLUTION OF BEHAVIOR FOR SUBJECT FOUR

		I	II	III
		INCLUSIVE	DOMINANT	DEPENDENT
36	INCLUSIVE-EXCLUSIVE	+0.56*	-0.11	+0.36
37	ENTERING-EXITING	+0.90*	-0.10	-0.04
38	COMING-DEPARTING	+0.94*	-0.02	+0.00
39	ARRIVING-DEPARTING	+0.71*	+0.05	+0.15
40	ASSOCATING			
	--DISASSOCIATING	+0.16	-0.25	+0.64*
41	DOMINANT-SUBMISSIVE	-0.04	+0.76*	-0.15
42	LEADING-FOLLOWING	+0.00	+0.87*	+0.02
43	COMMANDING-OBEYING	-0.32	+0.69*	+0.31
44	RESISTING-YIELDING	-0.27	+0.44	-0.31
45	DEMANDING-COMPLYING	-0.20	+0.72*	+0.07
46	RELYING-ON-OTHER			
	--RELYING-ON-ONESELF	-0.19	-0.72*	+0.36
47	ATTACHING-DETACHING	+0.78*	-0.07	+0.19
48	AFFECTIONATE			
	--UNAFFECTIONATE	-0.01	+0.07	+0.93*
49	PERSONAL-IMPERSONAL	+0.12	-0.06	+0.80*
50	COMFORTING-UNCOMFORTING	+0.34	-0.36	-0.32

Note: Values greater than the square root of the mean of squared loadings have been flagged.

Two general factorially-based models of cognition, emotion, and behavior (i.e., sets of psychological dimensions in the form of personal-trait dimensions) were suggested by the previous analyses. The first model, Model One (the Common Model), incorporated those cognitive, emotional, and behavioral factors which, as a set, generalized across the subjects--that is, the cognitive factors of Evaluation and Dynamism, the emotional factors of Pleasure and Arousal, and the behavioral factor of Association-Disassociation. The second model, Model Two (the Dominant Model), included those cognitive, emotional, and behavioral factors which, though not necessarily generalizable across subjects, were dominant within the sample of subjects, as represented by the most number of subjects beyond a majority and the hypothetically average subject. That is, Model Two, included the cognitive factors of Evaluation and Dynamism, the emotional factors of Pleasure, Arousal, and Control, and the behavioral factors of Sociableness and Dominance.

Model One--The Common Model. Table 80 displays the percentage and cumulative percentage of common variance of cognitive, emotional, and behavioral factors of Model One attributable to the extraction of each successive second-order factor. As is shown, for all subjects, except Subject

Eight, over 96% of the common variance of the primary factors of the model is accounted for after the extraction of the first two second-order factors, and for Subject Eight, 91% of the common variance is accounted for by the first two second-order factors.

Table 81 presents the internal criteria for determining the number of second-order factors for the five primary factors of Model One for each subject, with the "Root" criterion referring to the number of non-negative eigenvalues of the initial reduced correlation matrix (indicative of the absolute maximum number of common factors possible). Clearly, two second-order factors are indicated for all of the subjects, except possibly Subject Eight, and all of the criteria for ascertaining the number of second-order factors indicate two for the average subject, Subject Ten (with the Root criterion indicating absolutely no more than two). Given the previous a priori argument that cognition, emotion, and behavior are organically related and the dimensionality of their common factor space must be at least as great as the greatest number of any one of the sets of factors encompassed within that space (cognitive, emotional, or behavioral) and the internal criteria for more objectively determining the number of factors--it may be concluded that two-second order factors exist for all the subjects, except possibly for Subject Eight.

TABLE 80

PERCENTAGE OF COMMON VARIANCE OF PRIMARY FACTORS OF MODEL ONE ATTRIBUTABLE TO EXTRACTION OF SUCCESSIVE FACTORS

	SUBJECTS									
FACTORS	1	2	3	4	5	6	7	8	9	10
1	64	63	71	63	68	73	64	75	71	64
	64	63	71	63	68	73	64	75	71	64
2	35	34	25	35	31	24	34	16	25	35
	99	97	96	98	99	97	98	91	96	99
3	01	04	04	02	02	02	02	10	04	01
	100	100	100	100	100	99	100	100	100	100
4	--	--	--	--	--	01	--	--	--	--
	--	--	--	--	--	100	--	--	--	--

Note: Upper value and lower value are, respectively, the percentage and cumulative percentage of common variance attributable to that corresponding factor.

TABLE 81

CRITERIA FOR NUMBER OF SECOND-ORDER FACTORS FOR MODEL ONE

	CRITERIA						
	SCREE	KG	INCREMENT	CUMULATIVE	NK	HK	ROOTS
SUBJECTS							
1	2	2	2	2	2	2	3
2	2	2	2	2	2	2	3
3	2	2	2	2	2	2	3
4	2	2	2	2	2	2	3
5	2	2	2	2	2	2	3
6	2	2	2	2	2	2	4
7	2	2	2	2	2	2	3
8	3	2	3	2	1	1	3
9	2	2	3	3	2	2	3
10	2	2	2	2	2	2	2

Tables 82-91 present the secondary factor patterns of the primary factors of Model One for Subjects 1-10, respectively. For all of the subjects, the first second-order factor has been interpreted as "Emotionalism" (indicative of its negative extreme), for it is believed to be the same as that factor found by Eysenck which he has referred to by that label and sometimes as Neuroticism (H. J. Eysenck & S. B. G. Eysenck, 1969). For all of the subjects, the cognitive factor of Evaluation, the emotional factor of Pleasure, and the behavioral factor of Association all have salient and highest loadings (in all cases above +0.77) on that second-order factor. And for all subjects, the second second-order factor has been interpreted as "Extroversion" because it is believed to be the same as another factor found by Eysenck in personality research (H. J. Eysenck & S. B. G. Eysenck, 1969). For all subjects except Subject Eight, the cognitive factor of Dynamism and the emotional factor of Arousal have highest and salient loadings on that second-order factor (of at least +0.68 for those subjects). For Subject Eight, the Cognitive factor of Dynamism has a salient and its highest loading on that factor, though the emotional factor of Arousal has only a small negative loading on it.

As indicated earlier, for Subject Eight, the factor interpreted as Arousal from the three-factor solution of emotion was actually a much better representative of

emotional Arousal than that factor so interpreted in the two-factor solution for that subject. The factor interpreted as Arousal (actually Arousal/Control) in the two-factor solution for Subject Eight was confounded with the hypothesized factor of Control.

Had the factor interpreted as Arousal from the three factor solution been used in the second-order factoring of the primaries of Model One for Subject Eight, therefore, it likely would have had a high positive loading on the secondary of Extroversion. But, rather than using factors from different solutions for the subjects, the two-factor solution for cognition, the two-factor solution for emotion, and the one-factor solution for behavior were used for the primary factors of Model One for all the subjects.

For all subjects, scores were calculated on the two secondary factors of the primary factors of Model One for the forty social situations, using the regression method, and the secondary factors for the subjects then inter-correlated. Table 92 and Table 93 present the correlation matrices for the secondary factors of Emotionalism and Extroversion, respectively, for the subjects.

Quite obviously, the two second-order factors of Model One generalize across subjects and may therefore be referred to as common personal-trait dimensions. The first second-order factor of Emotionalism for the average subject,

Subject Ten, correlates +0.75 or greater with the first second-order factor of the other subjects interpreted as the same. And the second second-order factor of Extroversion for Subject Ten correlates +0.76 or greater with that factor interpreted the same for the other subjects, except for Subject Two (+0.67) and Subject Eight (+0.49), thus meeting the previously stated criterion of generalizability (i.e., at least 7 of 9).

Table 94 demonstrates the result of a third-order factoring of the second-order factors of Model One of all the subjects. As shown, all second-order factors interpreted as Emotionalism have a salient and highest loading on the first third-order factor (technically, not theoretically) interpreted as the same, with all loadings at least +0.84, except for one at +0.70. For the second-order factors interpreted as Extroversion for the subjects, all those factors have a salient and highest loading (all at least +0.71) on the third-order factor so interpreted, except for Subject Three (+0.60) and Subject Eight (+0.39).

<u>Model Two--The Dominant Model</u>. The second model evaluated, Model Two or the Dominant Model, incorporated the two cognitive factors of Evaluation and Dynamism, the three emotional factors of Pleasure, Arousal, and Control, and the two behavioral factors of Sociableness and Dominance. Model Two was evaluated in the same manner as Model One, except

only those subjects for which the primary factors incorporated in the model were obtained were included in the evaluation. That is, Subject Two, Subject Three, and Subject Nine were excluded from the analysis.

Table 95 presents the percentage and cumulative percentage of common variance of the primary factors of Model Two attributable to the extraction of each secondary factor for the six real subjects and average subject. As noted, for all of the subjects, 96% or more of the common variance of the primary factors is attributable to the extraction of the first three secondary factors, and for the average subject, Subject Ten, all of the common variance is attributable to the first three secondary factors.

Table 96 displays the internal criteria for determining the number of secondary factors for each of the seven subjects. When jointly considered, those criteria indicate from two to three factors for those subjects, though, notably, for the average subject, three factors and no more than three factors is quite clearly indicated. Given the earlier a priori argument that the different sets of factors in the model are linearly related and must therefore reside in a common factor space with a dimensionality at least as great as the greatest number of factors for the sets and given the internal criteria for deciding the number of

factors for the model--it is quite evident that three secondary factors underlie the primary factors of the model.

Tables 97-103 present the secondary factor patterns of Subject One, Subject Four, Subject Five, Subject Six, Subject Seven, Subject Eight, and Subject Ten, respectively. The secondary factor pattern of the average subject, Subject Ten, as shown in Table 103, epitomizes the general character of the secondary factor patterns of the other subjects.

For the average subject, as shown in Table 103, the first secondary factor is quite obviously the factor of Emotionalism found in Model One (with the negative end of that secondary factor labelled Emotionalism). The cognitive factor of Evaluation, the emotional factor of Pleasure, and the behavioral factor of Sociableness all have salient and highest loadings on that secondary factor (all above +0.95), and the behavioral factor of Dominance has a moderately high negative loading on that factor (-0.51), though not a salient (not above the root mean of the squared loadings) nor its highest loading on that factor.

The second second-order factor for the average subject is interpreted as Dominance. The cognitive factor of Dynamism has a salient negative loading on that secondary factor and loads it as high in absolute magnitude as any other factor. The emotional factor of Control and the behavioral factor of Dominance both have highest and salient loadings on that

secondary factor (+0.88 and +0.77, respectively). Clearly, for the average subject, a feeling of emotional control in relation to a focal-stimulus person in a physical setting is inversely proportional to the perception of that person along the cognitive dimension of Dynamism (i.e., the person is construed as static--passive and impotent) and is directly proportional to behavior construed as socially dominant.

The third second-order factor for the average subject is the same as the second second-order factor found in Model One--Extroversion. In the second model, too, the cognitive factor of Dynamism has a high and salient loading on that secondary factor, though it loads it only as much in absolute value as it does the secondary of Dominance, which it loads inversely. Similarly, the emotional factor of Arousal has a salient and its highest loading on the secondary factor interpreted as Extroversion. Clearly, the average subject feels emotionally aroused in a social situation with a subject construed as dynamic, <u>though whatever behavior is enacted is not much likely to be either sociable or dominant</u>.

One of the most interesting aspects of the three secondary factors of Model Two for the average subject (i.e., the personal trait dimensions for the average subject) is the evidence that the three emotional factors

provide the organizational basis for those psychological dimensions. The emotional factor of Pleasure has an extremely high loading on the psychological dimension of Emotionalism, and it would seem to underlie the other two primary factors of cognitive Evaluation and behavioral Sociableness which characterize that dimension. Similarly, the other two psychological dimensions of Dominance and Extroversion are apparently organized by the two emotional factors of Control and Arousal, respectively. For the emotional factor of Control has its highest loading on Dominance and would seem to underlie the opposite of cognitive Dynamism and underlie behavioral Dominance, and the emotional factor of Arousal has its highest loading on the dimension of Extroversion and seems to underlie the cognitive factor of Dynamism, which loads equally as highly in absolute magnitude on the secondary of Dominance.

For the subjects included in the evaluation of Model Two, scores on the second-order factors were calculated for the forty situations, using the regression method, and the second-order factors were then inter-correlated over the situations. Table 104, Table 105, and Table 106 present the correlation matrices of the three second-order factors of Emotionalism, Dominance, and Extroversion, respectively, for the subjects (i.e., for all subjects except for the three subjects excluded from the evaluation).

TABLE 82

FACTOR PATTERN OF MODEL ONE FOR

SUBJECT ONE

		I	II
		EMOTIONALISM	EXTROVERSION
1	EVALUATION	98*	-10
2	DYNAMISM	18	92*
3	PLEASURE	97*	18
4	AROUSAL	1	94*
5	ASSOCIATION	96*	24

Note: Values have been rounded to two decimal places and multiplied by one hundred.

TABLE 83

FACTOR PATTERN OF MODEL ONE FOR

SUBJECT TWO

		I	II
		EMOTIONALISM	EXTROVERSION
1	EVALUATION	91*	-16
2	DYNAMISM	17	97*
3	PLEASURE	94*	33
4	AROUSAL	6	86*
5	ASSOCIATION	81*	24

Note: Values have been rounded to two decimal places and multiplied by one hundred.

TABLE 84

FACTOR PATTERN OF MODEL ONE FOR

SUBJECT THREE

		I	II
		EMOTIONALISM	EXTROVERSION
1	EVALUATION	96*	-7
2	DYNAMISM	13	62*
3	PLEASURE	78*	31
4	AROUSAL	7	83*
5	ASSOCIATION	77*	58

Note: Values have been rounded to two decimal places and multiplied by one hundred.

TABLE 85

FACTOR PATTERN OF MODEL ONE FOR

SUBJECT FOUR

		I	II
		EMOTIONALISM	EXTROVERSION
1	EVALUATION	94*	-13
2	DYNAMISM	17	84*
3	PLEASURE	93*	11
4	AROUSAL	-1	88*
5	ASSOCIATION	91*	27

Note: Values have been rounded to two decimal places and multiplied by one hundred.

TABLE 86

FACTOR PATTERN OF MODEL ONE FOR

SUBJECT FIVE

		I	II
		EMOTIONALISM	EXTROVERSION
1	EVALUATION	95*	2
2	DYNAMISM	19	82*
3	PLEASURE	96*	9
4	AROUSAL	3	84*
5	ASSOCIATION	92*	19

Note: Values have been rounded to two decimal places and multiplied by one hundred.

TABLE 87

FACTOR PATTERN OF MODEL ONE FOR

SUBJECT SIX

		I	II
		EMOTIONALISM	EXTROVERSION
1	EVALUATION	91*	1
2	DYNAMISM	14	78*
3	PLEASURE	92*	24
4	AROUSAL	24	74*
5	ASSOCIATION	95*	24

Note: Values have been rounded to two decimal places and multiplied by one hundred.

TABLE 88

FACTOR PATTERN OF MODEL ONE FOR

SUBJECT SEVEN

		I	II
		EMOTIONALISM	EXTROVERSION
1	EVALUATION	95*	-16
2	DYNAMISM	10	85*
3	PLEASURE	96*	6
4	AROUSAL	-16	85*
5	ASSOCIATION	93*	1

Note: Values have been rounded to two decimal places and multiplied by one hundred.

TABLE 89

FACTOR PATTERN OF MODEL ONE FOR

SUBJECT EIGHT

		I	II
		EMOTIONALISM	EXTROVERSION
1	EVALUATIN	94*	-27
2	DYNAMISM	4	62*
3	PLEASURE	94*	8
4	AROUSAL	1	-10
5	ASSOCIATION	94*	19

Note: Values have been rounded to two decimal places and multiplied by one hundred.

TABLE 90

FACTOR PATTERN OF MODEL ONE FOR

SUBJECT NINE

		I	II
		EMOTIONALISM	EXTROVERSION
1	EVALUATION	94*	-4
2	DYNAMISM	23	68*
3	PLEASURE	88*	18
4	AROUSAL	0	70*
5	ASSOCIATION	86*	17

Note: Values have been rounded to two decimal places and multiplied by one hundred.

TABLE 91

FACTOR PATTERN OF MODEL ONE FOR

SUBJECT TEN

		I	II
		EMOTIONALISM	EXTROVERSION
1	EVALUATION	98*	-12
2	DYNAMISM	18	92*
3	PLEASURE	97*	18
4	AROUSAL	1	94*
5	ASSOCIATION	96*	24

Note: Values have been rounded to two decimal places and multiplied by one hundred.

TABLE 92

CORRELATION COEFFICIENTS OF SECOND-ORDER FACTOR OF EMOTIONALISM OF MODEL ONE FOR ALL SUBJECTS

	SUBJECTS									
SUBJECTS	1	2	3	4	5	6	7	8	9	10
1	100	82	79	85	87	84	82	78	66	93
2	82	100	83	81	78	81	75	83	69	91
3	79	83	100	84	86	86	74	87	60	91
4	85	81	84	100	82	88	75	74	70	92
5	87	78	86	82	100	91	80	84	58	92
6	84	81	86	88	91	100	75	80	59	92
7	82	75	74	75	80	75	100	71	64	88
8	78	83	87	74	84	80	71	100	62	89
9	66	69	60	70	58	59	64	62	100	75
10	93	91	91	92	92	92	88	89	75	100

Note: Values have been rounded to two decimal places and multiplied by one hundred.

TABLE 93

CORRELATION COEFFICIENTS OF SECOND-ORDER FACTOR OF EXTROVERSION OF MODEL ONE FOR ALL SUBJECTS

	SUBJECTS									
SUBJECTS	1	2	3	4	5	6	7	8	9	10
1	100	85	61	83	71	74	78	54	76	91
2	85	100	61	90	74	82	85	44	73	95
3	61	61	100	54	52	52	54	15	66	67
4	83	90	54	100	72	81	79	30	68	91
5	71	74	52	72	100	77	68	41	55	84
6	74	82	52	81	77	100	77	42	62	89
7	78	85	54	79	68	77	100	40	64	86
8	54	44	15	30	41	42	40	100	35	49
9	76	73	66	68	55	62	64	35	100	76
10	91	95	67	91	84	89	86	49	76	100

Note: Values have been rounded to two decimal places and multiplied by one hundred.

TABLE 94

THIRD-ORDER FACTOR PATTERN OF PERSONAL-TRAIT DIMENSIONS

OF MODEL ONE FOR ALL SUBJECTS

	I	II
	EMOTIONALISM	EXTROVERSTION
EMOTIONALISM		
SUBJECT 1	+093*	+017
SUBJECT 2	+091*	+010
SUBJECT 3	+092*	-021
SUBJECT 4	+092*	+001
SUBJECT 5	+094*	-011
SUBJECT 6	+094*	-005
SUBJECT 7	+084*	-001
SUBJECT 8	+088*	-015
SUBJECT 9	+070*	+008
SUBJECT 10	+100*	+000

TABLE 94 (cont.)

	I	II
	EMOTIONALISM	EXTROVERSTION
EXTROVERSION		
SUBJECT 1	-016	+086*
SUBJECT 2	-009	+094*
SUBJECT 3	+008	+060
SUBJECT 4	-002	+096*
SUBJECT 5	+009	+082*
SUBJECT 6	+008	+089*
SUBJECT 7	-005	+088*
SUBJECT 8	-002	+039
SUBJECT 9	-011	+071*
SUBJECT 10	+002	+098*

Note: Values have been rounded to two decimal places and multiplied by one hundred. Factors are uncorrelated.

TABLE 95

PERCENTAGE OF COMMON VARIANCE OF PRIMARY FACTORS OF MODEL TWO ATTRIBUTABLE TO EXTRACTION OF SUCCESSIVE FACTORS

	SUBJECTS						
FACTORS	1	4	5	6	7	8	10
1	61	61	65	63	53	57	58
	61	61	65	63	53	57	58
2	28	29	29	27	33	29	33
	88	90	94	89	86	86	92
3	10	08	04	07	11	13	08
	99	98	98	96	97	98	100
4	01	02	02	03	02	02	--
	100	100	100	99	100	100	--
5	--	--	--	01	--	--	--
	--	--	--	100	--	--	--

Note: Upper value and lower value are, respectively, the percentage and cumulative percentage of common variance attributable to that corresponding factor.

TABLE 96

CRITERIA FOR NUMBER OF SECOND-ORDER FACTORS

FOR MODEL TWO

	CRITERIA						
	SCREE	KG	INCREMENT	CUMULATIVE	NK	HK	ROOTS
SUBJECTS							
1	3	2	3	3	3	3	4
4	3	2	3	2	3	3	4
5	3	2	2	2	2	2	4
6	2	2	3	3	2	2	5
7	3	2	3	3	3	2	5
8	3	3	3	3	2	2	3
10	3	2	3	2	3	3	3

TABLE 97

FACTOR PATTERN OF MODEL TWO

FOR

SUBJECT ONE

		I	II	III
		EMOTIONALISM	DOMINANCE	EXTROVERSION
1	EVALUATION	92*	-33	-9
2	DYNAMISM	-10	-31	85*
3	PLEASURE	94*	-26	-5
4	AROUSAL	-1	6	90*
5	CONTROL	-23	88*	-16
6	SOCIABLENESS	94*	-24	-2
7	DOMINANCE	-48	81*	-5

Note: Values have been rounded to two decimal places and multiplied by one hundred, and values greater than the square root of the mean of the squared loadings have been indicated with an asterisk.

TABLE 98

FACTOR PATTERN OF MODEL TWO

FOR

SUBJECT FOUR

		I	II	III
		EMOTIONALISM	DOMINANCE	EXTROVERSION
1	EVALUATION	91*	-14	-21
2	DYNAMISM	9	-46	69
3	PLEASURE	91*	-17	1
4	AROUSAL	-1	-11	87*
5	CONTROL	-10	72*	-27
6	SOCIABLENESS	91*	-3	26
7	DOMINANCE	-71*	53*	-8

Note: Values have been rounded to two decimal places and multiplied by one hundred, and values greater than the square root of the mean of the squared loadings have been indicated with an asterisk.

TABLE 99

FACTOR PATTERN OF MODEL TWO

FOR

SUBJECT FIVE

		I	II	III
		EMOTIONALISM	DOMINANCE	EXTROVERSION
1	EVALUATION	94*	2	3
2	DYNAMISM	20	-75*	36
3	PLEASURE	96*	-3	8
4	AROUSAL	13	-29	61*
5	CONTROL	6	85*	-14
6	SOCIABLENESS	95*	-4	15
7	DOMINANCE	-76*	44	-16

Note: Values have been rounded to two decimal places and multiplied by one hundred, and values greater than the square root of the mean of the squared loadings have been indicated with an asterisk.

TABLE 100

FACTOR PATTERN OF MODEL TWO

FOR

SUBJECT SIX

		I	II	III
		EMOTIONALISM	DOMINANCE	EXTROVERSION
1	EVALUATION	88*	-10	10
2	DYNAMISM	2	-49*	23
3	PLEASURE	88*	-25	17
4	AROUSAL	25	-24	70*
5	CONTROL	0	90*	-15
6	SOCIABLENESS	89*	0	43
7	DOMINANCE	-37	80*	-12

Note: Values have been rounded to two decimal places and multiplied by one hundred, and values greater than the square root of the mean of the squared loadings have been indicated with an asterisk.

TABLE 101

FACTOR PATTERN OF MODEL TWO

FOR

SUBJECT SEVEN

		I	II	III
		EMOTIONALISM	DOMINANCE	EXTROVERSION
1	EVALUATION	94*	-2	-27
2	DYNAMISM	4	-71*	51*
3	PLEASURE	96*	-3	6
4	AROUSAL	-12	-15	78*
5	CONTROL	12	79*	-9
6	SOCIABLENESS	91*	12	-5
7	DOMINANCE	-39	46	13

Note: Values have been rounded to two decimal places and multiplied by one hundred, and values greater than the square root of the mean of the squared loadings have been indicated with an asterisk.

TABLE 102

FACTOR PATTERN OF MODEL TWO

FOR

SUBJECT EIGHT

		I	II	III
		EMOTIONALISM	DOMINANCE	EXTROVERSION
1	EVALUATION	90*	-16	-40
2	DYNAMISM	7	-34	61*
3	PLEASURE	95*	-5	9
4	AROUSAL	-14	38	45
5	CONTROL	30	70*	-19
6	SOCIABLENESS	95*	3	0
7	DOMINANCE	-40	75*	5

Note: Values have been rounded to two decimal places and multiplied by one hundred, and values greater than the square root of the mean of the squared loadings have been indicated with an asterisk.

TABLE 103

FACTOR PATTERN OF MODEL TWO

FOR

SUBJECT TEN

		I	II	III
		EMOTIONALISM	DOMINANCE	EXTROVERSION
1	EVALUATION	97*	-12	-20
2	DYNAMISM	10	-66*	66*
3	PLEASURE	95*	-22	10
4	AROUSAL	-3	-16	85*
5	CONTROL	0	88*	-26
6	SOCIABLENESS	98*	-4	10
7	DOMINANCE	-51	77*	-15

Note: Values have been rounded to two decimal places and multiplied by one hundred, and values greater than the square root of the mean of the squared loadings have been indicated with an asterisk.

TABLE 104

CORRELATION COEFFICIENTS OF FACTOR OF EMOTIONALISM OF MODEL TWO FOR SEVEN SUBJECTS

	SUBJECTS						
SUBJECTS	1	4	5	6	7	8	10
1	100	74	87	74	79	78	89
4	74	100	79	84	74	73	91
5	87	79	100	87	77	83	91
6	74	84	87	100	68	75	88
7	79	74	77	68	100	69	87
8	78	73	83	75	69	100	87
10	89	91	91	88	87	87	100

Note: Values have been rounded to two decimal places and multiplied by one hundred.

TABLE 105

CORRELATION COEFFICIENTS OF FACTOR OF DOMINANCE OF MODEL TWO FOR SEVEN SUBJECTS

	SUBJECTS						
	1	4	5	6	7	8	10
SUBJECTS							
1	100	56	32	59	51	41	71
4	56	100	55	71	57	48	70
5	32	55	100	61	70	56	78
6	59	71	61	100	60	49	74
7	51	57	70	60	100	58	83
8	41	48	56	49	58	100	69
10	71	70	78	74	83	69	100

Note: Values have been rounded to two decimal places and multiplied by one hundred.

TABLE 106

CORRELATION COEFFICIENTS OF FACTOR OF EXTROVERSION OF MODEL TWO FOR SEVEN SUBJECTS

	SUBJECTS						
	1	4	5	6	7	8	10
SUBJECTS							
1	100	66	52	31	53	70	84
4	66	100	55	23	63	32	72
5	52	55	100	46	41	26	64
6	31	23	46	100	26	08	48
7	53	63	41	26	100	21	70
8	70	32	26	08	21	100	55
10	84	72	64	48	70	55	100

Note: Values have been rounded to two decimal places and multiplied by one hundred.

As indicated in Table 104, the second-order factor interpreted as Emotionalism in Model Two for the average subject correlates +0.87 or more with the second-order factor of the other subjects interpreted as the same. Similarly, all of the correlations between the second-order factor of Dominance for the average subject and the second-order factor interpreted the same for the other subjects (Table 105) are quite high--i.e., all +0.69 or more. And the second-order factor of Extroversion for the average subject correlates +0.64 or more with that second-order factor so interpreted for the other subjects (Table 106), except for Subject Six and Subject Eight in which the correlations are, nevertheless, moderately high (+0.48 and +0.55, respectively).

Table 107 displays the factor pattern of a three tertiary-factor solution for the secondary factors of Model Two for the subjects included in the evaluation of that model. For all those subjects, secondary factors interpreted as Emotionalism and Dominance loaded saliently and highest in a corresponding manner on the tertiary factors identified as Emotionalism and Dominance (tertiary technically, not theoretically). Those secondary factors interpreted as Extroversion for the subjects all had salient and highest loadings on the tertiary factor labelled by that same name, except for Subject Six and Subject Eight. For Subject Six, the loading was substantial and highest, but

not salient (i.e., +0.41). For Subject Eight, the loading was not even the highest. Notably, the three tertiary factors were uncorrelated, though the factorial procedure permitted orthogonality.

Considering the information presented above, it would seem to be reasonably prudent to conclude that Model Two is, indeed, most likely a dominant model in the population, though not a model generalizable from subject to subject, i.e., not a common model. Given that the correlations of the second-order factors of Model Two are higher-level abstractions farther removed from the original data and dependent upon the factorial validity of a previous analysis, then the obtained correlations are generally quite impressive. Moreover, the third-order factor analysis of the inter-correlations of the second-order factors of that model is very supportive of the dominance of the model, with only Extroversion for Subject Eight failing to load appropriately the corresponding third-order factor.

Personal Models. Model One--the Common Model--and Model Two--the Dominant Model--were based upon the two sets of primary factors of cognition, emotion, and behavior which were common and dominant, respectively, for the sample of subjects. Except for Subject One, Subject Two, and, of course, Subject Ten, the average subject, however, the model which was best for each subject--i.e., the Personal Model

for each subject--incorporated a different set of primary factors than either the Common Model or Dominant Model.

A personal model for a subject was developed by first identifying the set of cognitive, emotional, and behavioral factors which were most psychologically informative of that subject--that is, according to the criterion of Importance explained earlier. As in constructing and evaluating the Common Model and the Dominant Model, the set of primary factors incorporated into the model were then factor analyzed. The number of second-order factors extracted and rotated for each personal model, however, was always made equal to the number of emotional factors.

The personal models for Subject One, Subject Five, and Subject Ten were the Dominant Models for those subjects previously presented in Table 97, Table 99, and Table 103, respectively. The personal models for Subject Two, Subject Three, Subject Four, Subject Six, Subject Seven, Subject Eight, and Subject Nine are presented in Tables 108-114, respectively.

For Subject Two and Subject Three, there were only the two emotional factors of Pleasure and Arousal and therefore only two second-order factors for their personal models. As shown in Table 108 and Table 109, those two second-order factors were quite similar to the two second-order factors in the Common Model--that is, Emotionalism and Extroversion.

Instead of the one general cognitive factor of Evaluation loading the secondary of Emotionalism, the two evaluative cognitive factors of Pleasantness and Sublimity loaded it instead. Interestingly, previous factorial solutions at the secondary level for those subjects were not very sensible when the number of secondary factors was made equal to the greater number of cognitive factors for those subjects, suggesting again the organizational role played by emotion.

For the other subjects--Subject Four, Subject Six, Subject Seven, Subject Eight, and Subject Nine--the same three secondary factors in the Dominant Model appeared to emerge--that is, the secondary factors of Emotionalism, Dominance, and Extroversion. And, similarly, the psychological dimensions indicated by those secondary factors appeared generally to be organized by the primary emotional factors.

The Personal Model of Subject Four in Table 110 and the Personal Model of Subject Eight in Table 113 merit special attention. Subject Four was the only subject that had as many as three behavioral factors, and two of those factors were confirmed as the two hypothesized behavioral factors of Inclusion and Dominance. The third second-order factor for that subject was interpreted as the third hypothesized behavioral factor of Dependence, though it failed a more objective confirmation as such. Subject Eight was the

subject that had the set of primary factors most representative of those hypothesized, particularly with reference to the two cognitive factors of Pleasantness and Sublimity.

As the Personal Model for Subject Four indicates, the three second-order factors of Emotionalism, Dominance, and Extroversion emerged, with the behavioral factors of Inclusion and Dependence both loading saliently and highest on the second-order factor of Emotionalism and with Dependence doing so more than Inclusion. For Subject Eight, both the first-order cognitive factors of Pleasantness and Sublimity have salient and highest loadings on the same factor of Emotionalism, though the cognitive factor of Pleasantness does so more completely than Sublimity. Sublimity, for that subject, has a substantial negative loading on both the secondary factors of Dominance and Extroversion. Both the behavioral factors of Inclusion and Dependence for Subject Four and the cognitive factors of Pleasantness and Sublimity for Subject Eight appear to be factors differentiated yet integrated by the emotional factor of Pleasure, though behavioral Inclusion and cognitive Sublimity are also apparently organized somewhat by the emotional factor of Control.

TABLE 107

THIRD-ORDER FACTOR PATTERN OF PERSONAL-TRAIT DIMENSIONS OF MODEL TWO FOR SIX REAL SUBJECTS AND AVERAGE SUBJECT

	I EMOTIONALISM	II EXTROVERSION	III DOMINANCE
EMOTIONALISM			
SUBJECT 1	+091*	-001	+005
SUBJECT 4	+091*	+000	+003
SUBJECT 5	+094*	-008	-011
SUBJECT 6	+090*	+000	-017
SUBJECT 7	+083*	-004	-001
SUBJECT 8	+087*	+001	-001
SUBJECT 10	+098*	+001	+001
EXTROVERSION			
SUBJECT 1	-021	+062*	-008
SUBJECT 4	-012	+072*	-006
SUBJECT 5	+007	+078*	-018
SUBJECT 6	-004	+080*	-013
SUBJECT 7	+000	+078*	-020
SUBJECT 8	+007	+071*	-009
SUBJECT 10	-001	+098*	+000

TABLE 107 (cont.)

	I	II	III
	EMOTIONALISM	EXTROVERSION	DOMINANCE
DOMINANCE			
SUBJECT 1	-015	-029	+068*
SUBJECT 4	-012	-022	+084*
SUBJECT 5	+014	-015	+059*
SUBJECT 6	+032	+005	+041
SUBJECT 7	-012	+004	+083*
SUBJECT 8	-003	-032	+028
SUBJECT 10	+000	-004	+089*

Note: All values have been rounded to two decimal places and multiplied by one hundred. Factors are uncorrelated.

TABLE 108

FACTOR PATTERN OF PERSONAL MODEL

FOR

SUBJECT TWO

		I	II
		EMOTIONALISM	EXTROVERSION
1	PLEASANTNESS	80*	-26
2	SUBLIMITY	74*	-7
3	DYNAMISM	28	90*
4	PLEASURE	88*	45
5	AROUSAL	-6	87*
6	ASSOCIATION	79*	37

Note: Values have been rounded to two decimal places and multiplied by one hundred, and values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 109

FACTOR PATTERN OF PERSONAL MODEL

FOR

SUBJECT THREE

		I	II
		EMOTIONALISM	EXTROVERSION
1	PLEASANTNESS	93*	-2
2	SUBLIMITY	78*	-3
3	DYNAMISM	11	74*
4	PLEASURE	81*	42
5	AROUSAL	6	87*
6	ASSOCIATION	79*	62

Note: Values have been rounded to two decimal places and multiplied by one hundred, and values greater than the square root of the mean of the squared loadings have been flagged.

TABLE 110

FACTOR PATTERN OF PERSONAL MODEL

FOR

SUBJECT FOUR

		I	II	III
		EMOTIONALISM	DOMINANCE	EXTROVERSION
1	EVALUAITON	92*	-6	-15
2	DYNAMISM	-7	-16	81*
3	CHARACTER	29	-72	38
4	PLEASURE	91*	-20	-7
5	AROUSAL	0	-20	79*
6	CONTROL	-6	89*	-14
7	INCLUSION	68*	-29	8
8	DOMINANCE	-70	50	-4
9	DEPENDENCE	87*	-8	12

Note: Values have been rounded to two decimal places and multiplied by one hundred, and values greater than the square root of the mean of the squared loadings have been indicated with an asterisk.

TABLE 111

FACTOR PATTERN OF PERSONAL MODEL

FOR

SUBJECT SIX

		I	II	III
		EMOTIONALISM	DOMINANCE	EXTROVERSION
1	EVALUATION	86*	-22	30
2	DYNAMISM	10	-47	20
3	DOMINANCE	-79	-24	21
4	PLEASURE	80*	-30	28
5	AROUSAL	15	-26	75*
6	CONTROL	7	88*	-13
7	SOCIABLENESS	83*	-5	54*
8	DOMINANCE	-27	83*	-20

Note: Values have been rounded to two decimal places and multiplied by one hundred, and values greater than the square root of the mean of the squared loadings have been indicated with an asterisk.

TABLE 112

FACTOR PATTERN OF PERSONAL MODEL

FOR

SUBJECT SEVEN

		I	II	III
		EMOTIONALISM	DOMINANCE	EXTROVERSION
1	EVALUATION	89*	2	-26
2	DYNAMISM	14	-76*	40
3	DISCONTENT	-56*	-3	52*
4	PLEASURE	97*	-8	1
5	AROUSAL	-7	-21	78*
6	CONTROL	15	81*	-3
7	SOCIABLENESS	91*	8	-8
8	DOMINANCE	-33	43	14

Note: Values have been rounded to two decimal places and multiplied by one hundred, and values greater than the square root of the mean of the squared loadings have been indicated with an asterisk.

TABLE 113

FACTOR PATTERN OF PERSONAL MODEL

FOR

SUBJECT EIGHT

		I	II	III
		EMOTIONALISM	DOMINANCE	EXTROVERSION
1	EVALUATION	94*	-10	-31
2	SUBLIMITY	57*	-25	-34
3	DYNAMISM	7	-33	64*
4	PLEASURE	92*	-8	13
5	AROUSAL	-13	38	41
6	CONTROL	34	68*	-22
7	SOCIABLENESS	93*	0	2
8	DOMINANCE	-37	77*	0

Note: Values have been rounded to two decimal places and multiplied by one hundred, and values greater than the square root of the mean of the squared loadings have been indicated with an asterisk.

TABLE 114

FACTOR PATTERN OF PERSONAL MODEL

FOR

SUBJECT NINE

		I	II	III
		EMOTIONALISM	DOMINANCE	EXTROVERSION
1	EVALUATION	90*	0	27
2	DYNAMISM	33	60*	-46
3	PLEASURE	87*	20	5
4	AROUSAL	1	70*	5
5	CONTROL	31	-2	69*
6	ASSOCIATION	90*	15	5

Limitations of the Study

Ideally, in a more exploratory factor-analytic study of the personal trait dimensions and the cognitive, emotional, and behavioral dimensions which compose them as all of those dimensions account for the social transactions of undergraduate females within their academic environment--a somewhat different set of conditions would have occurred than in the present study reported. Assuming a general correspondence between information obtained through the

questionnaire medium and the nature of actually existing social transactions, the subjects, hypothetical situations depicted, and variables selected would have been more assuredly representative of their respective domains. The subjects, for example, might have been more in number and would have been randomly selected. The development of the hypothetical social situations would have been based upon a random sampling of real situations, and the variables would have not been selected specifically to represent only a small number of hypothesized dimensions.

On the other hand, the experimental design of the study was essentially a multiple single-subject design, and a sample of nine subjects, though small for many studies, for a study such as the one conducted was quite adequate. Although the sample of subjects was not random, they provided good data, and given that the objective of the study was the identification of common psychological dimensions, the somewhat biased sampling of subjects would not be as critical as it would be if, for example, the study was seeking the population mean on those dimensions.

A more critical factor in the study was the selection of an equal number of variables to represent each of a number of hypothesized dimensions and the development of social situations specifically designed to make those dimensions emerge from the analysis. Yet, the original intent of the

investigation was not an exploratory factor analysis but to test the hypothesis that the popular three-dimensional model of interpersonal relations, at least with regard to personal trait dimensions, was insufficient and, if so, to determine if an additional dimension of morality could be empirically supported. In retrospect, there was also a third alternative hypothesis which the design of the study was capable of testing, that being of course the two-dimensional model of interpersonal relations.

Perhaps what should be even more carefully considered than the previous considerations is the reliability of variables used in the study--i.e., the cognitive, emotional, and behavioral bipolar adjectival rating scales. For, although factors could not have emerged which generalized across subjects if all the variables were unreliable, the unreliability of some of the variables representative of particular hypothesized factors could have prevented those factors from emerging or resulted in generally misleading factor structures.

If a variable is unreliable, however, then it will lie outside of the common factor space. Additionally, the communality of a variable theoretically is lower than the reliable variance of that variable. Therefore, an inspection of the communality of a variable should provide an answer concerning the reliablity of that variable.

The communalities of the variables used in the study are generally quite high. In fact, a study on intra-individual variation as the one conducted apparently leads to sets of variables that are much more inter-correlated than in typical studies of inter-individual variation, for the reasons cited earlier, and the number of response options for the variables used in the study reported (only five) were not enough to introduce sufficient error of measurement into the study so that the reliability of the variables could be more accurately assessed.

Nevertheless, the differential covariation of the subsets of variables and their generally high communalities indicates that the variables used in the study were more than adequately reliable. For the variables of the average subject, for example, the communalities of the variables were as shown in Table 115. The name of each of those variables was previously provided in Table 1.

TABLE 115

COMMUNALITIES OF VARIABLES FOR OPTIMAL FACTORIAL SOLUTIONS FOR AVERAGE SUBJECT

VARIABLES

COGNITIVE	EMOTIONAL	BEHAVIORAL
VAR 01 = 0.82	VAR 21 = 0.80	VAR 36 = 0.94
VAR 02 = 0.93	VAR 22 = 0.82	VAR 37 = 0.94
VAR 03 = 0.90	VAR 23 = 0.81	VAR 38 = 0.97
VAR 04 = 0.50	VAR 24 = 0.84	VAR 39 = 0.96
VAR 05 = 0.57	VAR 25 = 0.81	VAR 40 = 0.96
VAR 06 = 0.94	VAR 26 = 0.88	VAR 41 = 0.95
VAR 07 = 0.78	VAR 27 = 0.90	VAR 42 = 0.96
VAR 08 = 0.91	VAR 28 = 0.76	VAR 43 = 0.91
VAR 09 = 0.90	VAR 29 = 0.66	VAR 44 = 0.94
VAR 10 = 0.87	VAR 30 = 0.70	VAR 45 = 0.88
VAR 11 = 0.94	VAR 31 = 0.96	VAR 46 = 0.75
VAR 12 = 0.90	VAR 32 = 0.95	VAR 47 = 0.96
VAR 13 = 0.95	VAR 33 = 0.97	VAR 48 = 0.94
VAR 14 = 0.94	VAR 34 = 0.93	VAR 49 = 0.94
VAR 15 = 0.95	VAR 35 = 0.95	VAR 50 = 0.97
VAR 16 = 0.93		
VAR 17 = 0.85		
VAR 18 = 0.93		
VAR 19 = 0.95		
VAR 20 = 0.98		

CHAPTER FIVE

Empirical Investigation of Four Psychological Dimensions of the Inchoate Theory of Dyadic Social Transaction: II. Conclusion and Summary

CONCLUSION

Cognition

The data did not support the hypothesis that the subjects would construe focal-stimulus persons depicted in hypothetical social situations along the two evaluative dimensions of Pleasantness and Sublimity and the two dimensions of Activity and Potency. Instead, a more general evaluative dimension encompassing the two hypothesized evaluative dimensions of Pleasantness and Sublimity, referred to as Evaluation, and a more general dimension subsuming the two hypothesized dimensions of Activity and Potency, labelled Dynamism, were found to underlie the social cognition of the subjects. As Hallworth (1965) had previously observed, when subjects assess people on bipolar adjectival scales, it is common for Osgood's general factor of Evaluation to emerge and for Osgood's factors of Activity and Potency "to coalesce into a single factor of 'dynamism'" (p161).

Although the two dimensions of Evaluation and Dynamism as represented by a two-factor solution of the cognitive variables did generalize across subjects and were therefore common cognitive traits, those two dimensions were only best for a minority of the subjects. For most subjects, three dimensions best accounted for their social cognition, and, although they were not the same three dimensions, there appeared to be an underlying pattern for the different sets. In particular, for some subjects, one of the dimensions was the dimension of Dynamism and the other two dimensions were the two hypothesized evaluative dimensions of Pleasantness and Sublimity, which merged into the one more general factor of Evaluation when only two dimensions were permitted. For the other subjects, in a somewhat complementary manner, one dimension was Evaluation, another predominately Dynamism, and the third consisted of the cognitive variables associated with Dynamism and a few associated with Evaluation, as Dynamism and Evaluation were represented when only two dimensions were permitted. In the sets of three dimensions for subjects, then, one dimension was either Evaluation or Dynamism and the other two were essentially differentiations of the other.

Although the hypothesized cognitive factors of Pleasantness and Sublimity were not found to be common to the subjects, as stated previously, they were found for some of the subjects. For three of nine of the subjects, three

cognitive factors were found and interpreted as Pleasantness, Sublimity, and Dynamism, and for two of those subjects, those factors were phenotypically the same. For some of the subjects, therefore, focal-stimulus persons depicted in social situations were construed along the two conceptually related but distinctly different evaluative dimensions of Pleasantness and Sublimity.

It should be noted, however, that for the subjects in which only the one general evaluative dimension of Evaluation was appropriate, the cognitive variables representative of the hypothesized factor of Sublimity defined that dimension as equally as well as those variables representative of the hypothesized factor of Pleasantness. Sublimity, then, was an aspect of the evaluative dimension of Evaluation for those subjects, though it did not emerge as a distinctive dimension.

There are a number of plausible explanations as to why the two hypothesized cognitive factors of Sublimity and Pleasantness constituted the more general factor of Evaluation for a majority of the subjects. The most plausible explanation, perhaps, is simply that although the neuroanatomical structure involved in evaluating stimulus-persons for those subjects is capable of perceiving pleasantness and sublimity in stimulus persons, it has not yet become differentiated enough to perceive those qualities

more independently from one another, as it has for a few of the subjects. Consequently, when a focal-stimulus person is perceived primarily as pleasant, he is automatically evaluated to be of good character, and, conversely, when a focal-stimulus person is perceived as primarily of good character, he is automatically evaluated to be a pleasant person. They commit what is known as the "logical error" in person perception, perhaps accompanied with some process in which cognitive dissonance is resolved.

Emotion

The hypothesis that the three emotional factors of Pleasure, Arousal, and Control found by Mehrabian and Russell (1974) in studies in environmental psychology would also be found to account for the emotions of the subjects in social situations was supported by the data. Those three factors were found for the average subject, and they were also found to generalize across the real subjects when each of those factors was considered independently.

To obtain the previously established criterion of generalizability for the three emotional factors, however, it was necessary to represent the factor of Arousal by the factor interpreted as such in the two-factor solution of the emotional variables for two of the subjects. Therefore, although the three emotional factors as found for the average subject generalized across the subjects, the three-

factor solution of the average subject was not quite similar enough to the three-factor solutions of the other subjects to be considered generalizable. What mattered most, however, were that the three emotional factors themselves did generalize across subjects and hence were common emotional traits, not that a particular factorial solution failed to generalize across subjects.

Although the data for each of the subjects indicated that the two emotional factors of Pleasure and Arousal were involved in the emotions they experienced in social situations, for two of the subjects, Subject Two and Subject Three, the emotional factor of Control was not evidently involved. Moreover, as one would expect, the hypothesized behavioral factor of Dominance which one would quite obviously expect to be associated with the emotional factor of Control did not emerge in the data for those two subjects either. When one further considers the fact that those subjects were the only subjects in the sample who were both local and non-caucasian (Subject Two was Chinese-American and Subject Three was Filipino-American), suggesting a possible ethnic and/or geographic difference in relating socially, then it is reasonable to conclude that for some normal individuals the emotional factor of Control (in relation to others) just simply does not exist in their social-psychological makeup. The two emotional factors of Pleasure and Arousal, therefore, may be the only two

emotional factors which are universally common to all normal individuals in a population (with "normal" here meaning not physiologically defective).

The two-factor solutions and the three-factor solutions for the emotional variables for the subjects illustrated a difficulty which may be encountered in assessing the generalizability of a factor across subjects. Namely, an hypothesized factor, for example, may be best represented in a two-factor solution for one subject but best represented in a three-factor solution for another subject. It may be erroneous, therefore, to compare factors from different factorial solutions with the same number of factors, yet an analysis also becomes more complicated when one begins comparing factors from different factor solutions in which different numbers of factors were extracted.

Behavior

The three hypothesized behavioral factors of Inclusion, Dominance, and Dependence which were expected to generalize across subjects were not found to do so. In fact, only for one subject, Subject Four, did as many as three behavioral factors emerge, and although those three factors were interpreted as Inclusion, Dominance, and Dependence, the factor interpreted as Dependence failed the previously established criterion for more objectively identifying it as such.

Instead of the three hypothesized behavioral factors, only one behavioral factor interpreted as Association-Disassociation generalized across subjects and was therefore found to be a common dimension. That factor was best represented by the factor in the one-factor solution for all the subjects. It consisted of the three hypothesized factors of Inclusion, Dominance, and Dependence, with the variables representative of Dominance loading it negatively (making it, therefore, inclusion-submission-dependence).

In the two-factor solutions of the behavioral variables for the subjects, the hypothesized factor of Dominance and the unexpected factor of Sociableness emerged, except for one subject (Subject Nine) and the two local and non-caucasian subjects who also did not possess the emotional factor of Control. The factor of Sociableness consisted of the hypothesized factors of Inclusion and Dependence.

The two behavioral factors of Sociableness and Dominance would likely be common to the population of undergraduate females from or on the Mainland who are, for example, caucasian, but those factors may not be concluded to be common to the population studied in this investigation. Though not qualifying as common behavioral dimensions, however, they may be considered as dimensions which are "dominant" in the population (i.e., characteristic of the average member and the majority of the members).

The two behavioral factors of Sociabless and Dominance correspond to Carson's (1969) two-factor theory of behavior, in which the two factors of Affiliation and Dominance are postulated. They also correspond to the theory of Braiker and Kelly (1979) which postulates the two behavioral dimensions of affection and dominance (or love and conflict). Other theorists supporting such a model are Leary (1957), Lorr and McNair (1965), and Wiggins (1979).

The fourth behavioral factor hypothesized to emerge from the data, a factor expressive of moral behavior, failed to do so. Of course, the cognitive factor of Sublimity which was presumed to be necessary for the existence of the moral behavioral factor only emerged in two, at most three subjects, which would explain why a distinctive moral behavioral factor was not generally found for the subjects. Yet, it also was not found for those subjects which did have the cognitive factor of Sublimity.

In retrospect, the expectation of finding a heterogeneous behavioral factor thematically unified by moral motivation (Sublimity-Pleasure), even for those subjects in which such moral motivation existed, was not reasonable given the methodology. For, the behavioral variables selected were all representative of the hypothesized behavioral factors of Inclusion, Dominance, and Dependence, and one should therefore not expect a factor of moral behavior to emerge

representative of the covariation of a set of those behavioral variables across situations. For, if moral motivation leads to more situationally specific behavior, though along the three behavioral dimensions of Inclusion, Dominance, and Dependence (i.e., inconsistency on those three dimensions), and the behavioral variables were representative of those three dimensions, then it is contradictory to expect a factor of moral behavior to emerge from those variables accounting for their covariation across situations.

There is some evidence, at least, that moral motivation is expressed in behavior. For Subject Eight, for example, the cognitive factor of Sublimity loaded the psychological dimension of Emotionalism characterized by the behavioral factor of Sociableness in Model Two, the model of the dominant personal trait dimensions.

Personal Trait Dimensions

The Common Model. The set of cognitive, emotional, and behavioral factors which, as a set, are common to the subjects--that is, the cognitive factors of Evaluation and Dynamism, the emotional factors of Pleasure and Arousal, and the behavioral factor of Association--may be represented in a two dimensional common-factor space. Those two dimensions, when factorially derived, are the two personal

trait dimensions of Emotionalism and Extroversion, made most prominent by Eysenck (H. J. Eysenck & S. B. G. Eysenck, 1969).

In the Common Model of the social-psychological functioning of the subjects, the personal trait dimension of Emotionalism appears organized by the emotional factor of Pleasure and is characterized by the cognitive factor of Pleasantness and the behavioral factor of Association. Quite obviously, focal-stimulus persons felt as pleasing to the subjects are cognized as pleasant, and the subjects behave associatively in relation to them (i.e., inclusively, submissively, and dependently or affectionately).

The personal-trait dimension of Extroversion appears organized by the emotional factor of Arousal. It is characterized also by the cognitive factor of Dynamism, but it is not functionally related to the behavioral factor of Association. Obviously, a focal-stimulus person felt by a subject to be arousing is likely to be cognized by the subject as Dynamic. What is curious, however, is that a subject who feels a focal-stimulus person to be arousing and cognizes that person as dynamic, is not likely (or unlikely) to associate with that person, as one might expect from a process of extroversion.

If one adopts the two cognitive dimensions of Evaluation and Dynamism used by the average subject in the cognition of

the forty hypothetical social situations, however, then one would recognize that the focal-stimulus persons are counterbalanced for positive and negative and for dynamic and static, which may be conceived as something like a two-factor ANOVA design. With the two main factors of Evaluation and Dynamism then approximately independent (uncorrelated) and the dependent variable considered the behavioral factor of Association, then the results of the study reported here are simply indicating that for the average subject, whether the average subject behaved associatively or not depended upon whether that focal-stimulus person was perceived as good or bad, not according to whether that focal-stimulus person was perceived as dynamic or not. For, if the focal-stimulus person were dynamic, then that person was as likely to be negative as positive, and the tendency to dissociate from negative persons is perhaps about as great as the tendency to associate with positive persons. Likely, one would find an interaction between the two cognitive factors of Evaluation and Dynamism as they were related to the behavioral factor of Association.

On personality tests assessing Extroversion, the two cognitive factors of Evaluation and Dynamism are likely to be correlated in the items presented, thus resulting in a relation of associating behavior with dynamic focal-stimulus persons or social situations (e.g., items like "Do you like

to go to parties?"). The relation, then, often assumed between socially stimulating situations and associating behavior is likely a methodological artifact, when considered from the perspective of a particular subject, i.e., from a psychological perspective.

From the perspective of inter-individual differences, however, the subject characterized as extroverted (in relation to others) is conceived as being not easily emotionally aroused. To obtain an optimal level of emotional arousal, therefore, the extroverted person is thought to compensate by seeking social stimulation (the opposite process characterizes the subject thought as introverted). The two perspectives of extroversion, the one from a perspective of intra-individual variation and the other from a perspective of inter-individual variation, are therefore not necessarily contradictory but may be considered compatible.

The explanation provided above is in accord with the research of Meharabian and Russell (1974). That is, they found that emotional arousal in relation to environmental situations was curvilinearly related to behavioral association-disassociation (approach-avoidance) in relation to those situations (the Yerkes-Dobson Law), though only when those situations were affectively neutral--neither pleasant nor unpleasant. For pleasant situations, arousal

was directly related to behavioral association, and for unpleasant situations, behavioral association was inversely related to arousal (both those functions being monotonic).

The Dominant Model. The set of cognitive, emotional, and behavioral factors which are dominant in the sample of subjects--that is, the two cognitive factors of Evaluation and Dynamism, the three emotional factors of Pleasure, Arousal, and Control, and the two behavioral factors of Sociableness and Dominance--are adequately represented in a three-dimensional common-factor space. Those three dimensions, when factor-analytically derived, are the two personal-trait dimensions of Emotionalism and Extroversion found in the Common Model plus the dimension of Dominance.

The behavioral factor of Sociableness is the remnant of the behavioral factor of Association after the behavioral factor of Dominance has been extracted, in a sense, and the personal-trait dimension of Emotionalism bears the same relation to the behavioral factor of Sociableness in the Dominant Model as it does to the behavioral factor of Association in the Common Model. And, as in the Common Model, the personal trait dimension of Emotionalism is similarly organized by the emotional factor of Pleasure and is characterized by the cognitive dimension of Evaluation.

The personal-trait dimension of Dominance is organized by the emotional factor of Control, not present in the Common

Model, and it is characterized, as one would expect, by the opposite of the cognitive factor of Dynamism and by the behavioral factor of Dominance, also not present in the Common Model. The average subject and the majority of the subjects, therefore, when feeling in control in relation to a stimulus person, perceive that person as static (i.e., inert and impotent) and behave toward that person in a dominant manner.

The personal trait dimension of Extroversion in the Dominant Model is essentially the same as it appears in the Common Model. That is, it is organized by the emotional factor of Arousal and characterized by the cognitive factor of Dynamism, and it has no appreciable relation to any behavioral factor. The cognitive factor of Dynamism is somewhat less related to the personal-trait dimension of Extroversion in the Dominant Model than it is in the Common Model, however, due to the fact that the cognitive factor of Dynamism, for the average subject, is equally divided between the personal trait dimensions of Extroversion and Dominance in the Dominant Model.

Although the average subject and the majority of the subjects did not construe focal-stimulus persons according to the two hypothesized cognitive dimensions of Activity and Potency but rather did so according to the cognitive dimension of Dynamism encompassing both of those two

hypothesized factors, it is most interesting to observe that they did feel emotionally aroused and emotionally helpless in relation to those focal-stimulus persons they construed as dynamic. As noted previously, for the average subject, the cognitive factor of Dynamism had equally high loadings in absolute magnitude on the personal-trait dimensions of Extroversion and Dominance (+0.67 and -0.67) organized by the emotional factors of Arousal and Control, respectively. Therefore, although subjects were unable to discriminate cognitively between focal-stimulus persons characterized as active and those characterized as potent but instead construed them all as dynamic (active and potent), they did make a corresponding discrimination emotionally in relation to active and potent focal-stimulus persons.

Therefore, the hypothesis that three of the personal trait dimensions emerging for the subjects would be Inclusion, Dominance, and Dependence in the form of Activity-Arousal-Inclusion, Impotency (vs. Potency)-Control-Dominance, and Pleasantness-Pleasure-Dependence (or Affection), respectively, was not strictly supported. The three personal trait dimensions which did emerge, however, did have a closely related correspondence to the three personal-trait dimensions which had been hypothesized. For the hypothesized personal trait dimension of Dependence consisting of Pleasantness-Pleasure-Dependence (Personableness) did correspond considerably to the obtained

personal-trait dimension of Evaluation-Pleasure-Sociableness, except that Evaluation consisted also of Sublimity and Sociableness consisted also of Inclusion. The hypothesized personal-trait dimension of Dominance corresponded to the obtained dimension of Dominance, except that the cognitive component consisted of the impotency (vs. potency) aspect of the obtained cognitive factor of Dynamism (rather than the factor of Potency). And the hypothesized personal-trait dimension of Inclusion corresponded to the obtained dimension of Extroversion, except that the cognitive component consisted of the activity aspect of the cognitive factor of Dynamism (rather than the factor of Activity) and there was no behavioral component (for the hypothesized behavioral factor of Inclusion and Dependence had coalesced into a single factor of Sociableness which was part of Emotionalism). And, as explained previously, the behavioral factor of Inclusion should not have been theorized to emerge and be functionally related to emotional arousal for a dimension accounting for intra-individual variation.

The personal-trait dimensions found for the Dominant Model, however, only pertained to the average subject and a majority of the subjects, not commonly to all the subjects. Only the obtained trait dimensions of Emotionality and Extroversion from the Common Model, therefore, could be considered as common personal-trait dimensions and have any

theoretical correspondence to the hypothesized personal-trait dimensions as common dimensions.

Emotional Organization of Personal Traits. One of the most important conclusions of the study is that the personal trait dimensions, whether for the Common Model or the Dominant Model, are each organized by one of the emotional factors. That is, the emotional factors of Pleasure and Arousal organize the personal trait dimensions of Emotionalism and Extroversion, respectively, for both the models, and the emotional factor of Control organizes the personal trait dimension of Dominance found in the Dominant Model. The loadings of the personal trait dimensions and the interpretations of those dimensions support such a conclusion.

Additionally, the number and nature of the different sets of factors of experience--that is, of cognition, emotion, and behavior--not only indicate that the personal trait dimensions are organized by emotional factors in a one-to-one correspondence but also the primacy of emotion over cognition (or behavior). The primacy of emotion over cognition and behavior is indicated by the fact that for the average subject, three emotional factors were found whereas only two factors were found for both cognition and behavior. Given that a functional relationship, a causal relationship, is a one-to-one mapping or a many-to-one mapping of one set

of elements to another set of elements (not a one-to-many mapping), then the three emotional factors must precede the two cognitive and two behavioral factors. Moreover, the nature of the cognitive and behavioral factors in relation to the emotional factors is indicative of the organizing role played by emotion.

Of the three emotional factors of Pleasure, Arousal, and Control, one would expect the emotional factor of Control vs. Helplessness to have more of a direct relationship to overt behavior than to cognition, correponding to what is known about the two modes of consciousness. That is, one would expect emotional control to be more directly related to the expressive (active) mode of consciousness and therefore more to overt behavior (environmental manipulation) than to the receptive (passive) mode of consciousness and therefore to social cognition (person perception). Such an arrangement is, in fact, exactly what is found, as exemplified by the average subject, for one of the two behavioral factors is Dominance which has a high and direct relation to the emotional factor of Control as indicated by their respective loadings on the personal-trait dimension of Dominance; whereas, neither of the two cognitive factors has anything like a one-to-one correspondence to the emotional factor of Control (cognitive Dynamism being jointly a function of the emotional factor of Arousal as well as the emotional factor of Control).

The nature of the different sets of factors of cognition, emotion, and behavior and their inter-relationship also provides evidence that all three of those aspects of experience were actually being assessed in the investigation. The hypothesized tertiary relation of the hypothesized factors excluding those pertaining to the moral trait dimension (i.e., Activity-Arousal-Inclusion, Impotency-Control-Dominance, and Pleasantness-Pleasure-Dependence) would have emerged from the data had, for example, the assessments of cognition and behavior not denoted cognition and behavior per se but instead simply been, in effect, additional assessments of emotion. Although clearly emotion organizes cognition and behavior, the different number of factors for cognition and behavior, their nature, and their inter-relationship with the emotional factors clearly indicate that they pertain to cognition and behavior in relation to stimulus persons, respectively.

The three emotional factors of Pleasure, Arousal, and Control found in this investigation to be the organizational basis of the personal trait dimensions interpreted as Emotionalism, Extroversion, and Dominance, respectively, though postulated by the contemporary psychologists of Mehrabian and Russell (1974), may be traced to Wilhelm Wundt, who established the first laboratory in psychology in Leipzig in 1879. Wundt, as reported by the historian Robert

Watson (1971), postulated what came to be known as the "tri-dimensional theory of feeling" based upon his experiments of consciousness through the method of introspection. Wundt postulated that all existent emotions could be accounted for by the three bipolar dimensions of Pleasantness-Unpleasantness, Excitement-Depression, and Relaxation-Tension; corresponding to the three emotional dimensions of Pleasure-Displeasure, Arousal, and Control-Helplessness, respectively, postulated by Mehrabian and Russell (1974) and found here (relaxation being a key indicator of emotional control).

The Issue of the Common Traits. Burt (1965) observed that Wundt had developed a tri-dimenstional theory of feeling, and Burt stated that as early as 1910 he conducted a factor-analytic study of the "primary emotional tendencies" speculated by McDougall. He derived three factors he interpreted as "general emotionalism," "sthenic-astehnic" (later called extroversion), and "euphoric-dysphoric"--three dimensions which he described in a manner congruent with the personal-trait dimensions of Emotionalism, Extroversion, and Dominance found here.

In reviewing his earlier research on traits of temperament and relating his findings and conclusions to those of Eysenck and Cattell, Burt(1965) also postulated that his three traits were of such a high level of

generality that they represented influences which were more innate, more neurologically wired into the person. Moreover, it was at such a level of generality, he believed, that agreement among different trait theories would be found. The primary factors of Cattell he believed to be less specific, group factors which were more acquired, but when they were factored, the first two or more second-order factors, he believed would correspond to his factors.

What seems to have been overlooked in the inordinately lengthy controversy concerning the number and nature of the "common traits" of personality as ascertained through factor analysis is that the conventional design--R-Technique--has simply not been directly appropriate. A common factor obtained from correlations of personality variables <u>across</u> persons is a dimension of inter-individual variation, not necessarily of intra-individual variation, and, hence, it may or may not be a common trait (something common to members of the sample or population). As previously argued, however, the larger a common factor obtained from such an analysis, the more likely it might be expected to be a common trait, based upon <u>a priori</u> considerations.

The results of this investigation strongly suggests, however, that there are only two, at most three, common traits of personality. The traits of morality and dominance and, as demonstrated, emotionalism and extroversion, were

adequately represented by variables in this investigation, yet for only a minority of subjects did a cognitive factor or any other factor distinctly representative of the trait of morality emerge, and the trait of dominance was only clearly evident for two-thirds of the sample: Only the obtained trait dimensions of Emotionalism and Extroversion were found to be common. Given that personal trait dimensions of Dominance and Morality would be among the most likely to emerge from a study such as the one conducted as common factors generalizable across subjects--i.e, common traits--their failure to do so, therefore, strongly suggests that only Emotionalism and Extroversion are truly common traits, though Dominance might be.

Common factors obtained from conventional factor analyses (R-technique) beyond the first two to three common factors (Emotionalism, Extroversion, and Dominance) are likely representative of interactions between subsets of variables and subsets of persons--that is, type-factors. Just as a common factor may be only a group factor representative of a subset of variables, it may also be representative of a subset of variables (a group factor) but only for a subset of persons--hence a trait common only to that subset of persons.

As noted, the cognitive factor of Sublimity emerged for a third of the subjects and the behavioral factor of Dominance

emerged for two thirds of the subjects. In a comparable study in which the correlations were over subjects, one would expect those factors to emerge as common factors. The error would then be interprete them as "common traits."

The common trait of Extroversion, similarly, likely has no behavioral factor of Inclusion, contrary to what is usually presumed. Instead, behavioral Inclusion as it is usually found to be associated to Extroversion in various conventional factor analyses is probably due to an interaction between persons and variables. Similarly, the "dual nature" or multiple nature of Extroversion (Carrigan, 1960; H. J. & S. G. B. Eysenck, 1969) is probably due to an interaction between persons and variables.

SUMMARY

Theory of Dyadic Social Transaction

An inchoate theory of dyadic social transaction has been developed by the author based upon an organicist metaphysism. In that theory, social transactions within a given subenvironment are conceived as involving an individual--as the subject--and a stimulus complex consisting of a focal-stimulus person and an ambient-stimulus physical setting. The stimulus complex is conceptualized hiearchically in that it may be analyzed as composed of the components of focal-stimlus person and

ambient-stimulus physical setting, and the component of focal-stimulus person may be further analyzed as constituting the two subcomponents of the personhood and the social role of the focal-stimulus person, with the personhood being the focal-stimulus person considered independently from his or her social role. The subcomponents of the personhood and social role of the focal-stimulus person and the component of the ambient-stimlus physical setting may then be even further analyzed into two elements each--an element of specificity and element of generality. That is, the personhood and the social role of the focal-stimulus person and the ambient-stimulus physical setting may each be considered uniquely as a member of their respective classes of phenomena and also as a common member of their respective classes.

According to the theory, corresponding to the hierarchically conceived structure of the physical complex of focal-stimulus person and ambient-stimulus physical setting is a neuroantomical stucture also hierarchically conceived. Each such neuroantomical structure involved in a social transaction is composed, ultimately, of the neuroanatomical elements corresponding to the elements of specificity and generality for the personhood and social role of the focal-stimulus person and for the ambient-stimulus physical setting. Those two types of neuroanatomical elements corresponding to elements of

specificity and elements of generality in the physical complex may then be appropriately referred to as "attitudes" and "trait-composites" (trait profiles or stereotypes), respectively.

The attitudes and trait-composites may then be abstractly represented by a set of attitudinal dimensions and a set of trait dimensions, respectively. Those attitudinal and trait dimensions corresponding to the personhood of the focal-stimulus person may then be referred to as "personal attitudinal dimensions" and "personal trait dimensions," and those attitudinal and trait dimensions corresponding to the social role of the focal-stimulus person may then be referred to as "role attitudinal" and "role trait dimensions." Similarly, those attitudinal and trait dimensions corresponding to the ambient-stimulus physical setting may be referred to as "setting attitudinal" and "setting trait dimensions," respectively.

Although there would then be four sets of dimensions pertaining to the focal-stimulus person and two sets of dimensions pertaining to the ambient-stimulus setting, the theory utilizes a prototypical set of psychological dimensions for all four sets of dimensions pertaining to the focal-stimulus person and a prototypical set of psychological dimensions for both sets of dimensions pertaining to the ambient-stimulus physical setting. The

prototypical set of psychological dimensions pertaining to the focal-stimulus person are postulated to be Inclusion-Exclusion, Dominance-Submission, Dependence-Independence, and Morality-Immorality, and the prototypical set of psychological dimensions pertaining to the ambient-stimulus physical setting are postulated to be Formality-Informality and Constraint-Nonconstraint.

Given that the attitudes and trait-composites corresponding to the elements of specificity and generality of the focal-stimulus persons and ambient-stimulus physical settings within a subenvironment may be represented abstractly on sets of dimensions, then a social transaction may then be predicted (explained) for the subject in any social situation (with a "transaction" conceived philosophically as an action or process occurring across person-situation, not in the economic sense). Conceptually, the dimensions pertaining to the focal-stimulus person would synthesize to form social dimensions, and the dimensions pertaining to the ambient-stimulus physical setting would synthesize to form setting dimensions. The social dimensions and setting dimensions would then synthesize to account for the social transaction. The theory, incidentally, would then eliminate the irrational biases of personalogism and situationism, and the formula for synthesizing the social dimensions and the setting

dimensions might be multiplicative and such that it exemplified a person-situation interactional model.

Although the cognition, emotion, and behavior of a subject in a social situation are conceived according to the theory to be organically related, they may be considered separately as aspects of experience. When the cognition of the subject is then considered in relation to focal-stimulus persons in social situations, the theory postulates that the dimensions underlying those cognitions are the two dimensions of Activity-Passivity and Potency-Impotency found by Osgood and Suci (1955) in their studies of semantic meaning and the two dimensions of Pleasantness and Sublimity, assumed to be differentiations of the more general dimension of Evaluation found by Osgood and Suci (1955).

When the emotion of the subject is considered in the context of social situations, the theory of social transaction postulates that the dimensions accounting for those emotions are the same three found by Mehrabian and Russell (1974) in their studies of environmental psychology--that is, the three dimensions of Arousal-Unarousal (Calm), Control-Helplessness (though they called it Dominance-Submission), and Pleasure-Displeasure. And, when the behavior of the subject is considered in relation to a focal-stimulus person, the theory postulates that four

dimensions would account for those behaviors, with three of those dimensions being Inclusion-Exclusion, Dominance-Submission, and Dependence-Independence as found by Adamopoulos (1982) and Schutz (1958) and proposed initially by Horney (1945). The fourth behavioral dimension is postulated by the theory to be thematically unified by altruism though heterogeneous with respect to the other three dimensions, and it has been referred to alternatively as Altruism or Justice.

Given that the theory conceives the cognition, emotion, and behavior of a social transaction involving a subject to be organically related, they are therefore postulated as being represented by the smaller number of psychological dimensions discussed previously. For the prototypical psychological dimensions pertaining to focal-stimulus persons alluded to before (Inclusion, Dominance, Dependence, and Morality), the theory conceives of each dimension as consisting of the three components of cognition, emotion, and behavior, and it equates the cognitive component of each of those four dimensions with one of the dimensions postulated to underlie the social cognition of a subject when considered separately--i.e., Activity-Passivity, Potency-Impotency, Pleasantness-Unpleasantness, and Sublimity-Baseness.

The emotional component of each of the four psychological dimensions is then defined as a linear combination of the dimensions presumed to underlie the emotion of a subject in social situations, thus making each component possibly heterogeneous in nature. And the behavioral component of each psychological dimension is equated with one of the dimensions postulated to underlie behavior when behavior of a subject is considered separately--i.e., Inclusion-Exclusion, Dominance-Submission, Dependence-Independence, and Justice-Injustice (or Altruism-Egotism).

Although the emotional component of each of the psychological dimensions pertaining to a focal-stimulus person is permitted to be heterogeneous, the theory further postulates that, nevertheless, each one of those emotional components is roughly similar to one of the dimensions found to underlie emotion, and the cognitive, emotional, and behavioral components of the four psychological dimensions are then postulated as follows: Activity-Arousal-Inclusion (for Inclusion), Impotency-Control-Dominance (for Dominance), Pleasantness-Pleasure-Dependence (for Dependence), and Sublimity-Pleasure-Justice or Altruism (for Morality).

Integral Test of the Theory of Social Transaction

As an integral test of the inchoate theory of dyadic social transaction, therefore, an empirical investigation

was conducted to determine if the various cognitive, emotional, behavioral, and psychological (cognition-emotion-behavior) dimensions pertaining to focal-stimulus persons in social situations were more objectively supportable. That is, the experimental questions were as follows: 1) Are the dimensions underlying the cognition pertaining to focal-stimulus persons those of Activity, Potency, Pleasantness, and Sublimity. 2) Are the dimensions underlying emotion in social situations those of Arousal, Control, and Pleasure. 3) Are the homogeneous dimensions underlying the behavior in relation to focal-stimulus persons those of Inclusion, Dominance, and Dependence, and is there a heterogeneous behavioral dimension thematically unified by Justice or Altruism. And 4) given the previously stated dimensions of cognition, emotion, and behavior, may the cognitive component of each psychological dimension pertaining to the focal-stimulus person be identified with one of the dimensions found to underlie cognition, and may the complete nature of those psychological dimensions then be described as follows: Activity-Arousal-Inclusion (Inclusion), Impotency-Control-Dominance (Dominance), Pleasantness-Pleasure-Dependence or Affection (Dependence), and Sublimity-Pleasure-Justice or Altruism (Morality).

Although there are four sets of dimensions pertaining to focal-stimulus persons, as discussed previously, all four of those sets are based upon one set of prototypical

dimensions. Therefore, rather than test the above hypotheses for each of those sets (actually, only the personal trait dimensions and the role trait dimensions are testable), only the personal trait dimensions were investigated, with the presumption that the results obtained would be relevent to the other sets of psychological dimensions (i.e., personal attitudinal, role attitudinal, and role trait dimensions).

The three personal trait dimensions of Inclusion, Dominance, and Dependence (or Affection) had been well established in the domain of interpersonal relations. The psychoanalyst Horney (1945) had postulated those three dimensions as the dispositions of the ego, based upon her clinical observations, and they corresponded generally to the first three social modalities postulated by Erik Erikson (1950) in his psychoanalytically-based theory of psychosocial development. The psychoanalytically-oriented Schutz (1958) researched those three dimensions and found support for them through a cluster analysis of data obtained from the questionnaire medium. And Adamopoulos (1982) later found those three dimensions both necessary and presumably sufficient in accounting for a set of behaviors college students thought they would enact in various hypothetical situations on a college campus.

Although the fourth personal trait dimension of Morality postulated by the theory of dyadic social transaction has been excluded from the domain of interpersonal relations, it is, of course, an important dimension for cognitive-developmental theorists such as Piaget (1932/1970) and especially Kohlberg (1969; 1981), and in a recent review of personality theory and research, Loevinger and Knoll (1983) asserted that it was the "central dimension of personality."

In the theory of dyadic social transaction, the psychological dimension of Morality is utilized as the central dimension of personality. For the theory conceives of progressive human development within the context of social relations as naturally exemplifying thought encompassing higher levels of social reality accompanied at times with pleasures of a more sublime nature and with more altruistic behavior. And, antithetically, the theory conceives of progressive egotistical development, a regressive orientation in human development, which ultimately eventuates in nihilism. Such a conception, though emphasized by Fromm (1964) and attributed to Freud (1961) in his conception of Eros and Thanatos, may be traced historically at least to one of the most ancient religions,

Zorastrianism, which conceived of it simply as Good versus Evil.

All four personal trait dimensions postulated by the theory of dyadic social transaction were not contraindicated by factor-analytic research of personality when that research was rationally evaluated. It was therefore reasonable to presume that a personal trait dimension would emerge from factor-analytic research in the area of interpersonal relations when the experimental design permitted it and the data analysis was appropriate.

In the empirical investigation of the cognitive, emotional, behavioral, and personal trait dimensions underlying social transactions, the participation of nine female undergraduate students from a university campus was obtained. Each of the nine subjects completed a questionnaire which took approximately five hours to complete which assessed how they would likely perceive, feel, and behave in relation to focal-stimulus persons depicted in hypothetical social situations on a college or university campus.

The actual design of the questionnaire was rather intricate, in that it attempted to control for the intrusion of confounding factors and prevent error from fatigue, but conceptually it was rather simple. Conceptually, it consisted of forty different hypothetical social situations

presented in a paragraph which each subject read. Following the reading of each social situation, the subject assessed how she would likely perceive the focal-stimulus person depicted in the social situation on a set of bipolar adjectival rating scales potentially descriptive of focal-stimulus persons. Then she assessed how she would likely feel toward that stimulus person on a set of bipolar rating scales descriptive of emotion, and then she assessed how she would likely behave toward that stimulus person on a set of bipolar rating scales pertaining to behavior. There were fifty bipolar adjectival rating scales in all with each of the hypothesized dimensions of cognition (Activity, Potency, Pleasantness, and Sublimity), emotion (Arousal, Control, and Pleasure), and behavior (Inclusion, Dominance, and Dependence) represented by five scales (variables) each.

For each subject and for a calculated average subject (using the mean of the responses of the real subjects), the covariation of the twenty cognitive variables over the forty situations was factor analyzed with the final rotational solution permitting obliquity. Similarly, the covariation of the fifteen emotional variables over the forty situations was factor analyzed, and the covariation of the fifteen behavioral variables over the forty situations was factor analyzed.

Cognition. With respect to cognition, only a two-factor solution generalized across subjects as assessed by proportionality coefficients of factor loadings. One factor was clearly the general evaluative dimension found by Osgood and Suci (1955) in early research on semantic meaning which they referred to simply as Evaluation, and it consisted of the two hypothesized cognitive dimensions of Pleasantness and Sublimity. The other factor consisted of the other two hypothesized cognitive dimensions of Activity and Potency, and it was interpreted as Dynamism. As Hallworth (1965) had observed earlier, it is not unusual for those two dimensions to emerge when bipolar adjectival scales as used by Osgood and his associates are used to assess focal-stimulus persons and other social entities. Notably, however, the factor of Evaluation contained not only the hypothesized dimension of Pleasantness but also the hypothesized dimension of Sublimity, thus indicating that it was not simply an amoral dimension but also subsumed moral perception.

Although for a few of the real subjects and the average subject only the two cognitive dimensions of Evaluation and Dynamism were indicated, for the other subjects three factors of cognition were indicated for those subjects as individuals. However, they were not the same set of three factors for those individuals.

There was, however, a discernible pattern underlying the three-factor solutions of cognition for those subjects for whom such a solution was appropriate. For some of the subjects, one of the factors was the factor of Evaluation found in the two-factor solution, and one of the other factors was mostly the factor of Dynamism also found in the two-factor solution, though a substantial portion of the variables associated with it in the two-factor solution along with a few variables associated with Evaluation in the two-factor solution coalesced instead into the third factor of that solution. The third factor found for those subjects, however, was not the same.

For three of the nine subjects, the largest factor in the three-factor solution for them was the factor of Dynamism found in the two-factor solution. The other two factors were interpreted as the two hypothesized factors of Pleasantness and Sublimity, which in the two-factor solution for those subjects composed the more general factor of Evaluation. However, although the three factors for those three subjects were interpreted as Pleasantness, Sublimity, and Dynamism, only for two of the three subjects were their three-factor solutions considered similar enough to be identical.

<u>Emotion</u>. For the real subjects and the average subject, a two-factor solution of the emotional variables was found

to be highly generalizable. The first factor was identified as Pleasure, and the second factor was identified as Arousal, though for a couple of the subjects it was somewhat confounded by the hypothesized factor of Control.

The three-factor solution of the average subject, however, was also found to generalize across subjects according to an established criterion, when a factor from the two-factor solution was substituted for two of the subjects. Those three factors were quite clearly the three hypothesized factors of Arousal, Control, and Pleasure.

Behavior. For the behavioral variables, only a one-factor solution generalized across all of the subjects. That single factor was labelled Association and was loaded by the three hypothesized behavioral factors of Inclusion, Dominance, and Dependence (or Affection), with the hypothesized factor of Dominance loading it inversely (i.e., it was Inclusion-Submission-Dependence).

A two-factor solution of the behavioral variables came close to generalizing across subjects, though only the one-factor solution was warranted for three of the real subjects. One of the factors in the two-factor solution was interpreted as Sociableness and consisted of the two hypothesized behavioral factors of Inclusion and Dependence, and the other factor in that solution was identified as the hypothesized behavioral factor of Dominance. In progressing

from a one-factor solution to a two-factor solution for those subjects, therefore, the hypothesized behavioral factor of Dominance in the two-factor solution emerged from the factor of Association in the one-factor solution with the remnant of that factor then remaning as Sociableness in the two-factor solution.

Personal Trait Dimensions. Two models were suggested by the preceding factor analyses of the cognitive, emotional, and behavioral variables. One model, called the Common Model, incorporated those dimensions of cognition, emotion, and behavior from factorial solutions which, as a set, generalized across subjects. It included, therefore, the two cognitive dimensions of Evaluation and Dynamism, the two emotional dimensions of Pleasure and Arousal, and the single behavioral dimension of Association.

Although the three hypothesized emotional factors of Arousal, Control, and Pleasure did generalize across subjects, within the same factorial solution they did not, and although all three of those factors considered separately did meet the criterion of generalizability established, for two of those subjects the emotional factor of Control was completely missing. Moreover, for those two subjects and one other, the behavioral factor of Dominance one would obviously assume related to emotional control was also nonexistent. Therefore, only the two emotional factors

of Pleasure and Arousal were used in the Common Model. Though also, in fact, as a total set of cognitive, emotional, and behavioral factors, only those five factors of Evaluation, Dynamism, Pleasure, Arousal, and Association generalized across the subjects and hence were "common to all."

The second model, called the Dominant Model, consisted of that set of cognitive, emotional, and behavioral factors which were "dominant" for the sample, though not necessarily "common" in the sense of generalizing across the subjects. It consisted of that set of factors which characterized the average subject and the majority of the real subjects. It therefore incorporated the two cognitive factors of Evaluation and Dynamism, the three emotional factors of Pleasure, Arousal, and Control, and the two behavioral factors of Sociableness and Dominance.

Although the theory of dyadic social transaction had conceived the cognitive component of each of the personal trait dimensions to be equated with one of the dimensions of social cognition when cognition was considered separately and then defining the emotional and behavioral components accordingly, the previous analyses of cognition, emotion, and behavior precluded such a possibility. There was, for example, only one behavioral factor for the Common Model, but, most especially, the Dominant Model had three emotional

factors whereas it had only two cognitive and two behavioral factors. Basing the personal trait dimensions on the cognitive factors, therefore, would have collapsed the dimensionality of the Dominant Model into at least one too few dimensions. For if the personal trait dimensions of the Dominant Model were to account for the inter-relationships of the different sets of factors, then there could be no fewer dimensions than that subset of factors with the greatest number (i.e., cognition, emotion, or behavior), which in the case of the Dominant Model was equal to the number of emotional factors.

Rather than impose a structure on a set of factors for each of the two models in constructing the personal trait dimensions, therefore, those dimensions naturally underlying those sets of factors as determined through second-order factor analyses were defined instead as the personal trait dimensions. The personal trait dimensions for each model were, then, factor-analytically based: They were the secondary factors of the set of primary factors of cognition, emotion, and behavior incorporated in the models.

Common Model. The personal trait dimensions found factorially for the cognitive, emotional, and behavioral factors of the Common Model were two in number and were interpreted as Emotionalism and Extroversion. The factor of Emotionalism appeared to be organized by the emotional

factor of Pleasure and was characterized by the cognitive factor of Evaluation and the behavioral factor of Association. The factor of Extroversion appeared to be organized by the emotional factor of Arousal and was characterized by the cognitive factor of Dynamism, though it had no relation to any behavioral factor. Those two personal trait dimensions of Emotionalism and Extroversion in the Common Model were, indeed, found to generalize highly across subjects.

Dominant Model. The personal trait dimensions found as second-order factors of the primary factors of Evaluation, Dynamism, Pleasure, Arousal, Control, Sociableness, and Dominance in the Dominant Model were three in number and were interpreted as Emotionalism, Extroversion, and Dominance. Emotionalism, as in the Common Model, was organized by the emotional factor of Pleasure and characterized by the cognitive factor of Evaluation and the behavioral factor of Sociableness, a remnant of the behavioral factor of Association in the one-factor behavioral solution. Similarly, Extroversion, as in the Common Model, was organized by the emotional factor of Arousal and characterized by the cognitive factor of Dynamism but not by any behavioral factor. The personal trait dimension interpreted as Dominance, actually the second largest of the second-order factors, was organized by the emotional factor of Control and characterized by the

opposite of the cognitive factor of Dynamism and characterized especially by the behavioral factor of Dominance. Notably, the cognitive factor of Dynamism, consisting of the two hypothesized cognitive factors of Arousal and Potency, loaded equally on the two second-order factors (personal trait dimensions) of Extroversion and Dominance, though for the latter the loading was negative. For those subjects in which the Dominant Model was relevant, an inspection of the proportionality coefficients of the three personal trait dimensions of that model combined with a third-order factoring of those three dimensions for all those subjects combined indicated that those personal trait dimensions, though not common, were dominant in the sample of subjects.

Personal Models. For each subject in the investigation, a personal model was developed which included those cognitive, emotional, and behavioral factors most appropriate to the subject personally. For a few of the subjects the Common Model or the Dominant Model was also their personal model.

As in the Common Model and the Dominant Model, the personal-trait dimensions of the Personal Model for each subject were determined by a second-order factoring of the primary factors of cognition, emotion, and behavior

incorporated in that model. However, although initially the number of second-order factors extracted for each personal model was determined by the greatest number of factors for cognition, emotion, or behavior included in the model, for some subjects in which there were more cognitive factors than emotional factors the obtained second-order factors were not very interpretable. Therefore, the number of second-order factors finally extracted for each personal model was equated with the number of emotional factors incorporated in the personal model for that subject.

The personal-trait dimensions of the personal models were interpreted as manifestations of the same personal-trait dimensions found in the Common Model and the Dominant Model, with the personal-trait dimension of Dominance not emerging for those two subjects not having an emotional factor of Control and a behavioral factor of Dominance. Notably, the personal-trait dimension found in the personal models of the subjects, as for those personal-trait dimensions found in the Common Model and Dominant Model, were each organized by one of the emotional factors incorporated in the model.

Emotional Organization of Personal Trait Dimensions. For the various models, the organization of the personal-trait dimensions by the emotional factors included in the models was indicated not only by an inspection and interpretation of the second-order factor patterns. For a number of

subjects and for the average subject, the varying numbers of cognitive, emotional, and behavioral factors, their natures, and their inter-relationships also indicated that the personal-trait dimensions were organized by emotional factors.

For the average subject who represented the general trends in the data for the real subjects, as well as for some real subjects, the Dominant Model was also the most personally appropriate model, yet there were more emotional factors incorporated in that model than either cognitive or behavioral factors. Neither the cognitive factors as postulated nor the behavioral factors could therefore function as the defining features of any personal trait dimensions accounting for the inter-relationships among the set of primary factors of cognition, emotion, or behavior most appropriate for the subject, because there would then be at least one too few personal-trait dimensions (for the common factor space would at least have to be of three dimensions to include the emotional factors).

Additionally, evidence was found for the personal trait dimensions being organized by emotional factors by the obvious inter-relationships among the cognitive factors, emotional factors, and behavioral factors. For the Personal and Dominant Model for the average subject, for example, although the two hypothesized cognitive factors of Activity

and Potency emerged together as a more general cognitive factor of Dynamism, for the two personal-trait dimensions characterized by the emotional factors of Arousal and Control, that is, the personal-trait dimensions of Extroversion and Dominance, respectively, the cognitive factor of Dynamism characterized those two personal trait dimensions equally well, though in an opposite manner for the personal-trait dimension of Dominance. That is, although the average subject did not cognitively discriminate generally between stimulus persons who were active but not potent and those that were potent but not active, such a corresponding discrimination was apparently being made emotionally, indicating the primacy of affect over cognition and perhaps the primacy of functioning that is less conscious over that which is more so. And, furthermore, although the emotional factor of Control did not have a one-to-one correspondence with any cognitive factor characterizing the personal-trait dimension, it did so with the behavioral factor of Dominance, as one would expect, thus further illustrating the organization and mediating role played by emotion in cognition and behavior.

Even for those subjects in which more cognitive factors emerged than emotional factors, the number of personal-trait dimensions for their personal models had to be equated with the number of emotional factors when factorially defined for them to be sensible. For one of those subjects, for

example, the two evaluative cognitive factors of Pleasantness and Sublimity and the cognitive factor of Dynamism were represented best when only two personal-trait dimensions were permitted in accordance with the number of emotional factors which were found. Although the cognition of that subject was three dimensional, it did not fully encompass a three-dimensional space due to the obliquity of the two evaluative cognitive dimensions of Pleasantness and Sublimity which quite obviously appeared to emerge from the same emotional origin--i.e., emotional pleasure-displeasure.

Extroversion. One of the interesting findings of the investigation was that the personal trait dimension identified as Extroversion in both the Common Model and the Dominant Model, though organized around the emotional factor of Arousal and characterized by Dynamism as would be expected from theory, had no functional relation to any behavioral factor (either Association in the Common Model or Sociableness in the Dominant Model). If one considers Extroversion in the context of the Dominant Model, for example, then the fact that Extroversion is organized by the emotional factor of Arousal is supportive of Eysenck's conception of that personal trait dimension (H. J. Eysenck & S. B. G. Eysenck, 1969), but the fact that Extroversion is functionally unrelated (linearly, at least) to Sociableness (a combination of the two hypothesized behavioral factors of Inclusion and Dependence) is contrary to Eysenck's

conception, though supportive of research conducted by Meharabian and Russell (1974) related to the Yerkes-Dobson law.

Mehrabian and Russell (1974) assessed the psychological functioning of individuals to environmental settings on the three emotional dimensions of Arousal, Pleasure, and Control and a single behavioral dimension of Approach-Avoidance (probably the same as Association in the Common Model and very similar to Sociableness in the Dominant Model). Although they did find a curvilinear relation between the emotional arousal evoked by the settings and Approach-Avoidance in relation to them in general concordance with the Yerkes-Dobson law (i.e., that individuals approach or avoid situations in order to maintain an optimal level of emotional arousal), such a relation only pertained to neutrally valenced settings. For those settings which also aroused emotional pleasure (i.e., which were pleasing), emotional arousal and approaching the setting were directly related, and for those settings which evoked emotional displeasure, emotional arousal and approaching the setting were indirectly related (or, alternatively, arousal and avoidance were directly related).

The theoretical issue then indicated by the personal-trait dimension of Extroversion found in the study conducted is whether or not it may be reasonably considered a

personal-trait dimension if no mode of behavior is functionally related to it. According to the previously stated theory of dyadic social transaction, it may not be defined as a personal-trait dimension if it has no behavioral component.

The fact that persons considered more extroverted have been characterized as behaving more gregariously (or inclusively) by past factor analytic research may be due to a methodological artifact. For such research has identified such a dimension as a common factor accounting for the covariation of a set of variables <u>across subjects, not situations</u>, thus making it, technically, a common factor accounting for inter-individual variation, not necessarily for intra-individual variation, as would be required of a common personal-trait dimension. Given then that the variables representing Extroversion in such research are questionnaire items usually confounding social stimulation in some hypothetical situation, usually of a positive nature, with some gregarious behavior (e.g., "Do you like to go to parties?") and the fact that more extroverted persons would perceive situations as less stimulating and so seek those situations more than other persons when they are not negative (making the difference between the introverted and the extroverted person one of mean level), then the empirical association found from such research between social stimuluation (neutral and positive), emotional

arousal, and some mode of behavior such as social inclusion or gregariousness, could be attributed to an interaction between the variables and subjects used in the research.

Considered as an intra-individual dimension, it would appear from this investigation that the difference between the introverted person and the extroverted person is a difference in magnitude between focal-stimulus persons (or social situations) contrued as dynamic and the emotional arousal experienced. Intra-individually, Extroversion does not appear to be functionally related to any general mode of behavior, though from an implicit or explicit perspective of inter-individual variation, it would be construed as functionally related to a general mode of behavior such as gregariousness or social inclusion.

The Issue as to the Common Traits. Another very interesting outcome of the empirical investigation conducted is the fact that only two personal trait dimensions were found to be common to the subjects, Emotionalism and Extroversion, if one chooses to consider Extroversion a personal-trait dimension. The results suggest, therefore, that there are probably only two, no more than three, personal-trait dimensions which are actually common to individuals, if one wishes to extend the criterion of generalizability to include Dominance (and not require a personal trait dimension to have a behavioral component).

Although not all possible common traits found in factor-analytic research were represented by variables in the investigation so they could emerge, Dominance and Morality were. But Dominance failed to emerge for a third of the subjects, though one might, nevertheless, consider it common enough, and only the cognitive component of Morality emerged and for only a minority of the subjects. Given that Dominance and Morality are traits past research would lead one to believe were common and would emerge in the analysis but Dominance did only for two-thirds of the subjects and the cognitive component of Morality for only one-third--it is likely that only two, at most three common personal-trait dimensions exist. Most of the common factors assumed to be common traits in the usual studies of the covariation of personality variables over persons (R-technique) may simply be factors accounting for interactions between the variables and persons--that is, traits common to only subsets of persons.

Burt (1965) has reported that he postulated the three personal-trait dimensions corresponding to Evaluation, Extroversion, and Dominance based upon a factor analysis of McDougall's primary emotional dispositions as early as 1910. And the three emotional dimensions of Pleasure, Arousal, and Control postulated recently by Mehrabian and Russell (1974) based upon their factor-analytic studies which form the organizational basis for those personal-trait dimensions

appear to be essentially those postulated by Wilhelm Wundt in his tri-dimensional theory of feeling determined through the method of introspection prior to 1910. Could the bulk of factor analytic research of the common traits of personality since that time have proceeded predicated on a false assumption or a logical error?

One may well be reminded of Eysenck's contention that only Emotionalism and Extroversion generalize across samples (H. J. Eysenck & S. G. B. Eysenck, 1969). And, one may also well be reminded of Peterson's (1965) similar conclusion that Cattell's factors simply do not generalize across age groups, and one should therefore start first with the two largest factors in the data and add more dimensions as needed.

The empirical investigation reported in this dissertation was initially designed to be able to disconfirm the popular three-dimensional theory of interpersonal relations advanced by such theorists as Schutz (1958) and to determine if a fourth dimension of Morality as postulated by the theory of social transaction was empirically supportable. As the results indicate, however, both the three-factor and four-factor theories are refuted by the evidence. As shown, there appears to be only one personal trait dimension in the realm of interpersonal relations which is common and has a tripartite structure, when a fairly rigorous operational

definition is applied to that term, though it contains within it the substance of morality.

If one accepts a less rigorous criterion of generalizability and the notion of "dominant" personal trait dimensions (dominant but not common in the population), on the other hand, then the research reported here supports the two-dimensional theory of interpersonal relations (Emotionalism and Dominance), as represented by Leary (1957), Lorr and McNair (1965), and Wiggins (1979).

One obvious possible revision of the theory of social transaction, therefore, is to utilize the two personal trait dimensions of Emotionalism and Dominance, as clarified in the research which has been reported, including the moral aspect of the one dimension. The research, then, provides an opportunity for a substantial revision in the theory and a form of it in the future much more practical and amenable to mathematical specification.

APPENDIX A

Components of the Theory of Social Transaction

The inchoate theory of dyadic social transaction, as it has been presented in the previous chapters, describes the social-psychological functioning of an individual, termed the "subject," in relation to another person, referred to as the "focal-stimulus person," within some surrounding physical setting, called the "ambient-stimulus physical setting." Collectively, the social-psychological functioning of the subject in relation to a focal-stimulus person within an ambient-stimulus physical setting is referred to as an "interpersonal situation," and the theory limits itself to those interpersonal situations within some naturally occurring subenvironment such as a school or work place. In each such interpersonal situation, the subject and the focal-stimulus person are both inhabitants of the encompassing subenvironment.

The unit of analysis of the social-psychological functioning of the subject in an interpersonal situation is a social transaction, defined as the psychological reflex-arc analogue. The psychological reflex-arc analogue is referred to as a social trans-action, because it is literally conceived as an action or event occurring across (or over) the interpersonal situation of subject and

stimulus complex of focal-stimulus person and ambient-stimulus physical setting (cf Bentley, 1975b). From the perspective of the subject, it consists of three aspects or components--a cognition of the stimulus complex, an emotion in relation to the stimulus complex, and a behavior in relation to the stimulus complex. Those three components of a social transaction are theoretically conceived from an organicist metaphysical perspective.

According to the theory, a social transaction occurring in an interpersonal situation is analyzable into two major parts, one part related to the focal-stimulus person and the other part related to the ambient-stimulus physical setting. Additionally, that part of the social transaction related to the component of the focal-stimulus person in the stimulus complex is further analyzable into one part related to the "social role" of the focal-stimulus person and one part of the focal-stimulus person with the social role of the focal-stimulus person abstracted--that is, the "personhood" of the focal-stimulus person. The theory, therefore, incorporates not only the subject's perception of what is typically thought of as the personality of the focal-stimulus person, but also the subject's perception of the functioning of the focal-stimulus person in that person's social role. Hence, to some degree the theory considers the influence of the social structure of the subenvironment upon the social-psychological functioning of the subject.

To offset the irrational bias of personalogism and with the expectation of improving psychological description, the theory of dyadic social transaction further analyzes the social transaction of the subject in an interpersonal situation into parts related to the "specificity" and "generality" of the personhood and the social role of the focal-stimulus person and of the ambient-stimulus physical setting. The "specificity" of the personhood, social role, and setting refers to the uniqueness of those aspects of the stimulus complex, and the "generality" of the personhood, social role, and physical setting refers to what each of those objects have in common with the other members in their classes.

According to the theory, the same "psychological dimensions" of cognition-emotion-behavior which describe social transactions in various interpersonal situations also represent the involvement of the elements of the stimulus complex in those transactions, relative to the subject. That is, the specificity and generality aspects of the personhood and social role of the focal-stimulus person are each represented by the same prototypical set of psychological dimensions, and there are therefore four sets of such dimensions. Similarly, the specificity and generality aspects of the ambient-stimulus physical setting are both represented by the same prototypical set of psychological dimensions.

Those psychological dimensions representing the specificity and generality of the personhood of the focal-stimulus person are referred to as "personal attitudinal dimensions" and "personal trait dimensions," repectively, and, similarly, those psychological dimensions representing the specificity and generality of the social role of the focal-stimulus person are labelled "role attitudinal dimensions" and "role trait dimensions," respectively. Analogously, those psychological dimensions representing the specificity and generality of the ambient-stimulus physical setting are termed "setting attitudinal dimensions" and "setting trait dimensions," respectively. A social transaction, in any given interpersonal situation, is then conceived as a synthesis of all the above dimensions.

APPENDIX B

Definitions of Dimensions

The theory of dyadic social transaction postulates that the three emotional dimensions found empirically by Mehrabian and Russell (1974) mediate the cognition of a subject of a stimulus complex (stimulus person and setting) and the behavior of the subject in relation to that stimulus complex within an interpersonal situation. The emotional dimension of "Pleasure-Displeasure" they define as "... a feeling state that can be assessed readily with self-report, such as semantic differential measures, or with behavioral indicators, such as smiles, laughter, and, in general, positive versus negative facial expressions" (p. 18). The emotional dimension of "arousal" they define as "... a feeling state varying along a single dimension ranging from sleep to frantic excitement" (p. 18), and they state that dimension can be assessed by verbal report, physiological measures, semantic differential measures, and by some nonverbal measures such as facial activity. The emotional dimension of control-helplessness (dominance-submissiveness as they refer to it) they describe essentially as a feeling state of relaxation versus tension characterized behaviorally by postural relaxation (control) versus postural tension and rigidity (helplessness). It may be assessed, they state, by semantic differential measures

also, and they postulate that emotional control "... is the inverse of the judged potency of the environment" (p. 19).

Although the three dimensions of activity, potency, and evaluation found by Osgood and his associates (e.g., Osgood and Suci, 1955) are conceived often as "connotative dimensions" of environmental objects or signs of such objects, they may also be conceived theoretically to denote to some extent the properties of environmental objects, though as perceived (or cognized) by the subject. Mehrabian and Russell (1974) have theoretically conceived those three dimensions in such a manner, as evidenced by the previous quotation in which they asserted emotional control to be "... the inverse of the judged potency of the environment" (p. 19), and, in fact, they postulated all three of Osgood's dimensions to be representative of environmental objects and to be in a one-to-one correspondence with their three emotional dimensions.

The three dimensions of activity, potency, and evaluation found by Osgood and his associates in the judgments of various environmental objects and signs correspond in meaning to those terms as they are defined in a dictionary. Webster's New World Dictionary (Simon & Schuster, 1980), defines "activity" as "energetic action; liveliness, alertness," and it defines "potency" as "power; strength." These definitions of activity and potency correspond to

interpretations of factors found by Osgood and his associates which they have labelled by those same terms.

With regard to Osgood's dimension of evaluation as it pertains to focal-stimulus persons as perceived by subjects in interpersonal situations, however, the theory of dyadic social transaction postulates two evaluative dimensions, as stated previously. One dimension would pertain to the "pleasantness" of the focal-stimulus person, conceived without regard to moral considerations, and the other dimension would pertain to the "sublimity" of the focal-stimulus person, that is, in reference to the moral qualities of the focal-stimulus person, though both pleasantness and sublimity when perceived in focal-stimulus persons by a subject would result in emotional pleasure. The definitions of those two terms, once again, correspond to standard dictionary definitions, though they also correspond to some empirically derived factors as previously cited. "Sublimity," for example, may be defined as "the state or quality of being sublime, majestic, noble, etc.," and being "pleasant" may be defined as "having an agreeable manner, appearance, etc.; amiable" (Simon & Schuster, 1980).

The three behavioral dimensions of inclusion, dominance, and dependence (or affection) have been defined empirically by Schutz (1958) through cluster analysis and by Adamopoulos (1982) through factor analysis. Those dimensions also

correspond in meaning to their respective terms in a dictionary. For example, behavioral "inclusion" is "an including or being included" in an interpersonal situation; behavioral "dominance" is a "dominating" or controlling of a person, and behavioral "dependence" is a "being contingent upon" or relying upon another for emotional or instrumental support. Inclusive and exclusive behavior by a subject in relation to an interpersonal situation, with respect to overt behavior, is simply an entering into and exiting from those situations, respectively, whereas dominant and submissive behaviors refer to those behaviors of a subject once in an interpersonal situation to either actively control or submit to the focal-stimulus persons, respectively. Dependent and Independent behaviors by a subject in an interpersonal situation refer to those behaviors by the subject which are contingent upon or not contingent upon the focal-stimulus person for either apparently emotional (e.g., love) or instrumental reasons.

The fourth behavioral dimension introduced into the theory of dyadic social transaction and peculiar to it in the interpersonal domain is the behavioral dimension of justice (or behavior identified as altruistic). The essential quality of such behavior by a subject in an interpersonal situation is "fairness" in relation to the focal-stimulus person. Although the theory of social transaction postulates that all behavior in an interpersonal

situation may be characterized ostensibly by the other three dimensions when the behavioral quality of fairness is disregarded, the theory also postulates that the construct of fairness accounts for some of the cross-situational inconsistency of the subject on those other three behavioral dimensions. For a subject behaving justly, according to the theory, is expected to behave inclusively or exclusively, dominantly or submissively, or dependently or independently, according to the criterion of fairness.

The four "psychological dimensions" of cognition-emotion-behavior pertaining to the subject in relation to the focal-stimulus person in an interpersonal situation may then be defined by the previously defined dimensions of cognition, emotion, and behavior. That is, the psychological dimensions of Inclusion (named after the behavioral component of that dimension) is defined as Activity-Arousal-Inclusion; the psychological dimension of Dominance is defined as Impotence-Control-Dominance; the psychological dimension of Dependence is defined as Pleasantness-Pleasure-Dependence (or Affection), and the psychological dimension of Morality is defined as Sublimity-Pleasure-Justice (or Altruism). The emotional components of each of the four psychological dimensions above, however, is mathematically defined according to theory to permit them to be somewhat heterogeneous, though roughly the theory assumes each of

those components to be primarily composed of a single emotional dimension.

The above definition of cognitive, emotional, behavioral, and psychological dimensions (psychological dimensions having been defined here as consisting of cognition-emotion-behavior) may appear too abstract and unrelated to specific properties of the social-psychological functioning of the subject in an interpersonal situation. Ideally, however, in the empirical establishment of those dimensions, say, for example, the behavioral dimensions, a representative sample of subjects, focal-stimulus persons, and physical settings (within some representative subenvironment) would be selected (preferably, randomly). For each subject, the covariation of the behavioral variables of the subject across situations might be factor analyzed, and the common behavioral factors for that subject then compared to the similarly derived common behavioral factors of the other subjects to determine if such a dimension is in fact likely to be <u>common</u> to the population of which those subjects are members. If so, the dimension is then interpreted, usually by selecting a term from a thesaurus or dictionary, and the dimension, along with any other common dimensions within the same domain, can then be related to any specific behavior within that domain. A relatively small set of common behavioral dimensions, then, may be well grounded in

quantified experience and represent economically the behavioral variables within the behavioral domain.

APPENDIX C

FORTY HYPOTHETICAL SOCIAL SITUATIONS

1. You are in a laboratory course in biology, and your instructor has asked all of the students in your lab to select a partner. You and the partner you choose will be working closely together on detailed laboratory exercises, but what each of you has learned will be evaluated separately. All of the students in the course are strangers to one another, and any one of them would be as likely to agree to be your partner as any other. One of those students you have observed as being especially lively and talkative in contrast to the other students. In relation to that person in that situation:

2. You are sitting on a bench along one of the sidewalks on campus just casually reading the college newspaper. A student you have known for some time through various classes together sits down beside you on the bench to talk about a matter of concern to both of you. You have known that person to be very weak-willed and to have little control over her own life. But knowing of a conflict you are having with a mutual friend, she begins to tell you how to handle that conflict. In relation to that person in that situation:

3. You have walked into the library to study for an upcoming exam. You see a friend of yours who you believe must also be studying for the same exam sitting at a large table alone where there are empty seats. You are concerned about the exam which is to be taken the next day, and you must choose between sitting with your friend whose company you would enjoy or sitting at a carrel alone where you would be free from distraction. In relation to that person in that situation:

4. A male student who was very influential asked a female student who had recently transferred to your college for a date. The girl, however, politely refused, and because of the rejection the boy spitefully spread the rumor that she had a contagious venerial disease and should be avoided. Other male students were then not asking her out because they believed the rumor or did not themselves want to become an outcast. One very compassionate male student, however, who knew what had really happened, began taking her to some social events despite criticism because he enjoyed her company and because he did not like seeing her so mistreated. As a result, as others had feared, he became very unpopular and was avoided by others, though he did not

let that bother him. You are now in the campus snack bar, however, looking for a place to sit, and you see him sitting alone at a booth, isolated from other students. In relation to that person in that situation:

5. You are in the campus snack bar, and you have just bought a soft drink and are looking for a place to sit. Although there are a number of places available, you notice a professor from your previous class sitting alone with something to drink. In your previous class with her, a subject of considerable interest to you had emerged, but it was too unrelated to the course itself to discuss in class. The professor has a wide range of interests and is very livacious and communicative, however, and she invited any student interested in the subject to discuss it with her in the snack bar after class. In relation to that person in that situation:

6. You are seated alone at a large table in the library when a professor from a course you once took sits down across from you. From your previous experience with him, you know him to be very uncertain about how to organize a course and to have little confidence in the educational decisions he makes. He will consider suggestions, however, and now he is explaining the difficulty he has continued to have teaching the same course you once took from him. One of the requirements he has for his course you remember as being very counterproductive for yourself and other students when you took the course. In relation to that person in that situation:

7. You are in the office of a professor discussing the preparation of a term paper you are preparing for her course. The professor is very warm and comfortable to be around, and she often seems interested in the well-being of students. You have been having a personal problem which has been very much on your mind, but thus far you have kept it to yourself. The professor, however, noticing that you are bothered by something and not your usual self, in a concerned and caring way asks you what is wrong. In relation to that person in that situation:

8. The final examination for a course is just a couple of days away, and you need to make a good grade on that exam. Most of the students in the course have done much studying, and obtaining a good grade on past exams in the course has been difficult. You have expressed your concern about needing to do well on the exam to another student who later calls you on the phone. She informs you that she has been sly enough to obtain a copy of that exam, and in an effort to become friendly with you she invites you to her

dormitory room to go over the questions before the exam. In relation to that person in that situation:

9. You have just recently entered college, and you are attending a party given by your student government for students to become better acquainted. The socializing is lively and you notice a few people you have met briefly before involved in animated discussions which you could join. You also notice another person you have met previously. She seems content merely to remain by herself and sip punch while watching the gathering from a distance and listening to the music in the background. In relation to that person in that situation:

10. The students in your major area of study have formed an organization primarily for the purpose of learning what kinds of career opportunities will be available to you following graduation. You and another student who is known for his extensive and penetrating knowledge in your major area of study have been selected to obtain speakers for your organization who are successful in careers of interest to your organization. Your partner, however, has already expended considerable effort in deciding what speakers should be invited and has presented you a list asking you for your approval. In relation to that person in that situation:

11. You have sat down at a booth in the campus snack bar for some relaxation and to have something to drink. A male student you know from a course you both took together the previous semester has noticed you and seated himself across from you in the booth. He is not especially attractive and as usual has made some crude and impolite remarks to you. As your conversation with him continues, however, he begins telling you that he is attracted to you and begins caressing your hand. In relation to that person in that situation:

12. You have a group of companions of about five members who are often together, but recently a conflict developed within that group. One of the group members befriended a student whose ethnicity and race the others disliked and criticized. When that member refused to abandon that new friendship because of such prejudice when pressured by the others, she fell out of disfavor with the rest of the group because she was said to be "no longer one of us." The most influential member of the group has advised you to abandon her also. As you are now entering a large lecture room, you see that member of your group who is being shunned sitting one place and the other members of your group sitting at another separted from that person. In relation to that person in that situation:

13. You are registering for a required course which is being presented separately by two professors you have previously had before. Both are equally capable, but they have very different styles in teaching. One professor provides very much verbal stimulation and elicits discussion from his students, often from specific students. The other professor, in contrast, has a very scholarly and somewhat aloof style in lecturing, which enables students to just relax, if they want, and absorb the information being presented. You are now considering whether to take the required course from the more scholarly but aloof professor. In relation to that person in that situation:

14. You are walking to your next class, and a professor you had the semester before is walking in the same general direction and joins you. From your previous experience with him, you know him to be a strongly opinionated individual about almost anything and insistent upon convincing you that his opinions are right. As you walk together, he begins stating his opinion on a political matter of concern to you also, but his opinion is different from yours. In relation to that person in that situation:

15. You have gone by yourself to see a movie being shown on campus, and a professor you know from a course you had once taken sits down beside you. From the course you had from him, you know him to be a very insensitive person who as a professor exerted considerable control over his students. While waiting for the movie to begin, however, he begins talking intimately to you while offering his popcorn to you to eat. In relation to that person in that situation:

16. Your faculty advisor has recently experienced great social pressure from the administration of your college which has been reported in your college newspaper. Upon learning that your college has substantial financial investments in South Africa which practices Apartheid, she began publicly questioning if it was socially responsible for your college to be doing so. The administration denounced her as being disloyal and socially disruptive, and it appeared that her contract might be terminated in that she did not yet have tenure. But despite such criticisms she continued. You are now in her office and have just finished discussing your curriculum. She refers to the controversy and requests that you contact representatives in your student government and ask them simply to seriously consider the issue. In relation to that person in that situation:

17. You are walking along a sidewalk on campus on your way to the college bookstore to buy a notebook so you can

take notes during your next class. You have only about twenty minutes to purchase the notebook and get to your class, but on the way you see a student with whom you have had some very interesting conversations in the past who is sitting on a bench about twenty yards away reading a magazine. You need to purchase a notebook and get to your next class on time, but you have not seen that student in quite awhile. In relation to that person in that situation:

18. You are sitting comfortably in the lounge of the student union. Another student who had asked you to become her study partner for a course has come and seated herself beside you. She is not nearly as skillful in studying as you, and she has difficulty making decisions. The two of you have decided to develop a set of study questions for each chapter in the text used for the course, but together you have had some difficulty deciding how to divide the work. Suggestions from her have not been forthcoming, and she has not decided upon any of the suggestions you have made. In relation to that person in that situation:

19. During the last few weeks of summer vacation before registering for college, you had casually dated an attractive and very charming person, though a serious romantic relationship had not developed during that short period of time. He had been planning to attend another college in a different state during the fall, and after you left to register for college you lost contact with one another. However, primarily for financial reasons, he changed his plans at the last minute and registered at your college without you knowing it. While walking on campus shortly after registration, you see one another, and he comes to you and explains what had happened while hugging you and expressing how glad he is to see you. In relation to that person in that situation:

20. You are eating lunch in the cafeteria in the student union with a girl friend, and some female student your friend knows sits down to eat with you. As the two of them talk, you learn that your friend's acquaintance contracted herpes some time ago and that she doesn't like boys except for having sex. You also learn that she has a date with a boy this weekend who she plans to seduce. When asked by your friend if she is first going to inform him she has herpes, she says no, because the boy who gave it to her didn't tell her first. Out of curiousity, she asks you what you think she should do. In relation to that person in that situation:

21. You are taking a course from a keen and highly energetic professor who is intensely interested in the academic life and general well-being of his students. At

the beginning of the course, he not only stated where his office was located and when he would be available to confer with students regarding the course, but he also invited students who had personal problems affecting their education to discuss those problems with him in his office. You have had a personal problem affecting your education which you have been unable to resolve by yourself. In relation to that person in that situation:

22. You are in a special seminar, and you are presenting what you learned concerning a topic you had researched for the course. During your presentation, which had been going well, the professor interrupts you and challenges a statement you made but which you know to be true. Students in the past have attempted to disagree with the professor, but he always seems adamant about his positions once having stated them, and he almost always overpowers any opinion different from his own. In relation to that person in that situation:

23. You have accepted a special job on campus for a semester helping a professor who you have found to be very congenial. You are presently in her office discussing a task that can be done in one of two ways, with either way being about as effective as the other. The two of you could divide the task and work at it separately, or the two of you could work on the whole task together. In relation to that person in that situation:

24. You have been taking a course in speech during the semester, but the professor has taken advantage of the fact that she has received tenure and has ceased preparing for classes or making any thoughtful presentations. Instead, students were simply required to prepare and to present speeches of interest to them which were discussed rather informally in class. Now at the end of the semester, however, grades must be assigned, and by telling the students they themselves know best what grade they deserve and may be trusted to assign their own grade, she obviously expects to manage the problem of assigning grades without student protest. You have performed extremely well in the course and genuinely believe you deserve an "A" for the course. But when you inform her that you deserve an "A," she tries to dissuade you from assigning yourself that high of a grade, perhaps because so many other students have assigned themselves the highest grade regardless of whether they deserved it or not. In relation to that person in that situation:

25. You are eating your lunch at a round table in the cafeteria in the campus activities center, and you are engaged in the company of a couple of very exuberant

students. Another student, however, who from past experience you know to be very reserved and uncommunicative joins your group, and the other students leave shortly after to go to class. You are finishing your own meal. You have enough time to spare that you may remain in the company of the person who joined you, or you may excuse yourself and go to your next class early and visit with others already there. In relation to that person in that situation:

26. You are in a small class of students who are seated in a semi-circle so that they are in view of one another. The professor has explained that a term paper will be required for the course, and students are to choose the topic for their term paper from a list of topics he has developed. No topic may be chosen by more than one student. When asked by the professor your preference, you have stated as your selection the only topic of interest to you. However, another student who you know to be very strong academically and very persuasive states that he is especially interested in that topic, and he asks you if you would choose another topic instead so that he could have that one. In relation to that person in that situation:

27. You are taking a math course, and you are in the library working on a difficult math problem which has been assigned to you. Given enough time, you know you could probably eventually solve it, but you have spent considerable time on it already. A student taking the same math course who is very bright in math says hello to you while sitting down next to you at the table where you are working. Although she could help you solve the problem you are working on very easily, you also know that she can be harsh and demeaning of the intelligence of others. She sees, however, that you are working on math problems and confidently offers to help you if you encounter difficulty. In relation to that person in that situation:

28. A female student you have just met has come over to your dormitory room to study with you for an upcoming exam. From the newspapers and other sources, you know that she is a material witness in an ongoing rape trial in which she happened to witness her brother-in-law rape a young woman. She has been under tremendous pressure not only from lawyers during the trial but also from her husband's family who want her to simply deny that she had seen anything. But the rape victim had been physically and psychologically devasted, and she believed she had an obligation to testify as to what she had witnessed on behalf of the victim and to prevent others from being victimized. After studying, she begins to express how difficult it has been for her, as if she wanted to talk about it. In relation to that person in that situation:

29. You have entered a bus going to your college. After you have paid your fare and you have begun looking for a seat, you see a professor seated near the front of the bus who is teaching a small class you are presently taking. From your experience with that professor in class, you know her to be boring in discussions and to speak in a monotone. The seat next to her, however, is vacant, and you could sit there and talk to her or walk past her to one of the vacant seats in the back of the bus. In relation to that person in that situation:

30. You are sitting at a booth in the campus snack bar drinking a soda. A professor you know from a course you once took from her notices you, and she sits down at your booth with a drink in her hand just to talk to you. From your previous experience with her, you know her to have difficulty forming sound opinions on social issues and political affairs, and when she does form a political opinion, it is usually according to what others around her think. While discussing an upcoming presidential election in which you strongly favor one of the candidates but dislike the other, she explains in exasperation to you that she just doesn't know which candidate to vote for. In relation to that person in that situation:

31. You are sitting in the lounge area of the student union when a professor you had for a course the previous semester walks over and sits down to talk to you. He is not a very well-groomed individual and is deficient in his social manners more generally, often offending people without even being aware of it. He offers to buy you lunch. You have a choice of accepting his offer or telling him you have made previous plans and have lunch instead with your usual companions. In relation to that person in that situation:

32. A female student you know was asked by representatives of your student government to direct a fund-raising campaign to help crippled children within the local community. However, after directing the campaign and giving the money collected to those student representatives to present to an organization for helping the children, she discovered that those representatives had kept most of the money for themselves. When she then confronted them about it, they denied it and began stating publicly that she was mentally deranged to discredit her. When she reported the matter to the Dean of Students, he refused to investigate without further evidence. Despite the personal hardship she has endured, she is still attempting to have those students give all the money that had been collected to the crippled children and to remove those students from office. You have the evidence she needs to do so, and, knowing you do, she

has come to your residence and is now asking if you will present that evidence to the Dean of Students. In relation to that person in that situation:

33. You walk into a classroom for a lecture in a course, and nearly all of the seats are already taken. Only two seats near the front remain open. One of those seats is close to the door as you enter and is next to a person you know from prior experience to be quite conversive and quick witted. The other available seat is on the other side of the classroom. You must, therefore, either walk across the room and take the other seat or take the seat nearest you next to that person you know. In relation to that person in that situation:

34. You are working on campus in the library, and you and another student are responsible for a vital operation of the library. Your supervisor has just asked the two of you to decide which of you would be willing to assume an additional responsibility for that operation by directing it, though no additional pay would be involved. Your co-worker is very compliant and easy to get along with, but she is not the type naturally to exercise authority when some action needs to be taken and seems not to know what to do much of the time. You are presently discussing with your co-worker which one of you will assume the supervisory role. In relation to that person in that situation:

35. You are walking in the library between the stacks of books in search of a particular book. While doing so, you encounter a student you have been dating who has been looking for you. He is quite attractive and lovable, and when you see each other he begins to embrace and kiss you. In relation to that person in that situation:

36. You are walking to your next class on campus, and a professor from a class you are taking walks along side of you. Another student you know whose word you can trust, told you that she went to one of his parties and became friendly with him, but when she declined to become romantically involved with him he began being very critical of her in class and giving her grades on essays she thought were unreasonably low. Now he is placing his hand on your shoulder and inviting you to a party he is giving. In relation to that person in that situation:

37. You are attending a party being given for faculty and students in your major area of study for the purpose of becoming better acquainted. After arriving at the party, you see two professors from courses you are presently taking with whom you could converse. One of the professors is very quick mentally and always has much to say. The other

professor, in contrast, is very reflective and quite ponderous in his speech when he does have something to say. You are momentarily considering the reflective and more ponderous professor. In relation to that person in that situation:

38. You are at a picnic for faculty and students in your major area of study, and you have decided to play softball with some faculty members and students. The two opposing teams have been formed on a casual and voluntary basis, and no team captains have been designated. You are now heading for your favorite position at shortshop as your team is taking the field. But a professor on your team, who you know to exert considerable influence over others, rather of matter-of-factly tells you to take an outfield position instead. In relation to that person in that situation:

39. An unattractive and rather obnoxious professor from a class you once had has said hello to you and sat down next to you on a bench along one of the sidewalks on campus. At first you talk about impersonal matters, but later he begins to talk about the ups and downs of a love affair he is currently having. You may then question him about his personal life, share some of your personal life, or change the subject to one less personal and intimate. In relation to that person in that situation:

40. A professor in your major area takes a special interest in students. In fact, when students have been treated unfairly by other faculty members, he has spoken on their behalf in an effort to rectify their difficulties. Although such a practice has been criticized severely at times by some of the faculty, he has helped many deserving students complete their education, and his opinion is generally respected by the students who know him. After learning that you are planning to work for a particular female professor, however, he advises you not to do so when seeing you in the library. He explains to you that she does not treat students decently, and you may just become entrapped in a bad situation. In relation to <u>that person advising you</u> in that situation:

APPENDIX D

Questionnaire for Assessing the Psychological Functioning of Undergraduate Females in Hypothetical Social Situations

November 18, 1985

Instructions

This questionnaire consists of hypothetical social situations an undergraduate female such as yourself might encounter on a college or university campus. Each social situation is presented in a written paragraph, and it describes a person in some physical setting. You are to read each paragraph describing a social situation carefully so that you accurately comprehend it and, if possible, visualize it. Then you are to describe how you would likely perceive that person, feel toward that person, and behave toward that person in that social situation by using a set of twenty-five rating scales.

Each of the scales is defined at its opposite ends by two adjectives which are opposite in meaning, and you are to choose which adjective would most likely describe your psychological functioning pertaining to that person in that situation. For example, after reading a social situation, on the rating scale of ACTIVE versus PASSIVE as shown below, you might decide that you would most likely perceive the person depicted in the situation as "ACTIVE" rather than "PASSIVE," and then you might decide that you would most likely perceive that person as "quite" rather than "somewhat" ACTIVE. You would then circle the "X" above "quite" toward the "ACTIVE" end of the scale as below. Of course, if you were to decide that you would likely perceive that person as neither "ACTIVE" nor "PASSIVE," then you would circle the "X" above "neither" in the middle of the scale.

Example:

ACTIVE	{X}	X	X	X	X	PASSIVE
	quite	somewhat	-neither-	somewhat	quite	

The set of rating scales following each paragraph describing a social situation begins with rating scales pertaining to how you would likely perceive the person depicted in the social situation preceded by the question "How would you likely perceive that person?" It is important that you read that sentence each time prior to rating how you would likely perceive the person in the social situation. Likewise, it is important that you read the sentence "How would you likely feel toward that person?" prior to using the rating scales describing your feeling toward that person and that you read the sentence "How would you likely behave toward that person?" prior to using the rating scales describing your likely behavior toward that person.

You will find that in using the rating scales following a social situation that for some of the scales neither of the opposite adjectives would likely describe your experience so you would therefore be circling the "X" above the word "neither." However, try to be discriminating and try to avoid the choice of "neither" on the scales, if possible. Furthermore, use the more extreme response as much as is reasonably appropriate.

The questionnaire consists of forty hypothetical social situations which are presented twice, though the sets of rating scales used those two times are different. There are, therefore, eighty presentations of social situations. Those eighty presentations of situations are divided into five sections consisting of 16 situations each. You are to complete one section a day for five consecutive days at a time and place in which you are free from distractions. Do not discuss the situations with anyone before completing the questionnaire because your assessments must be independent.

If you encounter difficulties or have questions, then call the investigator at 261-1352.

HYPOTHETICAL SOCIAL SITUATIONS

Section I--First Day

HYPOTHETICAL SOCIAL SITUATIONS

Section I--First Day

1. You are in a laboratory course in biology, and your instructor has asked all of the students in your lab to select a partner. You and the partner you choose will be working closely together on detailed laboratory exercises, but what each of you has learned will be evaluated separately. All of the students in the course are strangers to one another, and any one of them would be as likely to agree to be your partner as any other. One of those students you have observed as being especially lively and talkative in contrast to the other students. In relation to that person in that situation:

How would you likely
perceive
that person?

{Note: Actual format of scales was as in instructions.}

1. ACTIVE-PASSIVE
2. UNPLEASANT-PLEASANT
3. STRONG-WEAK
4. UNFAIR-FAIR
5. SLOW-FAST
6. POLITE-IMPOLITE
7. POWERLESS-POWERFUL
8. HONEST-DISHONEST
9. SHARP-DULL
10. AWFUL-NICE

How would you likely
feel
toward that person?

11. HAPPY-UNHAPPY
12. CONTROLLED-CONTROLLING
13. STIMULATED-RELAXED
14. ANNOYED-PLEASED
15. INFLUENTIAL-INFLUENCED
16. CALM-EXCITED
17. SATISFIED-UNSATISFIED
18. CARED-FOR--IN-CONTROL

How would you likely
<u>behave</u>
toward that person?

19. INCLUSIVE-EXCLUSIVE
20. SUBMISSIVE-DOMINANT
21. RELYING-ON-OTHER--RELYING-ON-ONESELF
22. EXITING-ENTERING
23. LEADING-FOLLOWING
24. DETACHING-ATTACHING
25. COMING-LEAVING

2. You are sitting on a bench along one of the sidewalks on campus just casually reading the college newspaper. A student you have known for some time through various classes together sits down beside you on the bench to talk about a matter of concern to both of you. You have known that person to be very weak-willed and to have little control over her own life. But knowing of a conflict you are having with a mutual friend, she begins to tell you how to handle that conflict. In relation to that person in that situation:

How would you likely
perceive
that person?

1. RUGGED-DELICATE
2. UNWHOLESOME-WHOLESOME
3. AGITATED-CALM
4. HARSH-MILD
5. SMALL-LARGE
6. NOBLE-IGNOBLE
7. COLD-HOT
8. AGREEABLE-DISAGREEABLE
9. HARD-SOFT
10. UNJUST-JUST

How would you likely
feel
toward that person?

11. SLUGGISH-FRENZIED
12. CONTENTED-MELANCHOLIC
13. AWED-IMPORTANT
14. WIDE-AWAKE--SLEEPY
15. DESPAIRING-HOPEFUL
16. AUTONOMOUS-GUIDED
17. UNAROUSED-AROUSED

How would you likely
<u>behave</u>
toward that person?

18. OBEYING-COMMANDING
19. AFFECTIONATE-UNAFFECTIONATE
20. DEPARTING-ARRIVING
21. RESISTING-YIELDING
22. IMPERSONAL-PERSONAL
23. ASSOCIATING-DISASSOCIATING
24. COMPLYING-DEMANDING
25. COMFORTING-UNCOMFORTING

FOOTNOTES

[1] Throughout this dissertation, the author has included in his system of thought concerning the social-psychological functioning of the individual the involvement of neuroanatomical structures. The existence of such structures and their participation in the social-psychological functioning of the individual is predicated by the author upon the assumption of naturalism. That is, from a scientific perspective, any event in nature is presumed to involve some physical structure, and the psychological functioning of the individual is no exception.

A weakness in the psychological theorization presented, however, is in not having established the specific relations between such physiological structures and any psychological processes. In that sense, the theory lacks the greater degree of coherence expected of a more fully developed theory. Yet, the general conception of such structures within the inchoate theory by the author provides some insights and provides a rough conceptual framework for future theoretical development.

There are those theorists, however, that believe once a conception is introduced into a theory it is necessary to substantially integrate it into the theory. Although the author agrees it is desirable to do so, however, he does not feel compelled to do so immediately or, alternatively, to

extract it. It is perhaps best, however, to caution the reader concerning such an issue inasmuch as it pertains to the theory being presented.

[2] James Mill, it will be recalled, conceived of consciousness as analyzable into elements, and his conception of psychology has been likened to a kind of "mental chemistry" (R. Watson, 1971).

[3] O'Donovan (1980) presented the problem of self love in the theology of St. Augustine as follows: "'The primal destruction of man was self-love?' 'There is no one who does not love himself; but one must search for the right love and avoid the warped.' 'Indeed you did not love yourself when you did not love the God who made you.' These three sentences set side by side show why the idea of self-love in St. Augustine of Hippo constitutes a problem. Self-love is loving God; it is also hating God. Self-love is common to all men; it is restricted to those who love God. Mutually incompatible assertions about self-love jostle one another and demand to be reconciled. And Augustine himself refuses to undertake this task for us. There is no 'theory of self-love' articulated in his pages. He rarely tells us what he means by the phrase and when he does he is misleading" (p. 1).

[4] The "psychological dimensions" of the theory of dyadic social transaction--the various attitudinal and trait

dimensions (personal, role, and setting) will be referred to throughout the chapter as "dimensions," occasionally as "factors," but never as "components." Each psychological dimension, however, consists of three parts--cognition, emotion, and behavior. Those three parts will be referred to as "components" in relation to the psychological dimension which they comprise. When cognition, emotion, and behavior are each considered independently, however, reference may be made to their underlying "factors" or "dimensions," though not "components." A cognitive dimension or factor, for example, is simply a special variable of a general nature underlying cognition, and when used to represent a cognitive part of a psychological dimension (e.g., a personal trait dimension) is referred to as the cognitive component of that dimension. When the term "component" is used in relation to a neuroanatomical structure or a stimulus complex, it is used differently, according to general systems theory, though still to indicate part of a whole, but the context in which the term appears clearly indicates the appropriate meaning of that term.

REFERENCE NOTES

1. Campbell, J. F. A collection of two philosophically-based essays: a) Metapostulates for a social-psychological theory of dyadic social transaction and b) Ontology and ontological space-time. Unpublished manuscripts, 1985.

2. Campbell, J. F. An inchoate theory of dyadic social interaction developed from a general systems theoretical perspective. Unpublished manuscript, 1984.

3. Campbell, J. F. A social-psychological perspective of the political-context of evaluation research of community mental health centers. Unpublished manuscript, 1984.

4. Brennan, J. M., & Lee, E. M. C. An objective scree test for number of factors. Unpublished manuscript, 1982.

5. Gorsuch, R. L., & Yagel, J. C. Item factor analysis. Paper presented at the 1981 Annual Meeting of the American Educational Research Association.

6. Campbell, J. F. Personality factors of Hawaiian junior high school students. Unpublished manuscript, 1982.

7. Campbell, J. F. Personality factors of Hawaiian senior high school students. Unpublished manuscript, 1982.

8. Campbell, J. F. Second-order personality factors of Hawaiian junior high school students. Unpublished manuscript, 1983.

9. Campbell, J. F. Differences between the sexes on dimensions of personality for Hawaiian junior high school students. Unpublished manuscript, 1982.

10. Digman, J. M., & Inouye, J. Further specification of the five robust factors of personality. Manuscript submitted for publication, 1983.

11. Burdsal, C. B. User oriented factor analytic package (USOFAP)--Version 3.4. Wichita State University, Department of Psychology, Box 34, Wichita, Kansas 67201.

12. Campbell, J. F. Natural classification in science. Master's Thesis at Wichita State University, 1980.

13. Saunders, D. R. Some properties of the ratiomax and equamax criteria for blind orthogonal rotation. Paper delivered to the American Psychological Association, 1962.

REFERENCES

Adamopoulos, J. The perception of interpersonal behavior: Dimensionality and the importance of the social environment. Environment and Behavior, 1982, 14 (1), 29-44.

Adorno, T. W., Frenkel-Brunswick, E., Levinson, D. J., & Sanford, R. N. The authoritarian personality. New York: W. W. Norton & Company, Inc., 1950.

Allport, G. W. Personality: A psychological interpretation. New York: Holt, 1937.

Allport, G. W. Pattern and growth in personality. New York: Holt, Rinehart and Winston, 1961.

Allport, G. W. The general and the unique in psychological science. Journal of Personality, 1962, 30, 405-422.

Allport, G. W. The historical background of modern social psychology. In G. Lindzey & E. Aronson (Eds.), The handbook of social psychology (2nd ed.) (Vol. 1). Reading, Massachusetts: Addison-Wesley Publishing Company, 1968.

Aristotle. Magna moralia (trans. by St. G. Stock). In Jonathan Barnes (Ed.), The complete works of Aristotle (Vol. 2). Princeton, New Jersey: Princeton University Press, 1984a.

Aristotle. Metaphysics (trans. by W. D. Ross). In Jonathan Barnes (Ed.), The complete works of Aristotle (Vol 2). Princeton, New Jersey: Princeton University Press, 1984b.

Bard, P. On emotional expression after decortication, with some remarks on certain theoretical views. Parts 1 and 2. Psychological Review, 1934, 41, 309-329, 424-449.

Becker, W. C. The matching of behavior ratings and questionnaire personality factors. Psychological Bulletin, 1960, 57, 201-212.

Becker, W. C. A comparison of the factor structure and other properties of the 16PF and Guilford-Martin Personality Inventories. Educational and Psychological Measurement, 1961, 21, 393-404.

Bentley, A. F. The factual space and time of behavior. Journal of Philosophy, 1941a, 38 (18), 477-485.

Bentley, A. F. Situational vs. psychological theories of behavior. In A. F. Bentley, Inquiry into inquiries (Ed. by S. Ratner), Westport, Connecticut: Greenwood Press, Publishers, 1975b (Originally published, 1954).

Bertalanffy, Ludwig von. An outline of general systems theory. The British Journal for the Philosophy of Science, 1950a, 1 (2), 134-165.

Bertalanffy, Ludwig von. The theory of open systems in physics and biology. Science, 1950b, 111, 23-29.

Bettleheim, B. The informed heart: Autonomy in a mass age. New York: Avon Books, 1979.

Bever, T. G., Fodor, J. A., & Garret, M. A formal limitation of associationism. In Theodore R. Dixon and David L. Horton (Eds.), Verbal behavior and general

behavior theory. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1968.

Boltz, C. R. Personality types. In R. M. Dreger (Ed.), Multivariate personality research: Contributions to the understanding of personality in honor of Raymond B. Cattell. Baton Rouge, Louisiana: Claitor, 1972.

Bower, G. H., & Hilgard, E. R. Theories of learning (5th ed.). Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1981.

Browne, J. A., & Howarth, E. A comprehensive factor analysis of personality questionnaire items: A test of twenty putative factor hypotheses. Multivariate Behavioral Research, 1977, 12 (4), 399-427.

Burdsal, C., & Bolton, B. An item factoring of the 16PF-E: Further evidence concerning Cattell's normal personality sphere. Journal of General Psychology, 1979, 100, 103-109.

Burt, C. Research notes: Factorial studies of personality and their bearing on the work of the teacher. British Journal of Educational Psychology, 1965, 35 (3), 368-378.

Carrigan, P. M. Extraversion-introversion as a dimension of personality: A reappraisal. Psychological Bulletin, 1960, 57, 329-360.

Carson, R. C. Interaction concepts of personality. Chicago: Aldine Publishing Company, 1969.

Cattell, R. B. The main personality factors in questionnaire, self-estimate material. Journal of Social Psychology, 1950, 31, 3-38.

Cattell, R. B. The scree test for the number of factors. Multivariate Behavioral Research, 1966, 1 (2), 245-276.

Cattell, R. B. Personality and mood by questionnaire. San Francisco: Jossey-Bass Publishers, 1973.

Cattell, R. B. Radial parcel factoring versus item factoring in defining personality structure in questionnaire: Theory and experimental checks. Australian Journal of Psychology, 1974b, 26 (2), 103-119.

Cattell, R. B. The scientific use of factor analysis in the behavioral and life sciences. New York: Plenum Press, 1978.

Cattell, R. B., & Burdsal, C. A. The radial parcel double factoring design: A solution to the item-vs. parcel controversy. Multivariate Behavioral Research, 1975, 10, 165-179.

Cattell, R. B., & Cattell, M. D. Handbook for the Jr.-Sr. High School Personality Questionnaire, "HSPQ." Champaign, Illinois: Institute of Personality and Ability Testing, 1969.

Cattell, R. B., Coan, R. W., & Beloff, H. A re-examination of the personality structure in late childhood, and development of the High School Personality Questionnaire. Journal of Experimental Education, 1958, 27, 73-88.

Cattell, R. B., Eber, H. W., & Delhees, K. H. A large sample cross validation of the personality trait structure of the 16 P.F. with some implications. Multivariate Behavioral Research, 1968, Special Issue, 107-132.

Cattell, R. B., Eber, H. W., & Tatsuoka, M. Handbook for the Sixteen Personality Factor Questionnaire. Champaign, Illinois: Institute for Personality and Ability Testing, 1970.

Cattell, R. B., & Nesselroade, J. R. Untersuchung der interkulturellen konstanz der personlichkeitsfactoren im 16 P. F. - Test. Psychological Beitrage, 1965, 8, 502-515.

Cattell, R. B., Schroder, G., & Wagner, A. Verification of the 16 P.F. Questionnaire in German. Psychologische Forschung, 1969, 32, 369-386.

Cattell, R. B., & Vogelmann, S. A comprehensive trial of the Scree and KG criteria for determining the number of factors. Multivariate Behavioral Research, 1977, 12, 289-325.

Cattell, R. B., Wagner, A., & Cattell, M. D. Adolescent personality structure, in Q-data, checked in the High School Personality Questionnaire. British Journal of Psychology, 1970, 61 (1), 39-54.

Chein, I. Notes on a framework for the measurement of discrimination and prejudice. In Marie Jahoda, M.

Deutsch, and S. W. Cook (Eds.), Research methods in social relations (Vol. 1). New York: Dryden, 1951.

Compte, A. System of positive polity (Vol. 1) (trans. by Frederic Harrison). New York: Burt Franklin, 1875 (Originally published 1851).

Compte, A. System of positive polity (Vol. 2) (trans. by Frederic Harrison). New York: Burt Franklin, 1875 (Originally published 1852).

Comrey, A. L. Comparison of two analytic rotation procedures. Psychological Reports, 1959, 5 (2), 201-209.

Comrey, A. L. Factored homogeneous item dimensions in personality research. Educational and Psychological Measurement, 1961, 21 (2), 417-431.

Comrey, A. L. A study of thirty-five personality dimensions. Educational and Psychological Measurement, 1962b, 22, 543-552.

Comrey, A. L. Tandem criteria for analytic rotation in factor analysis. Psychometrika, 1967, 32, 143-154.

Comrey, A. L. A manual for the Comrey Personality Scales. San Diego, California: Educational and Industrial Testing Service, 1968.

Comrey, A. L. A first course in factor analysis. New York: Academic Press, Inc., 1973.

Comrey, A. L., & Duffy, K. E. Cattell and Eysenck factor scores related to Comrey personality factors. Multivariate Behavioral Research, 1968, 3, (4), 379-392.

Comrey, A. L., Jamison, K., & King, N. Integration of two personality factor systems. Multivariate Behavioral Research, 1968, 3, (2), 147-159.

Comrey, A. L., Meschieri, L., Misiti, R., & Nencini, R. A comparison of personality factor structure in American and Italian subjects. Journal of Personality and Social Psychology, 1965, 1, (3), 257-261.

Cooke, J., Kramer, A., & Rowland-Entwistle, T. History's timeline: A 40,000 year chronology of civilization (Ed. by F. Franklin). New York: Crescent Books, 1981.

Daniel, W.W. Applied nonparametric statistics. Boston: Houghton Mifflin Company, 1978.

Dawes, R. M. Social dilemmas. Annual Review of Psychology, 1980, 31, 169-193.

Deikman, A. J. Bimodal consciousness. Archives of General Psychiatry, 1971, 25 (6), 481-489.

Digman, J. M., & Takemoto-Chock, N. K. Factors in the natural language of personality: Re-analysis, comparison, and interpretation of six major studies. Multivariate Behavioral Research, 1981, 16 (2), 149-170.

Ellis, A. Humanistic psychotherapy. New York: McGraw-Hill Company, 1973.

Emerson, R. W. Compensation. In Carl Bode and Malcolm Crowley (Eds.), The portable Emerson (New ed.). New York: Penguin Books, 1981a.

Emerson, R. W. The fugitive slave law. In Carl Bode and Malcolm Crowley (Eds.), The portable Emerson (New ed.). New York: Penguin Books, 1981b.

Emerson, R. W. Nature. In Carl Bode and Malcolm Crowley (Eds.), The portable Emerson (New ed.). New York: Penguin Books, 1981c.

Emerson, R. W. Self-reliance. In Carl Bode and Malcolm Crowley (Eds.), The portable Emerson (New ed.). New York: Penguin Books, 1981d.

Emerson, R. W. Thoreau. In Carl Bode and Malcolm Crowley (Eds.), The portable Emerson (New ed.). New York: Penguin Books, 1981e.

Erikson, E. H. Childhood and society (2nd ed.). New York: W. W. Norton & Company, 1963 (Originally published 1950).

Eysenck, H. J. The scientific study of personality. London: Routledge & Kegan Paul Ltd., 1952.

Eysenck, H. J. The structure of human personality (3rd ed.). London: Methuen & Company, Ltd., 1970.

Eysenck, H. J., & Eysenck, S. B. G. Personality structure and measurement. San Diego, California: Robert R. Knapp, 1969.

Eysenck, S. B. G., & Eysenck, H. J. On the dual nature of extraversion. British Journal of Social and Clinical Psychology, 1963, 2, 46-55.

Eysenck, S. B. G., & Eysenck, H. J. The dual nature of extraversion. In H. J. Eysenck & S. B. G. Eysenck,

Personality structure and measurement. San Diego, California: Robert R. Knapp, Publisher, 1969.

Falconer, D. S. Introduction to quantitative genetics. London: Oliver and Boyd, 1960.

Freedman, J. L., Sears, D. O., & Carlsmith, J. M. Social psychology (3rd ed.). Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1978.

Freud, S. Civilization and its discontents (Trans. & Ed. by James Strachey). New York: W. W. Norton & Company, Inc., 1961 (Originally published 1930).

Freud, S. New introductory lectures on psychoanalysis (Trans. and Ed. by James Strachey). New York: W. W. Norton & Company, Inc., 1965 (Originally published, 1933).

Fritz, K. V. Indices of the adequacy of factor extraction suggesting a general function in factor analysis. Psychological Reports, 1970, 26 (3), 683-688.

Fromm, E. Escape from freedom. New York: Avon Books, 1941.

Fromm, E. Man for himself: An inquiry into the psychology of ethics. New York: Fawcett Premier Books, 1947.

Fromm, E. The art of loving. New York: Harper, 1956.

Fromm, E. The heart of man: Its genius for good and evil. New York: Harper & Row, Publishers, 1964.

Gorsuch, R. Factor analysis. Philadelphia: W. B. Saunders, 1974.

Grief, S. Untersuchungen zur dentschen ubersetzung der 16 PF fragebogen. Psychologische Beitrage, 1970, 12, 186-213.

Guilford, J. P. Factors and factors of personality. Psychology Bulletin, 1975, 82 (5), 802-814.

Guilford, J. P., & Zimmerman, W. S. Fourteen dimensions of temperament. Psychological Monographs, 1956, 70, (10, Whole No. 417).

Guilford, J. S., Zimmerman, W. S., & Guilford, J. P. The Guilford-Zimmerman Temperament Survey Handbook: Twenty-five years of research and application. San Diego, California: Edits Publishers, 1976.

Guttman, L. Some necessary conditions for common-factor analysis. Psychometrika, 1954, 19 (2), 149-161.

Hakstian, A. R., Muller, V. J. Some notes on the number of factors problem. Multivariate Behavioral Research, 1973, XX, 461-475.

Hallworth, H. J. Dimensions of personality and meaning. British Journal of Social and Clinical Psychology, 1965a, 4, 161-168.

Harlow, H. F., McGaugh, J. L., & Thompson, R. F. Psychology. San Francisco: Albion Publishing Company, 1971.

Harris, C. W., & Kaiser, H. F. Oblique factor analytic solutions by orthogonal transformations. Psychometrika, 1964, 29, 347-362.

Hebb, D. O. Drives and the C.N.S. (Central nervous system). Psychological Review, 1955, 62, 243-254.

Hediger, H. Wild animals in captivity. New York: Dover Publications, Inc., 1964.

Hendrickson, A. E., & White, P. O. Promax: A quick method for rotation to oblique simple structure. British Journal of Statistical Psychology, 1964, 17, 65-70.

Hess, E. Ethology and developmental psychology. In Paul H. Mussen (Ed.), Carmichael's manual of child psychology (Vol. 1) (3rd ed.), New York: John Wiley & Sons, Inc., 1970.

Hilgard, E. R. Consciousness in contemporary psychology. Annual Review of Psychology, 1980, 31, 1-26.

Hobbes, T. Leviathan (Intro. and Ed. by C. B. MacPherson). New York: Penguin Books, 1968 (Originally published, 1618).

Horney, K. Our inner conflicts: A constructive theory of neurosis. New York: W. W. Norton & Company, Inc., 1945.

Howarth, E. Were Cattell's personality sphere factors correctly identified in the first instance? British Journal of Psychology, 1976b, 67 (2), 213-230.

Howarth, E. Major factors of personality. Journal of Psychology, 1980, 104 (2), 171-183.

Howarth, E., & Browne, J. A. Investigation of personality factors in a Canadian context. I. Marker structure in personality questionnaire items. Canadian Journal of Behavioral Science, 1971a, 3, 161-173.

Howarth, E., & Browne, J. A. An item-factor-analysis of the 16 PF. Personality, 1971b, 2 (2), 117-139.

Howarth, E., Browne, J. A., & Marceau, R. An item analysis of Catttell's 16 PF. Canadian Journal of Behavioral Science, 1974, 4 (1), 85-90.

Hoyenga, K. B., & Hoyenga, K. T. The question of sex differences: Psychological, cultural, and biological issues. Boston: Little, Brown and Company, 1979.

Illich, I. Tools for conviviality. New York: Harper & Row, Publishers, 1973.

Institute of Personality and Ability Testing. Manual of the HSPQ. Champaign, Illinois: Institute for Personality and Ability Testing, 1973.

James, W. The principles of psychology (Vol. 1) (Gen. Ed. F. Burkhardt). Cambridge, Massachusetts: Harvard University Press, 1981 (Originally published, 1890).

James, W. Essays in radical empiricism. New York: Longmans, Green and Company, 1922.

Jamison, K., & Comrey, A. L. A comparison of personality factor structure in British and American university students. Journal of Psychology, 1969, 71 (1), 45-57.

Joreskog, K. G. Some contributions to maximum likelihood factor analysis. Psychometrika, 1967, 32, 443-482.

Kaiser, H. F. The varimax criterion for analytic rotation in factor analysis. Psychometrika, 1958, 23, 187-200.

Kaiser, H. F. A note on Guttman's lower bound for the number of common factors. The British Journal of Statistical Psychology, 1961, 14 (1), 1-2.

Kramer, B. M. Dimensions of prejudice. Journal of Psychology, 1949, 27, 389-451.

Kohlberg, L. Stages and sequence: The cognitive-developmental approach to socialization. In D. A. Goslin (Ed.), Handbook of socialization theory and research. Chicago: Rand McNally, 1969.

Kohlberg, L. Essays on moral development: The philosophy of moral development (Vol. 1). San Francisco: Harper & Row, 1981.

Kuusinen, J. Affective and denotative structures of personality ratings. Journal of Personality and Social Psychology, 1969, 12 (3), 181-188.

Laski, H. J. The changing content of freedom in history. In Robert E. Dewey and James A. Gould (Eds.), Freedom: Its history, nature, and varieties. London: The Macmillan Company, 1970.

Leary, T. Interpersonal diagnosis of personality: A functional theory and methodology for personality evaluation. New York: The Ronald Press Company, 1957.

Levin, J. Three-mode factor analysis. Psychological Bulletin, 1965, 64, 442-452.

Livius, Titus. The history of Rome (Vol. 2) (trans. by D. Spillan and C. Edmonds). New York: Harper & Brothers, Publishers, 1885 (Originally published, B.C.).

Loevinger, J., & Knoll, E. Personality: Stages, traits, and the Self. Annual Review of Psychology, 1983, 34, 195-222.

Lorr, M., & McNair, D. M. Expansion of the interpersonal behavior circle. Journal of Personality and Social Psychology, 1965, 2 (6), 823-830.

Lovell, C. D. A study of factor structure of thirteen personality variables. Educational and Psychological Measurement, 1945, 5, 335-350.

Maccoby, E. E., Jacklin, C. N. The psychology of sex differences. Stanford, California: Stanford University Press, 1974.

Machiavelli, N. The prince (Trans. by W. K. Marriott and Introduction by H. Butterfield). London: J. M. Dent & Sons, Ltd., 1958 (Originally published, about 1516).

McDougall, W. An introduction to social psychology (19th ed.). Boston: John W. Luce & Company, 1921 (Originally published, 1908).

Mehrabian, A., & Russell, J. A. An approach to environmental psychology. London: The Massachusetts Institute of Technology Press, 1974.

Milgram, S. Behavioral study of obedience. Journal of Abnormal and Social Psychology, 1963, 67 (4), 371-378.

Milgram, S. Obedience to authority: An experimental view. New York: Harper & Row, Publishers, 1974.

Mill, J. S. Utilitarianism (Ed. by Oskar Piest). New York: The Bobbs-Merrill Company, Inc., 1957 (Originally published, 1863).

Mill, J. S. The subjection of women (Intro. by Wendell Robert Carr). Cambridge, Massachusetts: M.I.T. Press, 1970 (Originally published, 1869).

Miller, J. G. Living systems. New York: McGraw-Hill Book Company, 1978.

Mintz, M., & Cohen, J. S. Power, Inc.: Public and private rulers and how to make them accountable. New York: The Viking Press, 1976.

Mischel, W. Toward a cognitive learning reconceptualization of personality. Psychological Review, 1973, 80, 252-283.

Neill, A. S. Summerhill. New York: Hart Publishing Company, 1960.

Norman, W. T. Toward an adequate taxonomy of personality attributes: Replicated factor structure in peer nomination personality ratings. Journal of Abnormal and Social Psychology, 1963, 63, 574-583.

O'Donovan, O. The problem of self-love in St. Augustine. New Haven, Conneticutt: Yale University Press, 1980.

Olds, J. Pleasure centers in the brain. Scientific American, 1956, 195 (4), 105-116.

Orwell, G. Homage to Catalonia. New York: Harcourt, Brace and Company, 1952.

Osgood, C. E. Measurement of meaning. Urbana, Illinois: University of Illinois Press, 1957.

Osgood, C. E., May, W. H., & Miron, M. S. Cross-cultural universals of affective meaning. Chicago: University of Illinois Press, 1975.

Osgood, C. E., & Suci, G. J. Factor analysis of meaning. In J. G. Snider and C. E. Osgood (Eds.), Semantic differential technique: A source book. Chicago: Aldine Publishing Company, 1969. Reprinted from: Journal of Experimental Psychology, 1955, 50, 325-338.

Osgood, C. E., Suci, G. J., & Tannenbaum, P. H. The measurement of meaning. Urbana, Illinois: University of Illinois Press, 1957.

Outka, G. Agape: An ethical analysis. New Haven, Connecticutt: Yale University Press, 1972.

Pervin, L. A. The representative design of person-situation research. In D. Magnusson & N. Endler (Eds.), Personality at the crossroads: Current issues in interactional psychology. Hillsdale, New Jersey: Lawrence Erlbaum Associates, Inc., 1977.

Peterson, D. R. Scope and generality of verbally defined personality factors. Psychological Review, 1965, 72 (1), 48-59.

Piaget, J. The moral judgment of the child. New York: Harcourt, Brace and Company, 1932.

Piaget, J. Piaget's theory. In Paul H. Mussen (Ed.), Carmichael's manual of child psychology (Vol. 1) (3rd ed.), New York: John Wiley & Sons, Inc., 1970.

Plato. The republic of Plato: The wisdom of Socrates as recounted by his pupil Plato (trans. by A. D. Lindsay). New York: E. P. Dutton, 1957.

Rodrigues, A., & Comrey, A. L. Personality structure in Brazil and the United States. Journal of Social Psychology, 1974, 92 (1), 19-26.

Ross, E. A. Social psychology: An outline and source book. New York: The Macmillan Company, 1920 (Originally published, 1908).

Sagan, C. Broca's brain: Reflections on the romance of science. New York: Ballantine Books, 1979.

Sahakian, W. S., & Sahakian, M. L. Ideas of the great philosophers. New York: Barnes & Noble, Inc., 1966.

Sarnoff, I. Society with tears. New York: Citadel Press, 1966.

Schumaker, G., & Cattell, R. B. Faktoranalyse des Deutschen HSPQ-untersuchung zur (onal) interkulturellen konstanz der primaren personalichkeits-faktoren. Zeitschrift fur

Experimentelle und Angewandte psychologie, 1974, 21 (4), 621-636.

Schutz, W. C. The interpersonal underworld. Palo Alto, California: Science & Behavior Books, Inc., 1966. Reprint of: FIRO: A three-dimensional theory of interpersonal behavior. New York: Holt, Rinehart and Winston, Inc., 1958.

Seligman, M. E. P. On the generality of the laws of learning. Psychological Review, 1970, 77 (5), 406-418.

Sells, S. B., Demaree, R. G., & Will, D. P., Jr. Dimensions of personality: I. Conjoint factor structure of Guilford and Cattell trait markers. Multivariate Behavioral Research, 1970, 5, 391-422.

Sells, S. G., Demaree, R. G., & Wills, D. P., Jr. Dimensions of personaltiy: II. Separate factor structures in Guilford and Cattell. Multivariate Behavioral Research, 1971, 6 (2), 135-1885.

Simon and Schuster. Webster's new world dictionary of the American language (2nd college ed.). New York: Simon & Schuster, 1980.

Skinner, B. F. Beyond freedom and dignity. New York: Alfred A. Knopf, 1972.

Smith, M. B. The personal setting of publich opinions: A study of attitudes toward Russia. Public Opinion Quarterly, 1947, 11, 507-523.

Soneif, M. I., Eysenck, H. J., & White, P. O. A joint

factorial study of the Guilford, Cattell and Eysenck scales1. In H. J. Eysenck and S. B. G. (Eds.), Personality and structure and measurement. San Diego, California: Robert R. Knapp, 1969.

Stephenson, W. The study of behavior: Q-technique and its methodology. Chicago: The University of Chicago Press, 1953.

Taylor, J. A. A personality scale of manifest anxiety. Journal of Abnormal & Social Psychology, 1953, 48, 285-290.

Thibaut, J. W., & Kelley, H. H. The psychology of groups. New York: Wiley, 1959.

Thurstone, L. L. Multiple factor analysis. Psychological Review, 1931, 38 (5), 406-427.

Thurstone, L. L. Primary mental abilities. Chicago: The University of Chicago Press, 1938.

Thurstone, L. L. Multiple-factor analysis: A development and expansion of The Vectors of Mind. Chicago: The University of Chicago Press, 1947.

Thurstone, L. L. The dimensions of temperament. Psychometrika, 1951, 16 (1), 11-20.

Thurstone, L. L. An analytic method for simple structure. Psychometrika, 1954, 19, 173-182.

Tsujioka, B., & Cattell, R. B. Constancy and difference in personality structure and mean profile, in questionnaire medium, from applying the 16 P. F. test in America and

Japan. British Journal of Social & Clinical Psychology, 1965, 4 (4), 287-297.

Watson, J. B. Behaviorism (rev. ed.). Chicago: The University of Chicago Press, 1930 (Originally published, 1924; rev. ed. 1930).

Watson, R. I. The great psychologists (3rd ed.). New York: J. B. Lippincott Company, 1971.

Weininger, O. Dominance in children. In Alkis Kontos (Ed.), Domination. Toronto: University of Toronto Press, 1975.

Wiggins, J. S. A psychological taxonomy of trait-descriptive terms: The interpersonal domain. Journal of Personality and Social Psychology, 1979, 37 (3), 395-412.

Wiggins, N., & Fishbein, M. 14. Dimensions of semantic space: A problem of individual differences. In J. G. Snider and C. E. Osgood (Eds.), Semantic-Differential Technique: A sourcebook. Chicago: Aldine Publishing Company, 1969.

Wolfe, J. H. Pattern clustering by multivariate mixture analysis. Multivariate Behavioral Research, 1970, 5, 329-350.

Woodbridge, F. J. E. The problem of consciousness again. The Journal of Philosophy, 1936, 33 (21), 561-568.

Wrigley, C., & Neuhaus, J. O. The matching of two sets of factors. American Psychologist, 1955, 10, 418-419.