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Associated features of depression subtypes based on strength and frequency of pleasant events: Implications from the Staats-Heiby Paradigmatic Behaviorism Theory

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ASSOCIATED FEATURES OF DEPRESSION SUBTYPES BASED ON STRENGTH AND FREQUENCY OF PLEASANT EVENTS: IMPLICATIONS FROM THE STAATS-HEIBY PARADIGMATIC BEHAVIORISM THEORY

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF THE
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MAY 1988

By

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Abstract

It has been proposed that the field of psychology can be characterized by the disunity of its bodies of knowledge. This paper discussed how this has been expressed in particular in theories of depression. A more recent theory, paradigmatic behaviorism, developed to help unify the field, was then presented. An analysis derived from the theory was applied to investigate the role of pleasant events in depression, a major focus of research in the area. According to the theory, the frequency of pleasant events would involve aspects of the individual's environmental circumstances and sensory-motor and language-cognitive personality repertoires, while their intensity would reflect the emotional-motivational repertoire, and different subtypes of depression would be represented by the interaction of these conditions. To test this, 440 undergraduates were administered questionnaires to measure frequency and strength of pleasant events, depression level, and various personality and environmental characteristics. Results showed that one subtype would involve a high strength of pleasantness for the events but with a low frequency of occurrence (HS-LF), and another subtype with a low strength (LS) of pleasantness with either a high or low frequency, replicating previous findings by Rose and Staats (1987). It was found that the HS-LF condition showed deficits in the sensory-motor and language-cognitive repertoires, while the LS condition also showed a deficit emotional-motivational repertoire, as predicted. Implications for classification and treatment were noted, and the heuristic value of paradigmatic behaviorism to guide and integrate research was discussed.

TABLE OF CONTENTS

ACKNOWLEDGMENTS iii

ABSTRACT v

LIST OF TABLES viii

LIST OF FIGURES ix

LIST OF ABBREVIATIONS x

CHAPTER I. INTRODUCTION 1
Separatism and Disunity in Psychology 2
Separatism in Behaviorism 7
Separatism in Theories of Depression 10

CHAPTER II. LEWINSOHN'S BEHAVIORAL THEORY OF DEPRESSION 14
The Role of Pleasant Events 15
Lewinsohn's Integrative Theory of Depression 21

CHAPTER III. THE STAATS-HEIBY THEORY OF DEPRESSION 23
Multilevel Theory 23
The Personality System 24
The Current Environment 28
The Role of Dysphoria 29
Classification of Subtypes of Depression 30
Current Systems 30
The Paradigmatic Behaviorism System 31
The Paradigmatic Behaviorism Analysis of Pleasant Events . . . 33
The Rose and Staats (1987) Study 35
Implications of the Study 38

CHAPTER IV. INDIRECT MEASUREMENT IN BEHAVIORISM 41
Self-Report Inventories of Depression 42
Correlation of Depression with Anxiety 44

CHAPTER V. DESIGN OF PRESENT STUDY 47
Hypotheses 48

CHAPTER VI. METHODS AND MATERIALS 50
Subjects 50
Materials 50
Pleasant Events Schedule Mood-Related Scale 50
Beck Depression Inventory 51
Eysenck Personality Inventory - N Scale 54
Reinforcement Survey Schedule 55
Frequency of Self-Reinforcement Questionnaire 57
Unpleasant Events Schedule 58
Interpersonal Behavior Survey 59
Perceived Social Support Scales 61
Automatic Thoughts Questionnaire 63
Procedure 64

CHAPTER VII. RESULTS 67
Effects for Depression and General Psychopathology . . . 73
Emotional-Motivational Repertoire 73
Sensory-Motor Repertoire and Environmental Situation . . 75
Language-Cognitive Repertoire 76
Influence of Negative Life Events on HS-LF Subjects . . . 77

CHAPTER VIII. DISCUSSION 79
Correlations among Measures 79
Hypotheses of Study 80
Implications of Findings 84
Conclusion 86

APPENDIX 88

REFERENCES 117

LIST OF TABLES

Table		Page
1	Correlations between Measures (all groups)	68
2	Mean Scores on Measures by Strength and Frequency	69
3	F-Values for Effects of Strength of Pleasantness and Frequency of Pleasant Events	71
4	T-Values for Planned Comparisons of Groups	72
5	Mean Scores of HS-LF Subjects using Median Split on UES-F'	78

LIST OF FIGURES

Figure		Page
1	Staats-Heiby Theory of Depression	26

LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
ATQ	Automatic Thoughts Questionnaire
ATQ'	Shorter Version of the Automatic Thoughts Questionnaire
BBR	Basic Behavioral Repertoire
BDI	Beck Depression Inventory
DAS	Dysfunctional Attitudes Scale
DSM-III	Diagnostic and Statistical Manual of Mental Disorders (Third Edition)
E-M	Emotional-Motivational Repertoire
EPI-N	Eysenck Personality Inventory Neuroticism Scale
FSRQ	Frequency of Self-Reinforcement Questionnaire
FSRQ'	Shorter Version of the Frequency of Self-Reinforcement Questionnaire
HS-HF	High Strength of Pleasantness-High Frequency of Occurrence for Pleasant Events
HS-LF	High Strength of Pleasantness-Low Frequency of Occurrence for Pleasant Events
IBS	Interpersonal Behavior Survey
IBS'	Shorter Version of the Interpersonal Behavior Survey
L-C	Language-Cognitive Repertoire
LS-HF	Low Strength of Pleasantness-High Frequency of Occurrence for Pleasant Events
LS-LF	Low Strength of Pleasantness-Low Frequency of Occurrence for Pleasant Events
MMPI	Minnesota Multiphasic Personality Inventory
PES	Pleasant Events Schedule
PES-F	Frequency Ratings of the Pleasant Events Schedule

PES-S	Strength of Pleasantness Ratings of the Pleasant Events Schedule
PSS	Perceived Social Support Scale
PSS'	Shorter Version of the Perceived Social Support Scale
RCPR	Response-Contingent Positive Reinforcement
RSS	Reinforcement Survey Schedule
RSS'	Shorter Version of the Reinforcement Survey Schedule
S-M	Sensory-Motor Repertoire
UES	Unpleasant Events Schedule
UES-F	Frequency Ratings of the Unpleasant Events Schedule
UES-F'	Shorter Version of the Frequency Ratings of the Unpleasant Events Schedule
UES-S	Strength of Unpleasantness Ratings of the Unpleasant Events Schedule
UES-S'	Shorter Version of the Strength of Unpleasantness Ratings of the Unpleasant Events Schedule

Associated Features of Depression Subtypes Based on

Strength and Frequency of Pleasant Events:

Implications from the Staats-Heiby Paradigmatic Behaviorism Theory

Chapter I

Introduction

This paper will focus upon the issue of separatism in psychology and on theories which have been proposed to help remedy this situation. It has been suggested that the field of psychology can be characterized by the separation and disunity of its bodies of knowledge. The history and nature of this separatism and disunity will be discussed, with an emphasis on how this has been expressed in behavioral theories of learning. How this separatism has affected study in a particular area of psychopathology will then be examined by looking at the different theories of depression. One operant theory in particular, Lewinsohn's behavioral model of depression, will be discussed in detail, with special attention being given to those studies focusing on the relationship between pleasant events and depression. It will then be shown how shortcomings and inconsistencies in the results of these studies (and from those of other theories in the area as well) have led to calls to move away from such unitary approaches and towards integrative, unified models of depression.

One integrative model, the Staats-Heiby paradigmatic behaviorism theory of depression, will then be presented in detail. This will include a discussion of previous studies investigating subtypes of depression, based on predictions from this model. One such study by Rose and Staats (1987) which identified subtypes of depression based on the frequency and strength of pleasantness of pleasant events will be

focused on. Finally, a study will be presented which investigated the associated features and characteristics of individuals showing the subtypes of depression identified from the Rose and Staats (1987) study.

Separatism and Disunity in Psychology

It has been proposed that the science of psychology is characterized by separatism of its bodies of knowledge, which functions to split the field into many unorganized fragments, along many dimensions (Staats, 1981, 1983, 1984, 1986a). These divisions exist in terms of competing theories, research methods, the nature of acceptable findings, basic versus applied research, conceptual approaches (e.g., subjective versus objective, holistic versus atomistic, experimental versus naturalistic), professional organizations and divisions, journals, and training programs. Scientific work here is disorganized and performed mainly in different "camps" or schools. As such, many of the findings tend to remain within each particular school of thought, with little awareness or appreciation by the scientists involved of work which is done within other approaches. A relevant example here just from the area of clinical psychology (cf. Marshall, 1980) notes that there are an estimated 100 to 140 mainstream schools of psychotherapy, with virtually every university running its program its own way and paying little attention to others.

Additionally, the various schools of thought in psychology are divided along the lines of what knowledge is seen as being relevant to the field, the methodology and apparatus used to obtain the knowledge, and how to relate their findings to those of others (Staats, 1983, 1984). Even with respect to overall defining goals for the field,

behavioral scientists are "...split into parties, factions, or sects, which have not managed to hammer out a common set of disciplinary goals" (Toulmin, 1972, pp. 38-39).

Following from this, researchers in psychology are seen as working to produce unique findings, and other studies which function instead to seek commonalities and integrate different approaches are only slightly valued and seldom performed or published (Staats, 1983). In fact, separatism also involves the absence of an expectation that such connections and integrations should occur in the first place (Staats, 1981). Finally, this characteristic can even be seen to be a fundamental aspect of the training provided in psychology, where "psychologists learn how to differentiate and distinguish the things that are studied, rather than to integrate and unify" (Staats, 1984, p. 7). The result of all this is that the field becomes disorganized and aimless, consisting of many small, isolated islands of knowledge.

Maher (1985) states that the reason psychology is presently in such a state of fragmentation is that because much of the behavior of psychologists producing this has been reinforced by such things as recognition, rank, and pay. He notes that, "We have given recognition to our past theoreticians not because their theories had solved any actual problems, but because the theorist had managed to develop his own theory" (p. 17). Maher feels that this situation is reflective of basic structural problems in psychology, in terms of how work in our field is organized.

With respect to the historical development of this condition in the science of psychology, much attention has been paid within the field to

Kuhn's (1962) analysis of change in the natural sciences. Kuhn felt that change is a function of the clash of conflicting paradigms. A paradigm is characterized by a set of shared assumptions concerning the world, a common philosophy of science and consistent methodology for its application, and an agreed-upon set of findings (Minke, 1987). Ultimately, a certain paradigm comes to be accepted by the science, and then guides and produces the advances in the field.

Many psychologists have attempted to apply to our field Kuhn's ideas on the nature of paradigms, especially his concept of scientific change through the clash of competing paradigms. In so doing, psychology has often been characterized as being in a state of scientific revolution, with multiple paradigms competing for general acceptance as the defining paradigm for the field (e.g., Masterman, 1970). Staats, however, has argued instead that what was of most relevance from Kuhn's work for the field of psychology was his description of the natural sciences in their earlier, preparadigmatic stage (Staats, 1983, 1984). Kuhn (1962) said that the early stages of a science consist primarily of random fact-gathering by scientists engaged in idiosyncratic observation and experimentation, and with no commonly held body of belief. The result of this unorganized work in the early stages of the natural sciences was the formation of many different and separate schools of thought.

The similarity of these characteristics to the state of psychology today has led Staats and his colleagues to describe our field as preparadigmatic (Minke, 1987; Staats, 1975, 1983), a description also applied by others (e.g., Franks, 1984; Yates, 1975). Staats has further

hypothesized that all sciences develop on a continuous dimension of progress from an early disorganized state to an advanced unified state (Staats, 1983). While the natural sciences long ago passed through the stage of preparadigmaticism to become unified, paradigmatic sciences, the behavioral sciences such as psychology have not yet passed through their preparadigmatic stage. As such, the use of the modern natural sciences as a model for the behavioral sciences to pattern themselves after at present would seem to be inappropriate (Staats, 1984).

From this viewpoint, psychology is best viewed as a modern preparadigmatic science, which has the capacity to progress toward unification, as did previously the natural sciences. However, due to the very fact of modernity, moving toward the unification of a science now presents a vastly more complex and arduous task than it did for the natural sciences a few centuries ago when they were in their preparadigmatic stage. What is called for now is the development of a foundation and framework for working toward this unification (Staats, 1983). In an effort to start organizing the abundance of knowledge produced by the science into a coherent body, other authors have also started to advocate the development of a unifying and integrating framework for psychology (e.g., Kunkel, 1985; Royce, 1982; Schwartz, 1981). Hishinuma (1987) suggests that what is needed first is acceptance of the goal of unity and a methodology for producing unification across the range of study in psychology.

Specific suggestions for moving toward this goal of unification include changes in citation practices, new training techniques, integratory review articles (both on a research level and on a

theoretical level), and the comparative analysis of grand theories (see Staats, 1983). Kunkel (1985) adds that the unity of contemporary psychology will increase to the extent that we perform the following four interrelated tasks: analyze the nature of the diversity in psychology; understand the factors that give rise to diversity and maintain it (e.g., different values and perspectives of researchers, the variety of research methods used, the emphasis on novelty rather than analysis and integration, parochial reading and thinking habits in different schools of thought, and the difficulty of empirically testing certain theories, such as Freud's); employ an effective heuristic perspective and specification of the object of study; and use a variety of procedures including the synthesis of compatible theories. A unified theory structure, as described, could be expected to give specialists in psychology a general meaning to their science, allow them to see the relationship of their work to that of others in different areas, and thereby allow them to be better able to utilize the works of others in a relevant and productive manner (Staats, 1984).

It should be briefly noted that this call for unification is not something which is universally accepted by all those in the field who have analyzed the situation. These other philosophers of psychology have expressed the belief that due to its wide diversity, psychology is inherently non-unifiable. Koch (1978, 1981), for example, feels that it was an error for psychologists to have ever attempted to construct grand, general theories. Instead, according to this view, it should be acknowledged that the field of psychology actually consists of multiple, distinct disciplines, and that the fundamentally non-unifiable subject

matter of the field should be recognized as such. Thus, any attempts at trying to develop an integratory framework for a unified science of psychology would be useless and futile. In contrast, however, in the present view, Staats (1984, p. 9) notes that acceptance of this evaluation of psychology "as a 'would-be discipline'...relegates our field to that of a non-science as a permanent condition."

Separatism in Behaviorism

The influence of separatism and disunity which have characterized the field of psychology as a whole, can be seen very clearly in the development of behavioral theories of learning, when examined closely. This is especially interesting, since behaviorism has often been characterized by others as possessing a unity lacking in psychology in general. However, as noted by Minke (1987), "closer scrutiny of the commonality of behaviorists indicates that while there exists much commonality among all those who call themselves behaviorists, the degree of unity within the group is much less than generally supposed."

According to Staats, the development of behaviorism can best be explained by a model emphasizing change through generational growth, where the relevant concepts of preceding generations are retained and newer concepts added (Staats, 1983, 1986b). In this view, the first generation behaviorists included Pavlov, Thorndike, and Watson. These researchers were mainly concerned with the establishment of general principles such as classical and instrumental conditioning. The second generation (beginning the 1930's) was the period of the grand learning theories, and included the works of Hull, Tolman, Guthrie, and Skinner. This period saw a widening of the range of phenomena studied, a concern

with the philosophy of science, and a striving for the reduction of basic principles. Of these four theorists, the work of Hull remained strong until into the 1960's, and only Skinner still has major impact today, with work in the experimental (or applied) analysis of behavior.

It is what happened mainly during this second generation of behaviorism that is of major concern here. For during the elaboration of these theories, rather than combining accepted findings to form a unified body of knowledge with uncertain areas targeted for further research, what happened instead was that "each of the major theorists...composed his own separate and seemingly independent theory" (Staats, 1983, p. 187). Principles and concepts in one theory were not related to like elements in another theory, even when they were highly similar and overlapping. Among the many examples of this possible to cite here are the presentation of the basic principle of reinforcement as expressed by Thorndike, Skinner, and Hull; the sequencing of responses, or chaining, as expressed by Thorndike, Watson, and Skinner; and concept formation and abstraction as expressed by Hull and Skinner (where the same principles were called concepts by Hull and abstractions by Skinner, and the commonality was never cross-referenced) (see Staats, 1983, Chap. 6).

As can be seen here, each theory developed its own terms and language in a way designed to establish its independence, distinguish it from others, and make areas of commonality difficult to see. That these efforts were successful in their intent can be seen in the fact that the theories were not considered to constitute an integrated body of knowledge, but rather were seen as different and in competition with

each other, this despite the fact that in most ways they were actually very similar.

Another defining characteristic of these theories can be observed in their relation to the rest of the field of psychology. As noted by Staats (1984), behaviorism has always been characterized by a methodology of rejectionism. Entire areas of content which did not lend themselves to study by the methods favored were rejected as not being appropriate or relevant for study in psychology (e.g., covert processes were called mentalistic and largely excluded from concern). Following this rejection of large areas of the field, attempts at unification were done by developing in great detail a theory in one small part of psychology, and then attempting to generalize it to other areas of psychology, usually on a conjectural level (Staats, 1984). This approach was especially typical of Skinner and Hull, and was particularly strongly reflected in Hull's (1943) paper, in which a specific approach for unifying psychology was outlined. In essence, this was to be done by one small set of researchers, working alone, deriving the equations describing the laws of behavioral phenomena and then applying them to the field in general. Hull added, "Naturally such work will be done by those who hope for its achievement and believe in its possibility; those who do not share these hopes and beliefs will engage in other ventures. In the end, if the equations are derived successfully they will be available for all to use, and both groups should rejoice in the contemplation of the advantages ultimately to accrue" (Hull, 1943, p. 290). This was, in the present view, and in the

course of time proved to be, a very naive view of what the situation called for.

All of these above characteristics can be seen as expected by-products of the philosophy of separatism found in a preparadigmatic science. A much different approach can be found in the works of third generation behaviorism (beginning in the 1960's and 1970's), which has focused on integrating the previously separated areas of classical and instrumental (or operant) conditioning (Staats, 1983). These include perceptual-motivational theory (Bindra, 1978), the hybrid theory of operant conditioning (Logan, 1979), the integratory work of Bolles (Bolles, 1979), and the three-function learning theory of paradigmatic (or social) behaviorism (Staats, 1968, 1975; Staats & Warren, 1974). This latter theory will be discussed in detail later. The next section will focus on how this separatism has been reflected in behavioral theories in one particular area of psychopathology--depression.

Separatism in Theories of Depression

Research pertaining to depression has experienced a great burgeoning during the past two decades. This work has developed across many different fronts: social, cognitive, behavioral, genetic, biochemical, pharmacological, neurophysiological, and cross-cultural (Carson & Adams, 1981). These authors add that during this period, there has been a significant increase in the attention which behaviorists have paid to the problem of depression, "with a concomitant flooding of empirical investigation" (p. 125). However, as will be discussed, this flooding of new information has largely remained separated and disunified, until very recently.

With respect to a definition of depression, the currently accepted diagnostic description of depression, the Diagnostic and Statistical Manual of Mental Disorders, Third Edition (DSM-III: American Psychiatric Association, 1980), states that the symptoms of Major Depressive Disorder (also known as unipolar depression) include dysphoric mood and loss of pleasure in almost all usual activities. The disorder is prominent and relatively persistent, and is associated with other symptoms such as "appetite disturbance, change in weight, sleep disturbance, psychomotor retardation or agitation, decreased energy, feelings of worthlessness or guilt, difficulty concentrating or thinking, and thoughts of death or suicidal attempts" (DSM-III, 1980, p. 210). Carson and Adams (1981) note that these common constituents of a depressive syndrome can be categorized into the following areas: dysphoria, behavioral deficits, behavioral excesses, somatic symptoms, and cognitive manifestations.

Historically, traditional psychiatric and contemporary behavioral models have both presented depression as a unitary phenomenon with one primary cause, as has been indicated (Craighead, 1980; Heiby & Staats, in press). Within medical models, a biochemical imbalance is typically presumed to produce an identifiable set of symptoms constituting a depressive syndrome. Even more recent models which attempt to integrate several different biochemical dysfunctions have posited that there ultimately exists a final common pathway leading to the depressive syndrome (e.g., Akiskal & McKinney, 1975). A similar approach has been outlined by psychoanalysts (e.g., Mendelson, 1974). Although there have been differences in certain specifics, each of these researchers has

assumed that there exists an identifiable syndrome with one pattern of unconscious processes resulting in the observed depressive symptomatology (cf. Craighead, 1980; Klerman, 1975).

Behaviorally-oriented clinicians have also tended to propose unitary models to explain depression. Behavioral models of depression can be organized into four major categories (cf. Wilcoxon, Schrader, & Nelson, 1976): (1) the socioenvironmental models of Lewinsohn (1974; Lewinsohn, Weinstein, & Shaw, 1969) and Ferster (1973), which see the acquisition and maintenance of depressive behavior as following from a reduction in sources of environmental reinforcement (ratio strain), which functions to put much of the person's adaptive behavior on an extinction schedule (Lewinsohn's theory will be discussed in detail below); (2) Beck's (1967, 1974) cognitive model of depression, which maintains that depression results from an overabundance of negative thought content and dysfunctional cognitive processing that cause the person to view the self, the world, and the future in a negative manner (the "cognitive triad") and that further allow this content to maintain itself even in the face of contradictory evidence; (3) Seligman's (1975) learned helplessness model, which holds that people become depressed when they learn to believe that there is no relationship between their behaviors and the consequences which follow them, resulting in decreased responding. This theory was subsequently reformulated (Abramson, Seligman, & Teasdale, 1978) to stress the role of certain attributions the person makes regarding the causation of the experience (i.e., internal, stable, and global) which may then determine the impact of the response-consequence independence; and (4) the self-control model of

Rehm (1977), which maintains that depression results from deficits in the self-control skills of self-monitoring, self-evaluation, and self-reinforcement.

While each of these behavioral models portrays depression as a multidimensional phenomenon, each nevertheless views one characteristic as the primary one in depression, from which all of the other features of depression develop (Craighead, 1980; Staats & Heiby, 1985). This primary characteristic then is itself presumed to have a primary, unitary etiological pattern. Based on this, each of these models (with the exception of the learned helplessness model) has resulted in a treatment package for depression which is mainly designed to change what that model has identified as the primary etiological factor. The present view here is that while each of these models has identified major components of depression, produced important empirical findings, and outlined prominent approaches to therapy, there still exists an inadequacy "...in the suggestion that there is a primary causative, explanatory, and treatable variable associated with depression" (Craighead, 1980, p. 124).

Chapter II

Lewinsohn's Behavioral Theory of Depression

A prominent approach to the study of depression, developed within the operant behavioral framework, is the behavioral theory of depression of Lewinsohn and his colleagues (Lewinsohn, 1974; Lewinsohn et al., 1969). A key tenet of this theory is the assumption that a low rate of response-contingent positive reinforcement (RCPR) acts as a critical antecedent and maintaining factor for the occurrence of depressive behaviors (MacPhillamy & Lewinsohn, 1974). This theory posits that: (1) onset of depression is accompanied by a reduction in positive reinforcement; (2) intensity of depression covaries with the rate of positive reinforcement; and (3) improvement is accompanied by an increase in positive reinforcement (Lewinsohn & Libet, 1972).

A low rate of RCPR may be the result of a slow, insidious reduction of available reinforcers (and therefore be difficult to detect at first) or, alternatively, it may be caused by a highly visible withdrawal of a pivotal reinforcer (e.g., death of a loved one, loss of employment) (Lewinsohn, 1974). According to this theory, when the net gains for the individual responding adaptively to the environment are considerably less than the rewards for not initiating goal-seeking behavior, depression will result. The accompanying cognitive changes (e.g., pessimism, guilt, hopelessness, etc.) are viewed as secondary manifestations of the dysphoria produced by the low rate of RCPR (Lewinsohn et al., 1969) [although the term "dysphoria" is introduced here, it is not developed in any systematic manner, and the differences

in its usage between the theories of Lewinsohn and Staats and Heiby will be discussed in detail in a later section].

Following then from this view that an inadequacy in the frequency or quality of social reinforcement is causally related to the onset and maintenance of depressive behavior, depression is thought to result when the person has lost some ability to elicit positive reinforcement from others (Lewinsohn & Graf, 1973; Libet and Lewinsohn, 1973). This is such that the depressed individuals do not possess the instrumental (or social) skills to effectively control the consequences of their interpersonal encounters, so that they are not able to avoid or remedy negative interpersonal exchanges. Social skills are operationally defined along these lines as the ability to emit behaviors that elicit positive reinforcement from the social environment and which avoid negative reinforcement (Lewinsohn, 1974; Libet and Lewinsohn, 1973).

In summary, according to this theory, it is suggested that depressed individuals exhibit the following features: (1) a reduction in the frequency and/or quality of response-contingent positive reinforcement available; (2) are less active interpersonally; (3) provide less reinforcement for others; (4) miss chances to emit and elicit reinforcing behavior; and (5) show a relative lack of reciprocity and stability in their relationships compared to nondepressed individuals (Lewinsohn, 1974; Libet and Lewinsohn, 1973).

The Role of Pleasant Events

Much of the research pertaining to Lewinsohn's theory has centered around the measurement of pleasant events and activities and investigation of their relation to level of depression. As a means to

assess this characteristic, the Pleasant Events Schedule (PES) was developed (MacPhillamy & Lewinsohn, 1971). This schedule consists of 320 events which a diverse sample of people reported to be sources of pleasure for them. Two responses are asked for each of these events. The first is the frequency of occurrence for this item during the past month on a 3-point scale: 1. This has not happened in the past 30 days; 2. This has happened a few times (1-6) in the past 30 days; 3. This has happened often (7 or more times) in the past 30 days. The second response is the subjective enjoyability of the item on a 3-point scale: 1. This was not pleasant; 2. This was somewhat pleasant; 3. This was very pleasant. The amount of pleasure derived from any of these events is defined as the product of the frequency and enjoyability (strength of pleasantness) ratings for that event.

In an early study in this area, Lewinsohn and Libet (1972) looked at the relationship between pleasant events, activity schedules, and depression. The hypothesis tested was that the intensity of depression is a function of the amount of positive reinforcement received by the person, as shown in the correlation between ratings of the person's mood and the number of pleasant activities he or she engages in. Three groups of 10 subjects each (depressed, nondepressed psychiatric controls, and normal controls) rated their moods and also indicated the number of pleasant activities they engaged in over a period of 30 days. Results showed a significant association between mood and the number of pleasant activities as predicted, thereby supporting the theory's assumption of a correlation between rate of positive reinforcement and intensity of depression.

Lewinsohn and Graf (1973) examined the relationship between engaging in pleasant activities and level of depression, as a function of age, sex, and diagnostic group. Ninety subjects were divided into three diagnostic groups (depressed, nondepressed psychiatric controls, and normal controls) and three age groups (18-29, 30-49, and 50 and over). All subjects completed the PES and the Depression Adjective Checklist (Lubin, 1965) to measure mood for a period of 30 days. Results showed a substantial and significant relationship between mood level and the number of pleasant activities engaged in for all diagnostic groups, and that depressed subjects engaged in the fewest pleasant activities. Events frequently associated with mood were categorized into three groups: incompatible affects, ego supportive, and social interaction. Differences between sex and age groups were nonsignificant, with the exception of there being more mood-correlated items for the 30-49 age group. Overall, the results were noted as providing strong support for the behavioral theory--the number of pleasant activities engaged in by a person is associated with mood, and people who are depressed engage in a smaller number of pleasant activities.

Next, MacPhillamy and Lewinsohn (1974) investigated depression as a function of levels of desired and obtained pleasure. Subjects were 120 paid volunteers divided into three diagnostic groups as in the above studies, and who were then administered the PES. Mean scores were computed on the scales to measure obtained pleasure, activity level, and the potential for being reinforced by a wide variety of events (from the additional questions on the PES, "How often would these events have

happened in your life in the past month if they had happened as often as you'd like?" and "How pleasant, enjoyable, or rewarding could each event have been during the past month?"). Results here were as predicted--depressed subjects scored significantly lower on all these scales than did the control groups. A minor hypothesis, from the neoanalytic theory of Bonime (1966), was also tested. This posited that depressed subjects would have higher scores on a scale purporting to measure level of desired gratification. However, this hypothesis was not confirmed. This was interpreted as indicating that "such cognitive information provides no useful increment of predictability in identifying depressed individuals..." (p. 655). Overall, the results were noted as providing further strong support of the behavioral theory: depressed subjects have relatively low levels of reported pleasure, general activity level, and perceived potential for reinforcement, all summing to produce a reduced input of positive reinforcement. Furthermore, these effects are specific to depression. The treatment implication derived from this is that clients should be trained to observe and record their activities and assisted in increasing the frequency of those behaviors (social skills) which are likely to bring increased positive reinforcement.

Building on these previous studies, MacPhillamy and Lewinsohn (1976) developed the Mood-Related Scale short-form of the PES. This scale contains 49 of the PES items which were found to be significantly correlated with reported mood in at least 10% of the subjects who recorded their own activities and mood daily for 30 consecutive days. These items fell into three major categories: social interaction, intrinsically mood-related events (e.g., laughing, being relaxed), and

those related to competence and independence. The psychometric properties of the standard and short forms of the PES will be discussed in the Methods chapter.

A couple of subsequent studies looked at the relationship between pleasant and unpleasant mood-related events and depression, with conflicting results obtained. Lewinsohn and Amenson (1978) found that the rate of engagement in and experienced impact of pleasant events (positive reinforcers) and unpleasant events (punishments) comprised independent domains. Results showed that the intercorrelations between pleasant and unpleasant events were nonsignificant and yielded separate and orthogonal dimensions of reinforcement and punishment. In contrast, Grosscup and Lewinsohn (1980) in a similar study found a significant association between pleasant and unpleasant events. This was such that a high rate of occurrence of aversive events was correlated with a reduction in the pleasantness of pleasant events. The differences between the two studies were speculated to possibly depend upon whether inter-individual comparisons (as in Lewinsohn & Amenson) or intra-individual comparisons (as in Grosscup & Lewinsohn) are being made. However, no rationale from the theory as to why this might be so, or any other explanations, were offered.

Additional, and more damaging, inconsistent results have occurred subsequently for the behavioral theory of depression. Lewinsohn and Hoberman (1982), reporting the results of a longitudinal, prospective study, found that neither the frequency of pleasant or unpleasant events predicted the later occurrence of depression. This suggests that the number of these events is <u>not</u> antecedent to depressive episodes, in

opposition to what the theory predicted. With respect to reinforcement and punishment, only the aversiveness of unpleasant events emerged as predicting later depression. These findings correspond well with an earlier critique of Lewinsohn's theory by Blaney (1977), who, in noting the largely correlational nature of the studies on the theory, stated that "...perhaps the theory should be treated as a characterization of the depressed person's interaction with his environment rather than as a hypothesis concerning the causal antecedents of the depressive episode" (p. 210). Thus, taking all the results together, Lewinsohn, Hoberman, Teri, and Hautzinger (1985) concluded that "it is clear that the premises of the reinforcement theory were not entirely supported" (p. 342).

According to Lewinsohn et al. (1985), these nonconfirming results for the behavioral theory (and similar nonconfirming results for the other theories mentioned before) were a result of the theories offering too simplistic views of depression by overemphasizing certain factors. This is essentially the same conclusion reached earlier by Craighead (1980), described previously. As a response to these findings, numerous researchers have started calling for a unified, integrative theory of depression, capable of better handling the complexity of factors involved (Billings & Moos, 1982; Craighead, 1980; Doerfler, 1981; Heiby, 1987; Lewinsohn et al., 1985; Staats & Heiby, 1985). The next sections will present two integrative theories of depression in detail, those of Lewinsohn et al. (1985) and Staats and Heiby (1985).

Lewinsohn's Integrative Theory of Depression

In consideration of the above issues, Lewinsohn et al. (1985) proposed a model which attempts to integrate the major variables involved in the occurrence of unipolar depression. Depression is viewed here as a product of both environmental and dispositional factors, involving changes in behavior, affect, and cognitions. Like the older behavioral theory, though, environmental or situational factors are still seen as the "primary triggers of the depressogenic process" (p. 344).

The chain of events leading to the occurrence of an episode of depression is hypothesized to begin with the occurrence of an evoking or antecedent event, typically some form of a stressor. These antecedents are assumed then to initiate the depressogenic process in that they disrupt substantial and relatively automatic behavior patterns of the individual. This disruption also leads to an initial negative emotional reaction. Together, these then lead to either a reduction of positive reinforcement or to an elevated rate of experiencing aversive stimuli.

As the effects of these events exert their influence by lowering the person's obtained level of reinforcement, attempts are made to reduce this impact through the coping process. These efforts will vary in how successful they are, depending upon environmental and dispositional factors. An inability to reverse the impact of the stress is hypothesized then to lead to a heightened state of self-awareness. This produces a greater focus on oneself, increased self-criticism, negative expectancies, a higher rate of internal attributions for

causing events, and behavioral withdrawal. All this then leads into increased dysphoria.

Lewinsohn et al. hypothesize next that these increasing feelings of self-awareness and dysphoria break through the individual's typically self-protective perceptions and thus lead to the cognitive, behavioral, and emotional changes associated with depression. These changes are further presumed to be very important in the maintenance and exacerbation of the depression. In an assumption based on Beck's cognitive theory, it is argued that as the dysphoria escalates, the individual's self-schema is changed, producing more negative self-evaluations, low rates of self-reinforcement, pessimism about the future, and other cognitive distortions. Furthermore, being so self-aware and dysphoric acts to reduce the person's social competence (social skills) and also contributes to a negative impact on others. Finally, the model posits additional "feedback loops" (p. 350), which help determine the level of severity and the duration of an episode of depression.

In conclusion, the authors note that their model allows for the heterogeneity and multiplicity of depression symptoms, and allows for a multiplicity of causes, as well. The model is noted to assign a central role to dysphoria, because it is assumed to be necessary for the shift into the typical depressive mode of thinking and behaving. The model is also viewed as showing how to treat depression by intervening at various points of entry in the chain leading to a depressive episode, and being able to generate relatively specific hypotheses to test these assumptions.

Chapter III

The Staats-Heiby Theory of Depression

The Staats-Heiby paradigmatic behaviorism theory of depression (Heiby & Staats, in press; Staats & Heiby, 1985) has as one of its goals the incorporation of productive findings pertaining to depression. It introduces a framework for distinguishing subtypes of depression, and for the specific prediction of the etiology and treatment of these subtypes. This subtheory of depression was developed as a specific elaboration of a more general theory of personality and abnormal behavior, which is part of the yet more general theory of human behavior, paradigmatic (or social) behaviorism (see Staats, 1963, 1975).

Multilevel Theory

While paradigmatic behaviorism is based upon a theory of the elementary principles of conditioning, it has taken the position that these elementary principles need development in a series of levels before complex human behavior can be adequately understood (Staats, 1975). This approach insists upon close reasoning from level to level. At its basic level, paradigmatic behaviorism contains a three-function learning theory which states that the classical conditioning of emotional responses and the instrumental conditioning of behavior are intimately related. A stimulus that elicits an emotional response (i.e., one that has emotional value) will then because of that also be a reinforcing stimulus (positive or negative), capable of producing instrumental conditioning. As a third function, approach behaviors will be learned to stimuli that elicit positive emotional responses and avoidance behaviors will be learned to stimuli that elicit negative

emotional responses. These three functions of stimuli (emotional, reinforcing, and directive) are related, and depend upon the emotional value of the stimulus.

At a later level, paradigmatic behaviorism also states that there are individual differences which have a causal role in determining behavior. Two people placed in the same environmental situation will behave differently, even though the behavioral contingencies in the situation are the same for both. It is therefore deemed necessary to have a personality level to the theory to be able to account for such individual differences. However, unlike in traditional conceptions of personality, paradigmatic behaviorism adds that the personality theory must be objective and explicit, and capable of analytic specification. The theory must define personality, and indicate the manner in which it is learned. Furthermore, the principles by which the personality helps determine how the individual behaves in interaction with conditions of the later situation also need to be stipulated.

The Personality System

The personality system is viewed here as consisting of three different, interacting personality, or basic behavioral, repertoires (BBR's)--the emotional motivational (E-M), the language-cognitive (L-C), and the sensory-motor (S-M) repertoires (see Staats, 1975; Staats & Burns, 1982). A BBR is defined as a "complex constellation of skills which [is] learned on the basis of the elementary learning principles and the principles of cumulative hierarchical learning" (Staats, 1975, p. 63). These latter principles stipulate that past acquisitions of skills (the BBR's) are basic to the further acquisition of elements in

the developing repertoires. The BBR's determine how the individual will experience a later situation, how he or she will behave in that situation, and thus what he or she will learn in that situation (Staats, 1968).

The model of depression derived from the general theory of paradigmatic behaviorism stipulates that it is not the environment alone that is the major determinant of depression. The environment and the personality characteristics of the individual, in interaction, determine whether or not the symptoms of major depression will appear. The paradigmatic behaviorism theory views depression as involving deficits and inappropriate elements in the personality repertoires that in conjunction with environmental events (also involving deficits and inappropriacies) evoke a negative emotional state of dysphoria.

The Staats-Heiby theory of depression is outlined in Figure 1 (see page 26; cf. Heiby, 1987). Environmental events (labelled S_1 in the Figure) act as causes in the development of the individual's personality. As a consequence of experience with certain original learning conditions, the individual may develop a personality which is deficient of important components, or it may contain inappropriate components, which could then contribute to the development of depression. The personality repertoires will now be defined, along with how they contribute to depression.

The emotional-motivational (E-M) repertoire consists of the many environmental and behavioral stimuli which elicit emotional responses in the individual. Emotional stimuli also have reinforcing and directive stimulus functions, thus what stimuli have emotional properties helps

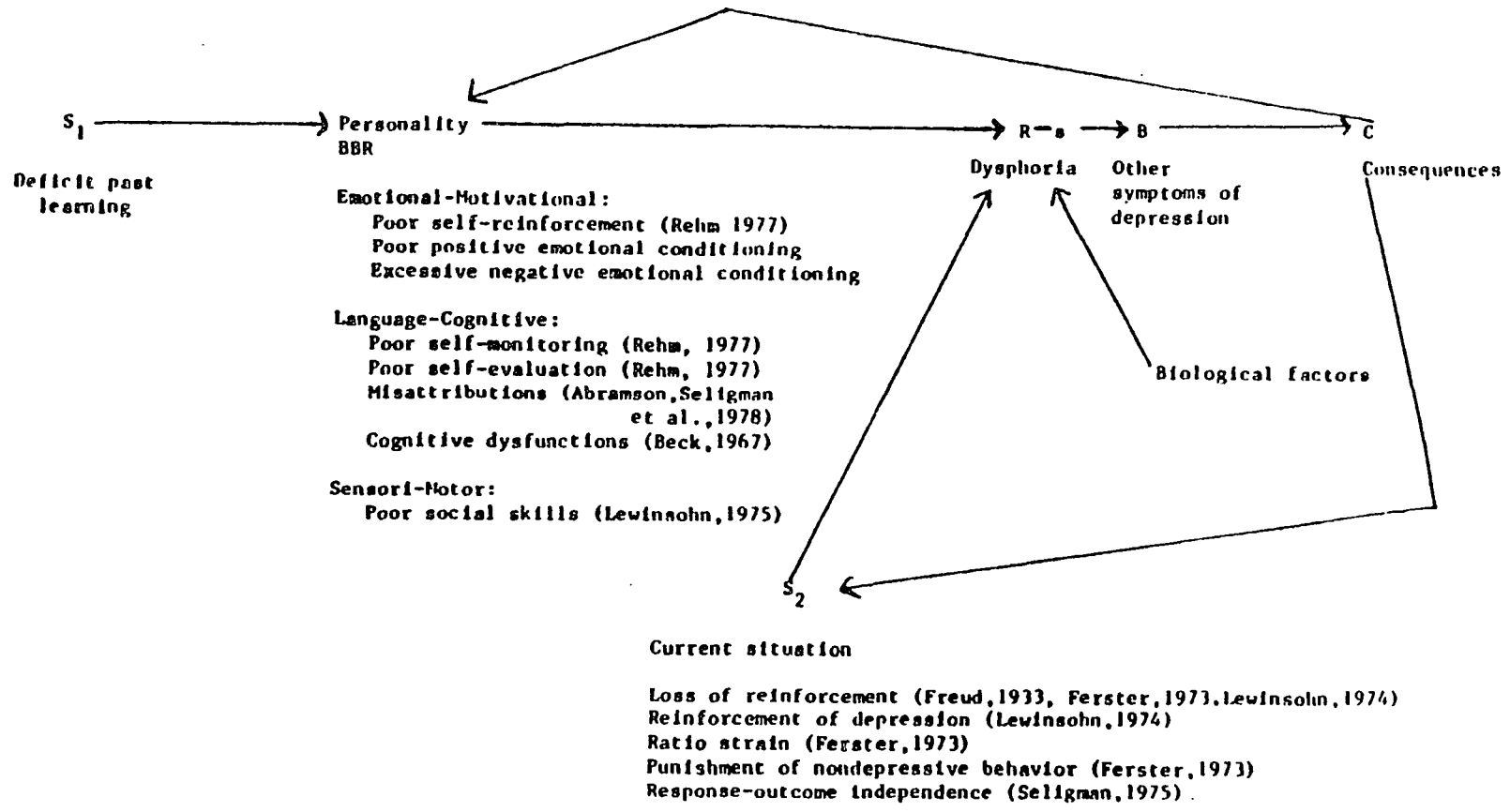

FIGURE 1
STAATS-HEIBY THEORY OF DEPRESSION

determine the characteristics of the individual's behavior. Deficits in this E-M repertoire contribute to depression. For example, having too few intimate relationships can impoverish both the positive emotions experienced, as well as the behavior that is displayed. The E-M system may also be inappropriate. Such elements might involve standards of performance which are set too high, thereby leading to a low experience of positive emotions and a low ratio of self-administered reinforcement.

The language-cognitive (L-C) BBR involves overt and covert reasoning abilities, problem-solving, intellectual functioning, self-concept and world-view, and basic language sub-repertoires (e.g., labelling, emotional words, image words, the verbal-motor repertoire, and the verbal imitational repertoire). A deficit in positive emotional word emission and a surplus of negative word emission are involved in such common-sense descriptions as low self-esteem, low sense of personal worth and responsibility, blaming of the self, and so on.

The sensory-motor (S-M) BBR is a very broad one covering many crucial motoric and instrumental skills, such as athletic abilities, work skills, and sexual skills. Staats (1975) notes that the sensorimotor-imitational sub-repertoire is one of the major prerequisites for observational learning and modeling. For this repertoire, deficit aspects contributing to depression might include a lack of recreational skills and activities, and inappropriate elements might include poor interpersonal styles and social skills.

These personality repertoires function themselves in a causative and interactive manner, with other BBR's and the current environmental situation, in affecting the subsequent learning and behavior of the

individual (Burns, 1980; Staats, 1975). The role of the individual's personality serves a very important function within paradigmatic behaviorism, in contrast to previous behavioral approaches where it has been largely neglected. Staats and Burns (1982) noted that personality is viewed solely as an effect and not as a cause in standard behaviorism (e.g., Skinner, 1953). The analysis provided by the present model of the inconsistent results discussed previously of the behavioral theory of depression is that without a concept of personality, there is no adequate explanation available for why there are significant individual differences observed in the response to the same environmental conditions of loss (Heiby & Staats, in press).

The Current Environment

The current environmental situation and present life circumstances represent the second point of influence for environmental events in the development of depression (labelled S_2 in Figure 1). Precipitating events here also include deficits (such as a recent loss of job or death of a loved one) and inappropriate components (including unusual demands of job or family).

Figure 1 notes some of the environmental factors involved in the onset of depression which different behavioral researchers have investigated, including loss of reinforcement and ratio strain (Ferster, 1973) and response-outcome independence (Seligman, 1975). Unlike these approaches, however, paradigmatic behaviorism stipulates that it is ordinarily not the environment by itself which is the determinant of depression (Heiby & Staats, in press; Staats & Heiby, 1985). Rather, as has been noted, the other interacting determinant involves the

individual's personality repertoires. As noted in Staats and Heiby (1985), for example, when aspects of the individual's emotional-motivational system have strong emotional value (such that they will also act as reinforcers and incentives for the individual), they will be able to prevent the symptomatic behaviors of depression from developing past an appropriate point of duration and intensity following a major environmental loss.

The Role of Dysphoria

The paradigmatic behaviorism theory also considers it necessary to indicate the central role of dysphoria in the depressive syndrome. Fundamentally, the individual becomes depressed on the basis of quantity--when there are too few positive emotional stimuli encountered in the environment, or too many negative emotional stimuli, or both. While single stimuli can elicit specific emotional responses, this theory states that it is ordinarily multiples of negative emotional stimuli, multiple or very strong deficits of positive emotional stimuli, and combinations of these conditions that as a conglomerate produce a negative emotional state defining dysphoria (Rose & Staats, 1987). This dysphoria is a state that is deep, of some duration, and that itself produces further behavioral symptoms that lead to the diagnosis of depression. Finally, in a reciprocal fashion, these consequences of behaving depressed can have effects back upon the personality repertoires and environmental conditions (Heiby, 1987).

Classification of Subtypes

Current Systems

The Staats-Heiby paradigmatic behaviorism model also presents a classification scheme for different subtypes of depression. Current classification systems of depression can be divided into three major types based on: (1) a family history of the disorder (e.g., Andreasen & Winokur, 1979); (2) presumed etiology, such as primary versus secondary depression (Munro, 1966), and endogenous versus exogenous depression (Van Praag, Ulleman, & Spitz, 1965); and (3) symptomatology, such as unipolar versus bipolar depression (Leonhard, 1979). While each of these classification systems has made substantial contributions toward the study of different types of depression, no one system, however, has offered a model which fully accounts for the variability observed in the etiology and response to treatment in depression (Heiby & Staats, in press). These traditional systems have mostly tried to propose a singular distinction between two major subtypes of depression, which has not proven adequate in dealing with the complexity of factors involved. Moreover, these approaches have been in competition with each other, and have not attempted to integrate findings from other areas of investigation in depression, thereby further limiting their range of applicability (Heiby & Staats, in press; Rose, 1985). This separatism here can be seen as but one more example of the approach to methodology which has characterized virtually the entire field of psychology, as described earlier.

The Paradigmatic Behaviorism Classification System

Unlike the above approaches, the classification scheme of paradigmatic behaviorism recognizes that there are many possible subtypes of depression based on numerous potential etiological factors. What the Staats-Heiby theory proposes here is the subtyping of depression according to the interaction of premorbid personality and environmental precipitants (Heiby, 1987; Heiby & Staats, in press; Staats & Heiby, 1985). The subtypes posited from this model may thereby be a function of interactions among and/or between the personality repertoires and environmental factors. Identifying subtypes in this fashion would serve to help identify antecedents to depression and aid in the prescription of prevention and treatment strategies for specific cases of depression (Craighead, 1980; Heiby, 1983a; Heiby & Staats, in press). This theory would predict then that the most effective treatment for a particular case of depression would be one which targets assumed etiological factors (e.g., see Heiby, 1986; McKnight, Nelson, Hayes, & Jarrett, 1984). As noted in Heiby and Staats (in press), the proposed classification scheme incorporates the biologically-based systems which have facilitated the understanding of endogenous and bipolar disorders, and has the additional flexibility to accommodate a demonstration of interaction among personality, environmental, and biological factors.

One such subtype identified already within the paradigmatic behaviorism theory framework involves an interaction of conditions that result in an inappropriately low self-reinforcement characteristic along with a deficit in environmental sources of reinforcement (Heiby, 1983a,

1983b; Heiby, Ozaki, & Campos, 1984). Heiby (1983a) found in an analogue study that nondepressed subjects with a low frequency of self-reinforcement exhibited a greater dysphoric reaction to a decrease in experimenter-controlled reinforcement than did nondepressed subjects with a high frequency of self-reinforcement. In a retrospective study, Heiby (1983b) found that individuals exhibiting a low frequency of self-reinforcement are more likely to exhibit dysphoria than are persons showing a high frequency of self-reinforcement when faced with similar naturally occurring environmental losses of reinforcement. In relation to treatment implications, Heiby (1986) found that clinically depressed subjects exhibiting deficits in self-control skills improved significantly better with treatment aimed at self-control training, while subjects showing deficient social skills fared significantly better with treatment aimed at social skills training. A recent study by Heiby, Campos, Remick, and Keller (1987) has further distinguished this subtype of unipolar depression with self-control deficits from one associated primarily with neuroendocrine dysfunction as measured by the dexamethasone suppression test.

Much other work has started to occur recently for assessing and treating other subtypes of depression. In a study similar to Heiby (1986), McKnight et al. (1984) found that depressed subjects with either deficient social skills or distorted cognitions showed significantly enhanced treatment effects when the intervention was targeted at the assessed area of deficit. Rapp and Fremouw (1982) found evidence of four different discernable subtypes of depression involving either no apparent behavioral deficit, dysfunctional attributional style plus a

deficient number of pleasant events, dysfunctional attributions plus an excess of unpleasant events, or those with dysfunctional attributions, cognitive distortions, deficient pleasant events, and excessive unpleasant events. Several other studies have identified a subtype showing a high number of negative life change events coupled with low social support (Habif & Lahey, 1980; Holahan & Moos, 1981; Norris & Murrell, 1984).

A further significant contribution of the paradigmatic behaviorism theory of depression classification scheme can be noted in Figure 1. Included in this diagram are the personality and environmental variables which have been proposed by various theorists, placed within the context of the present theory. Due to the analysis provided by the Staats-Heiby theory, which specifies the elements of the personality repertoires and environmental situation, two unique personality factors can be identified that have not been posited by previous researchers. These two variables are poor positive emotional conditioning and excessive negative emotional conditioning. In order to investigate the first of these variables, poor positive emotional conditioning, a paradigmatic behaviorism analysis has been applied to study the relationship between pleasant events and depression.

The Paradigmatic Behaviorism Analysis of Pleasant Events

As has been noted previously, assessment of pleasant events on the Pleasant Events Scale (PES) involves ratings for the frequency with which the events occur, as well as for the strength of pleasantness which they produce. From the perspective of the Staats-Heiby theory, these two characteristics being assessed can be seen to involve

different personality repertoires or conditions (Rose & Staats, 1987). The frequency of the positive events would reflect a deficit in environmental sources of reinforcement for depressed subjects, as well as perhaps a deficient sensory-motor repertoire (e.g., deficit social skills) and language-cognitive repertoire. On the other hand, the strength of pleasantness of the events for depressed subjects would reflect a deficient emotional-motivational repertoire, in that the items have never had or have lost some of their affective-reinforcing-directive potential for the individual.

Given these different sites of causation, it is therefore possible that two individuals could get the same score on the PES, but due to different circumstances. One person, for example, could have learned a rich emotional-motivational system which included many events he or she would find strongly positive. However, due to life circumstances, there could be important losses involved in the supply of these events. The individual's low score on the scale would thereby be due to the low frequency of the events and he or she would be depressed. Another way of receiving a low score on the PES would be because the individual has not learned strong emotional responses to these events. When this is the case, the presence or absence of a rich supply of those events for the person is relatively insignificant. There may be problems of inadequate impetus to active behavior in this case, and a lack of positive emotional affect, but this is not the same as the depression that is produced by someone who is deprived of important emotional-motivational stimuli.

The central point here is the theoretical conception on which the PES was formulated was not analytic, in that it did not differentiate the personality characteristics (in this case, emotional-motivational) from the environmental supply of the individual's "needs" (Rose, 1987; Rose & Staats, 1987). When measures are confounded in this way, predictions based upon them are not likely to be consistent. The approach of paradigmatic behaviorism can thus be contrasted to that of MacPhillamy and Lewinsohn (1974), discussed earlier, where the subjects were grouped initially as depressed or nondepressed, and separate correlations of mood with frequency and strength of pleasantness were then determined, but not their interaction effects.

The Rose and Staats (1987) Study

Rose and Staats (1987) conducted a study to investigate these interaction effects between the conditions of frequency and strength of pleasantness of pleasant events in depression. The purpose of the study was to show that the analysis of what is involved in the Pleasant Events Schedule is important, that different subtypes of depression can be isolated when such an analysis is made, and that there are new treatment implications of this analysis. All of these factors help validate a theory that can make that type of analysis. This research was further guided by the recommendation of Staats (1986b, p. 289), "...to show, in basic studies, why the items on indirect measures do index behavioral processes important to the individual's behavior...with the goal of seeing what it is that is measured...."

The specific hypotheses tested were: (1) for higher reported strength of pleasantness, those subjects with a low reported frequency

of pleasant events would report higher depression levels than those subjects with a high frequency of pleasant events; and (2) for low reported strength of pleasantness, subjects with either a high frequency or low frequency of such events would be approximately equivalent in level of depression. These hypotheses were based upon paradigmatic behaviorism's analysis of the emotional properties of the events in question, not their reinforcing properties. Unlike Lewinsohn's behavioral theory of depression, response-contingent positive reinforcement was not emphasized in Rose and Staats (1987), because response-contingency is irrelevant to emotion-elicitation. That is, a scarcity of certain events will only produce the negative emotional state of dysphoria when those events are positive ones of strong intensity, and deprivation of events that only weakly elicit positive emotional responses will have only a weak effect upon the individual's emotional state. The items on the PES ask only how frequently the events occurred and how enjoyable they were, not whether they occurred in a response-contingent manner.

The subjects were 250 undergraduate students who were administered the Pleasant Events Schedule Mood-Related Scale (MacPhillamy & Lewinsohn, 1976) and the Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). On the basis of the total strength of pleasantness scores on the PES M-R scale, the subjects were divided into two groups, upper 25% and lower 25%, reflecting subjects with high and low levels of strength of pleasantness for the items, respectively. These two groups were then further divided in half, in terms of high or low levels of frequency of the events. Thus, four groups were formed:

(1) High Strength-High Frequency (HS-HF) (n=30); (2) High Strength-Low Frequency (HS-LF) (n=34); (3) Low Strength-High Frequency (LS-HF) (n=34); and (4) Low Strength-Low Frequency (LS-LF) (n=32).

A two-way analysis of variance test of the depression scores of these subjects showed significant results for both main effects, as had been previously demonstrated by Lewinsohn and colleagues. Thus, for reported frequency of pleasant events, those subjects with low levels had a significantly higher level of depression than did those with high levels of frequency ($p < .03$). For reported strength of pleasantness for the events, those subjects with low levels had a significantly higher level of depression than did those with high levels of strength ($p < .03$).

The test for the interaction effects of the model was nonsignificant ($p > .05$). However, *t*-tests on the specific comparisons predicted supported both hypotheses. For the first hypothesis, for high strength of pleasantness, those subjects with a low frequency of pleasant events had a significantly higher level of depression than did those with a high frequency ($p < .02$). For the second hypothesis, for low strength of pleasantness for the events, those subjects with a low frequency were not significantly different from those with a high frequency ($p. > .10$). Furthermore, for those subjects with a High Strength-Low Frequency characteristic and for subjects in both of the groups with a low level of reported strength of pleasantness, the mean levels of reported depression were slightly above the cutoff mark for mild depression/dysphoria using that inventory (the implications of using indirect measures and cutoff criteria for analogue studies such as this will be discussed in a later section).

Implications of the Study

For identifying and classifying subtypes of unipolar depression, the results of Rose and Staats (1987) indicated then that one subtype would involve a high strength of pleasantness associated with pleasant environmental events, but with a low frequency of occurrence for them. Another subtype would involve a low strength of pleasantness for these events, with either a high or low frequency of their occurrence.

The implications of these findings from the Staats-Heiby paradigmatic behaviorism theory of depression (Staats & Heiby, 1985) were then considered in comparison with the revised integrative theory of Lewinsohn and colleagues (Lewinsohn et al., 1985). The integrative model of Lewinsohn was noted to have been built up around the older behavioral theory, at which level it contains its greatest detail and specificity. In terms of personality or predisposing characteristics, however, the propositions have largely been borrowed from other unitary theories and there is little specificity or integration. Concepts such as personality (or disposition) and emotion have been introduced, but their definitions and sources of basic work are not clear. In contrast, the paradigmatic behaviorism theory of the Staats-Heiby model has a long history of systematic, integrated research (see Staats, 1963, 1968, 1975). The Staats-Heiby model contains a detailed specification of the various personality repertoires and how they interact with each other and with environmental events in producing the symptoms of depression. It was this specification that led to the investigation of the strength and frequency of pleasant events as involving separate repertoires and interaction-based subtypes of depression.

Thus, it was concluded that even though there is now some overlap between the two models (particularly in the centrality given to the role of dysphoria and in the description of antecedent environmental events), the greater development and integration of personality repertoires in the Staats-Heiby model is of higher heuristic value, leading to an analysis of different subtypes of depression, that can then be tested empirically and serve as a future foundation for treatment differences. Furthermore, because of its goal of unifying what have traditionally been separated and disorganized areas of knowledge within psychology, the Staats-Heiby model places a high level of importance on the task of identifying these subtypes and then ultimately integrating them into a cohesive, unified framework (see Heiby, 1987). It is in such a context of heuristic and integrative value that these theories must be evaluated.

Implications from these findings for assessment and treatment considerations for the identified subtypes were also discussed. With respect to the assessment of pleasant events and their relationship to depression, these findings suggest that it is important to look at the ratings for frequency and enjoyability (strength of pleasantness) separately, not as a multiplicative function, since they appear to be identifying different etiological subtypes of the disorder. These different subtypes could then be seen to have different treatment implications. For the High Strength-Low Frequency (HS-LF) subtype, treatment would seem best to focus upon increasing the individual's level of pleasant activities and also on improving his or her social skills as part of this change. This approach is quite consistent with

that advocated by Lewinsohn and his colleagues (Lewinsohn & Hoberman, 1982), although their reasoning would be different. However, for the other subtype here, Low Strength of associated pleasantness, this approach would likely not be as beneficial, and treatment would seem to be better focused upon working to modify aspects of the person's emotional-motivational repertoire, a consideration that would not derive from Lewinsohn's behavioral theory.

To investigate further the implications of the above findings, the present study was conducted to examine in detail the associated characteristics and features of these identified subtypes, as an aid to more precise treatment planning. However, as this study relied on self-report inventories for assessing level of depression, which has become a controversial area in the field, first some of these issues relating to the use of indirect measures in general and for depression specifically need to be addressed.

Chapter IV

Indirect Measurement in Behaviorism

A basic assumption of radical behaviorism is that a behavioral sample measures nothing beyond itself (Goldfried & Sprafkin, 1976; Mischel, 1972). As has been noted previously, radical behaviorism rejected the concept of personality as a causative variable in determining behavior, and so, as a consequence, also rejected traditional methods of personality assessment. However, despite this theoretical orientation, the use of indirect measures of behavior, typically via self-report, has become increasingly prominent within behavioral research (see Bellack & Hersen, 1977; Cone & Hawkins, 1977). Approaches to this situation have included viewing assessment along an indirect-direct continuum (e.g., Cone & Hawkins, 1977) or using predictive validity as the major criterion by which to justify this use (e.g., Bellack & Hersen, 1977). However, neither of these approaches is able to incorporate the use of indirect measurement within a behavioral theoretical framework, and thus is not as able to help advance the study of behavioral assessment.

A different approach has been taken by paradigmatic behaviorism, which says that the behavioral sample <u>can</u> measure something beyond itself (Burns, 1980; Staats, 1975, 1981, 1986b). What this approach does is to add a causative concept for personality, while keeping within a sample approach.

This theory states that given the interrelatedness of the personality repertoires and their interaction with the environment, then assessment of repertoires can provide predictive information about

particular behaviors which are different than the repertoires themselves (Burns, 1980). Burns notes for example that while the Reinforcement Survey Schedule (Cautela & Kastenbaum, 1967) aims to assess aspects of the individual's emotional-motivational system, it does not do this directly but instead directly assesses the person's verbal-emotional repertoire by employing his or her learned ability to label emotional responses, which is an aspect of the language-cognitive system. Staats (1975, Chap. 12) adds that accurate assessment here naturally depends on other factors as well, notably whether the relevant self-labeling repertoires in the individual's language-cognitive system are congruent with reality. The possibility that this is not so does not require an automatic rejection of all verbal tests in this view, but rather additional sensitivity to this issue. In summary, the value of this approach is that it provides a learning theory rationale for the use of indirect measurement, and in so doing, "has opened the door for a productive unification of traditional psychometric and behavioral assessment methods" (Burns, 1980, p. 204). It also addresses the need expressed recently from other quarters of behaviorism for researchers to begin being more careful about matching theory and method (McFall, 1986), in that our measurement models are the tools of theory building, and their value must be judged in this context.

Self-Report Inventories of Depression

The above discussion is particularly relevant to the study of depression, since this area has seen a heavily increasing rise in the use of self-report inventories in recent years. As examples, Sacco (1981) found in a review of analogue studies of depression in four major

clinical psychology journals from 1976 to 1979 that there were 11 articles which selected subjects solely on the basis of a pretesting on a single depression inventory, and Deardorff and Funabiki (1985) found in a review of analogue depression studies from 1976 to 1982 from the Journal of Abnormal Psychology and the Journal of Consulting and Clinical Psychology that 16 out of 19 such articles used the Beck Depression Inventory alone as the basis for classification. Two of the major concerns surrounding the use of self-report inventories for classifying depressed subjects are the issues of generalizing findings from college students to depressed patients and the contention that these inventories may be measuring a much broader construct than depression, such as anxiety.

College students have become very popular subjects for use in studies on depression during the last couple of decades, and the Beck Depression Inventory (BDI) has become the most frequently used measure in these studies (Bumberry, Oliver, & McClure, 1978). Bumberry et al. found that the correlation between the BDI and psychiatric rating of depth of depression in college students was .77 (significant at $p < .001$), indicating that the BDI is a valid instrument for use in a college population. Oliver and Burkham (1979) found that the 3-week test-retest reliability of the BDI with this population was .78, and that the scores were significantly correlated with college year level but not with sex, age, or marital status. They argued that the results of these studies suggest that depression in students does bear some resemblance to clinical depression, and that self-report is a valid way for determining this.

Sacco (1981), however, has qualified the findings of Bumberry and Oliver by saying that the BDI is a valid measure only for the day on which it is administered. Sacco found in his study that there was a significant decline in the test scores on a later second administration, and that this often resulted in a change of classification from mild depression to no depression. Similar results have been found or noted by Hatzenbuehler, Parpal, and Matthews (1983), Stehouwer (1985), and Zimmerman (1986). However, upon further investigation of this phenomenon, Hatzenbuehler et al. (1983) felt that this decline in scores was due mainly to effects of prior exposure, instead of weaknesses within the inventory. They found that those subjects who were retested on a different related inventory did not show a significant decline in scores and maintained the same depression classification. They concluded that the decline in scores is not caused by dissipation of depressive mood among the students but is related instead to procedural factors such as changes in expectations or increased knowledge about the BDI.

Correlation of Depression with Anxiety

The other major issue here which has been raised recently is that the BDI and other similar inventories may be measuring an emotional state that is considerably broader than depression (Coyne & Gotlib, 1983; Gotlib, 1984; Tanaka-Matsumi & Kameoka, 1986). These authors note that in subclinical samples, all types of psychopathology are significantly interrelated, including a significant correlation between measures of depression and anxiety. Gotlib (1984) found, for instance, that the single major factor accounting for 50% of the total variance in

a factor analysis of seven depression inventories was nonspecific distress or dysphoria. Gotlib notes that studies employing these measures should attempt to use a psychopathology control group, but acknowledges that this may be rather difficult to implement with a subclinical population. Tanaka-Matsumi and Kameoka (1986) feel that these results call for further empirical investigation of the nomological network of the basic construct of depression.

In a study designed to further investigate the findings of Gotlib (1984), Hill, Kemp-Wheeler, and Jones (1986) administered the BDI and the Eysenck Personality Inventory (EPI) (Eysenck & Eysenck, 1964) to a sample of college students and psychiatric patients. Varimax factor analysis of the items of the BDI yielded a factor structure for the students that was very comparable to that of the patients, with close correspondence on six out of seven factors. All BDI factors in the student sample also correlated significantly with the N (Neuroticism) scale of the EPI, a measure of "general psychopathology". The second aim of the study was to then assess the extent to which these factors measured something other than just general psychopathology. It was considered that if the factors were significantly related to life-event measures, and these remained significant after factor scores were statistically adjusted to remove the influence of general psychopathology, the factors would then be confirmed as measuring something other than just general psychopathology. Factor scores were thus correlated with three life-event measures, and part correlations were then computed between the life-event measures and the component of factor scores orthogonal to neuroticism. Results showed that four of

the student factors appeared related to negative life-events where responsibility was perceived, and in all four cases the part correlation was significant (18.7% of BDI variance was shared with variance in responsible negative life events, and these variables still shared 12.9% of variance when the influence of the general psychopathology measure was removed in the part correlation). The authors state that this indicates that the factors measured by the BDI "are not merely measures of general psychopathology" (p. 46). While they add that they cannot conclude with certainty that what the BDI measures is depression, they feel that this is a reasonable conclusion when their findings are taken together with those of Bumberry et al. (1978). They conclude, though, by noting that since the BDI does measure general psychopathology to some extent, researchers conducting analogue studies of depression "would be well-advised to allow for this by taking measures of general psychopathology when using the BDI" (p. 46).

What seems to be the best recourse at present when using subclinical samples, given all the above findings, is to recognize these limitations and aim for the future incorporation of more precise behavioral appraisals of depression, without abandoning the current use of self-report measures, such as the BDI, which have demonstrated acceptable psychometric properties (see the Methods chapter for specifics), inclusiveness with DSM-III criteria for depression (Moran & Lambert, 1983), and, in the context of the present approach, have a basis in a solid theoretical framework. The additional use of a measure of general psychopathology, as advocated by Hill et al. (1986), would also seem appropriate.

Chapter V

Design of Present Study

The study to be described here involved an extension of the Rose and Staats (1987) study to determine more specifically the exact nature of the environmental and personality system characteristics of individuals representing these identified subtypes, based on assumptions derived from paradigmatic behaviorism theory, as an aid to more precise assessment and treatment planning. The frequency and strength of the pleasant events were measured again by the Pleasant Events Schedule Mood-Related Scale. Level of depression was assessed by the Beck Depression Inventory.

The other characteristics of these subtypes which were examined include: social skills, measured by the Interpersonal Behavior Survey (Mauger & Adkinson, 1980); social support, measured by the Perceived Social Support scales (Procidano & Heller, 1983); distorted cognitions, measured by the Automatic Thoughts Questionnaire (Hollon & Kendall, 1980); the strength of positive emotional responding, measured by the Reinforcement Survey Schedule (Cautela & Kastenbaum, 1967); the frequency of self-reinforcement, measured by the Frequency of Self-Reinforcement Questionnaire (Heiby, 1982); and relationship with the frequency and strength of unpleasant events, measured by the Unpleasant Events Schedule (Lewinsohn, 1975; MacPhillamy & Lewinsohn, 1982). As a measure of general psychopathology, the N (Neuroticism) scale of the Eysenck Personality Inventory was used (Eysenck & Eysenck, 1964), as suggested by Hill et al. (1986). All these measures were given together in a single administration, as per the recommendation of Sacco (1981).

Hypotheses

The first part of the study involved essentially a replication of the Rose and Staats (1987) study. Thus, it was again predicted that subjects with a high frequency of occurrence for pleasant events but with a low level of associated pleasantness for them would evidence a higher level of measured depression than those with a high level of strength. Also, for subjects with a low level of strength of pleasantness for pleasant events, with either a high or low frequency of their occurrence, levels of depression were again predicted to not be significantly different.

Given the replication of these subtypes, it was now predicted that for the groups with a low strength of pleasantness, representative of a deficient emotional-motivational system according to the theory, that lower scores would be obtained on measures tapping this system than in comparison to the groups with high strength. It was also predicted that for the group with a high strength and low frequency, which was posited by the theory to represent deficits in the sensory-motor and language-cognitive repertoires and in environmental sources of reinforcement, that scores of measures tapping these systems would be lower in comparison to the other groups. In addition to the standard forms of the different tests to measure these characteristics, scores were also derived for shorter versions of each, based on the results of a cluster analysis of the test items done as a pilot study for Rose and Staats (1987). It was hypothesized that these measures would be stronger and more consistent measures of their respective constructs, and that, therefore, stronger relationships might be found as predicted above.

A secondary set of hypotheses related to the High Strength-Low Frequency (HS-LF) subtype. It was suggested that individuals in this group might represent two distinct types: one type might be depressed and fall into this group due to the occurrence of recent major negative life events, and another type which would not have this history and could just be considered as a more deprived group. The shorter version of the frequency ratings scale of the Unpleasant Events Schedule (UES-F') was used as the measure of these negative events, with a median split of scores on this measure used as the basis to divide subjects. It was predicted that for subjects with the higher level of these negative life events, depression/dysphoria scores would be higher given the acute, sudden impact of these events. Behavioral competence (e.g., social skills), though, would still be relatively more intact for these individuals, if the low level of frequency of pleasant events had just been decreased due to these recent negative events.

Discussion of the results from this study will then include a full description of the obtained subtypes with their associated characteristics, along with an analysis of the heuristic value of integrative theories such as the Staats-Heiby model for guiding research in this area. The implications of these findings for the classification, assessment, and treatment of the subtypes of depression will also be discussed.

Chapter VI

Methods and Materials

Subjects

The subjects were 447 undergraduate psychology students, with 198 (44.3%) males and 249 (55.7%) females. Seven of these subjects were dropped because of incomplete items, leaving a total of 440. Of this number, 381 (86.6%) were from the University of Hawaii at Manoa, and 59 (13.4%) were from Pepperdine University and California Lutheran University in Southern California. All subjects received course credit for participation in the study. The average age of the subjects was 21.3 years.

Ethnically, the composition was as follows: 165 (37.5%) were of Japanese ancestry, 103 (23.4%) Caucasian, 50 (11.7%) Chinese, 43 (9.8%) Mixed ancestry, 33 (7.5%) Filipino, 23 (5.2%) Hawaiian or Part-Hawaiian, 14 (3.2%) Korean, 5 (1.1%) Vietnamese, 2 (0.4%) Black, and 2 (0.4%) Hispanic.

Materials

Pleasant Events Schedule Mood-Related Scale. As described previously, the Pleasant Events Schedule Mood-Related Scale (MacPhillamy & Lewinsohn, 1976) is an inventory of 49 items which were empirically demonstrated to be correlated with reported mood. On this scale, the frequency and strength of pleasantness of each item are rated on a 3-point scale of 0, 1, or 2. The test-retest reliability of the mood-related scale was found to be .69 at one month and .50 at three months (MacPhillamy & Lewinsohn, 1976). With respect to content validity,

Moran and Lambert (1983) state that the scale focuses on the symptomatology inherent in the depressed individual.

Bouman and Luteijn (1986) found that the frequency and enjoyability ratings of the PES Mood-Related Scale both had moderate negative correlations with measures of depression and neuroticism. For frequency, the correlation was -.48 with the BDI and -.32 with the N scale of the Dutch Personality Questionnaire (DPQ) (a translation of the Eysenck Personality Inventory). For enjoyability, the correlation was -.58 with the BDI and -.33 with the DPQ (all correlations were significant at the .05 level).

In this proposed study, the directions for responding to the frequency of occurrence for the items will be same as those described previously for the Pleasant Events Schedule: 1. This has not happened in the past 30 days; 2. This happened a few times (1-6) in the past 30 days; 3. This has happened often (7 or more times) in the past 30 days. For the second response, subjective enjoyability of the items, the instructions will be modified slightly to read additionally: "If the event did not occur in the past 30 days, indicate how enjoyable it would have been if it had occurred." This is similar to the instructions used in MacPhillamy and Lewinsohn (1974) and should be able to better assess the reinforcing potential of those items which did not occur for the individual during this time period. Again, strength of pleasantness will be measured on a 3-point scale: 1. This was not at all pleasant; 2. This was somewhat pleasant; 3. This was very pleasant.

Beck Depression Inventory. The Beck Depression Inventory (Beck et al., 1961) is a 21-item inventory presented in multiple-choice format (four

choices to each item) designed to measure presence and degree of depression in adolescents and adults. Each item attempts to assess a specific symptom of depressed individuals. Although Beck is associated with the development of the cognitive theory of depression described previously (see Beck, 1967), the BDI was designed to assess depression independently of any particular theoretical bias.

The BDI was normed on 409 inpatients and outpatients from Pennsylvania. This population was predominantly Caucasian with a higher frequency of lower socioeconomic status, although subsequent research has reported that race seems to be a negligible factor concerning the reliability of this instrument (cf. Moran & Lambert, 1983). Most studies have also found that the effects of sex on BDI scores suggest no significant relationship (e.g., Oliver & Burkham, 1979).

Responses are indicated by having the subjects circle the number beside the statement they endorse. Each choice is given a weight of 0 to 3 points. The score is obtained by taking the highest score circled for each item and adding the total number of points for all items. The following guidelines have been recommended for classifying level of depression (Beck et al., 1961; Beck, Rush, Shaw, & Emery, 1979): 0-9 normal range, 10-15 mild depression, 16-19 mild-moderate depression, 20-29 moderate-severe depression, and 30-63 severe depression. It is noted that there is no arbitrary score that can be used for all purposes as a cutoff score and that the specific cutoff point used should depend upon the characteristics of the subjects used and the purpose for which the inventory is being given (cf. Stehouwer, 1985). Still, however, as noted by Deardorff and Funabiki (1985), of 16 studies from 1976 to 1982

that used the BDI alone for the classification of depression, 14 used a cutoff score of 9 or 10. Most recently, Kendall, Hollon, Beck, Hammen, and Ingram (1987) suggest that mild levels of depression are associated with scores of 10 to 20, with 10 to 17 suggesting dysphoria and greater than 17 more closely associated with depressive states.

In an investigation of the factor structure of the BDI, Beck and Beamesderfer (1974) found three major factors: negative view of self and future, physiological symptomatology, and physical withdrawal. Combined with the results of other such studies, it appears that the BDI is tapping the affective dimension of depression along with cognitive and physiological symptomatology (Stehouwer, 1985).

Studies on the reliability of the BDI have reported split-half reliability at .86 (Beck & Beamesderfer, 1974) and .93 (cf. Stehouwer, 1985). The test-retest reliability has been reported at .90 (Beck, 1970) and .78 at three weeks (Oliver & Burkham, 1979).

For validation of the BDI, two studies were reported by Beck et al. (1961). These studies were conducted with psychiatric populations, with psychiatric assessment of depth of depression as the criterion measure. Biserial correlation coefficients of .65 and .67 were obtained. More recent studies have investigated the content and concurrent validities of the scale. Moran and Lambert (1983) note that the BDI directly taps six of the nine identified variables of depressive symptomatology using DSM-III criteria, and two other variables partially. For concurrent validity, the BDI has been found to correlate .75 with the MMPI D scale (Beck, 1970), .77 with psychiatric estimate of depression (Bumberry et

al., 1978), and .80 with psychiatric rating using the Hamilton Rating Scale (Hammen, 1980).

In an effort to improve the temporal stability of the BDI, it was revised slightly in 1979 (Beck et al., 1979). The original instructions to complete the scale specified that the ratings be based upon the way the subject is feeling at the present time. In the revised version, subjects are asked to describe the way they have been feeling over the past week. In a study investigating the stability of the revised BDI, Zimmerman (1986) found that the 1-week test-retest reliability was .64 ($p < .001$). A direct comparison with the original version was not made, however, although the author suggests that the relative stability of the two versions of the BDI are similar.

Eysenck Personality Inventory - N Scale. The Eysenck Personality Inventory (EPI) (Eysenck & Eysenck, 1964, 1968), like its predecessor the Maudsley Personality Inventory (Eysenck, 1959), was constructed principally to measure two personality dimensions, neuroticism and extraversion. The EPI was developed from studies involving factor analytic investigations of normal and clinical populations to identify the major personality factors, as well as from analogue and applied experiments to establish correlates of these factors and to validate treatment programs (Friedman, 1985). In this study, only the N (Neuroticism) scale, containing 24 items, was used.

The N scale reflects the principal dimension of emotional normality-abnormality. Those individuals scoring high on N are generally nervous, maladjusted, and overemotional, which may dispose them to develop neurotic disorders under stress (Friedman, 1985).

Reported mean scores on this scale are 11.7 for females and 10.0 for males (Howarth, 1976). Factor analytic studies of the EPI (Howarth, 1976; Howarth & Browne, 1972) have found that the items of the N scale are more homogenous than the Extraversion scale (E), with higher item-scale correlations and low cross-correlations with the Extraversion scale.

Test-retest reliability of the N scale over one month was found to be .86, and internal consistency was .80 (cf. Friedman, 1985). The N scale has been shown to increase with increases in life stress (Hare & Payne, 1972), to decrease with recovery from psychiatric disorders (Knowles & Kreitman, 1965), and to be significantly higher in a variety of patient groups (e.g., anxiety, obsessional, and hysterical states) than in normal groups (Eysenck & Eysenck, 1964). Based on these results, the N scale has been noted to be an adequate measure of "general psychopathology" (Hill et al., 1986).

Reinforcement Survey Schedule. The Reinforcement Survey Schedule (RSS) (Cautela, 1977; Cautela & Kastenbaum, 1967) was developed to identify possible reinforcing stimuli together with their relative reinforcing values. The schedule contains 54 major items which the subject is asked to rate on a 5-point scale to indicate how enjoyable or satisfying he or she finds each stimulus event (the shorter version of this schedule derived from the cluster analysis which was also used, RSS', consisted of 17 items, #4, 5, 10, 14, 24, 31, 34, 35, 40, 41, 42, 44, 45, 46, 47, 48, 54). Although the RSS was developed within a behavior therapy model, the authors note that it could be employed equally well within other theoretical frameworks and empirical applications.

Cautela (1972, 1984; Cautela & Lynch, 1983) has outlined a number of different ways in which the RSS can be used in institutional or individual treatment programs: (1) responses can be used to choose back-up reinforcers for a token economy or contingency contracting program; (2) idiosyncratic reinforcers for clients can be identified and employed in shaping responses not currently in their repertoires; (3) identification of potential reinforcers can be used to increase the general level of reinforcement by urging clients to participate in activities that are reinforcing, especially for depressed clients; and (4) changes in clients' responses on the RSS can be used as a measure of treatment success with certain types of behavioral problems, particularly depression.

A reliability study of the RSS found that its test-retest reliability was .73 at one week, .67 at three weeks, and .70 at five weeks (Kleinknecht, McCormick, & Thorndike, 1973). Cautela and Kastenbaum (1967) administered the RSS to 165 undergraduates, and using a chi-square analysis for the frequency of choice for each response found that there was no significant difference in the tendency to pick any one category over any other category.

A number of validity studies have been conducted with the RSS on depression. Cautela (1972) administered the RSS at the beginning and end of treatment for depressive clients. It was found that on the second administration the clients rated more items as "Much" or "Very Much," indicating higher levels of potential reinforcement. In a later outcome study with inpatients (cf. Cautela & Lynch, 1983), 200 patients were interviewed at admission, discharge, and 1-year follow-up, and

administered the RSS. Results indicated that the subjects reported a significantly lower level of reinforcement for the month prior to admission. Also, a significant positive correlation was found between level of reinforcement and "Global Outcome" as rated by the interviewer one month after discharge on the Global Outcome Scale.

Frequency of Self-Reinforcement Questionnaire. As a means to measure a generalized self-reinforcement set, Heiby (1982, 1983c) developed the Frequency of Self-Reinforcement Questionnaire (FSRQ). The items were developed in order to be consistent with the hypothesis that individuals who typically require unrealistically high criteria in defining target responses and who frequently fail to attend to or discriminate a target response when it occurs will subsequently engage in a low frequency of self-reinforcement (LFSR) and thereby be predisposed to depression (Heiby, 1982).

The FSRQ was initially developed from a pool of 100 true-false items rationally derived by the author. From these, 30 items were selected by other researchers with at least 80% interrater agreement, as representative of Rehm's (1977) definition of self-reinforcement. These 30 items were then included in a scale entitled "Attitudes Questionnaire" in order to reduce subjects' hypotheses about its purpose, and administered to 100 undergraduates twice within an 8-week interval (cf. Heiby, 1982). Results showed a test-retest reliability coefficient of .92, and a split-half reliability of .87, both significant at $p < .0001$. The shorter version of this test derived from the cluster analysis which was also used (FSRQ') consisted of 12 items (#4, 10, 12, 14, 16, 17, 18, 19, 21, 24, 25, 30).

Validity studies with the FSRQ have found that scores on the measure are significantly correlated with self-praise during experimental tasks (Heiby, 1983c) and with frequency of self-monitored self-praise as well as experimenter ratings of the tendency to engage in self-reinforcement (Heiby, 1982). Subsequent studies using the FSRQ have involved identifying subtypes of depression, and were reviewed previously (Heiby, 1986; Heiby et al., 1984, 1987).

Unpleasant Events Schedule. The Unpleasant Events Schedule (UES) (Lewinsohn, 1975) is a 320-item scale for assessing the frequency and strength of aversiveness of stressful life events, and is similar in format to the Pleasant Events Schedule. The items were generated from a survey mailed to a sample of 390 heterogeneous subjects who had participated in previous studies conducted by Lewinsohn and his colleagues. These people were asked to list nine events which had happened to them recently, selecting three which had been very unpleasant, three which had been moderately unpleasant, and three which had only been slightly unpleasant. Second, a group of 24 subjects stratified by age and sex were asked to self-monitor unpleasant events which had happened to them during a seven-day period. Together, all these items were grouped into seven categories, and 320 items were selected to form the UES.

Test-retest reliability of the frequency ratings of the full scale has been found at .67 for one month, .68 for two months, and .64 for three months, and the coefficient alpha (internal consistency) was .96. For the strength of aversiveness, the test-retest reliabilities for the same periods were .67, .61, and .45, and the coefficient alpha was .98

(Lewinsohn & Talkington, 1979). These authors also found that the correlation coefficients of the frequency ratings, strength ratings, and cross-product scores of the UES with the BDI were .13 ($p > .05$), .26 ($p < .05$), and .34 ($p < .01$), respectively. The UES frequency data was summarized by noting that the depressed subjects were neither markedly nor uniquely elevated in the overall frequency with which they reported aversive events during the 30-day period. For the aversiveness data, the depressed subjects were only elevated on three of the seven subscales. However, the UES was found to be sensitive to clinical improvement in depression level following treatment, in that on the final post-treatment assessment, the depressives were indistinguishable from the controls on the UES ratings.

A short-form of the UES has subsequently been developed (MacPhillamy & Lewinsohn, 1982). A factor analysis was conducted on the UES by these authors, and those items which loaded above .40 on the first principal component scale derived from the UES cross-product scores were selected. This resulted in obtaining 53 items. The short-form scale was found to have a coefficient alpha of .93. This form of the UES will be used in the present study. The shorter versions of these scales derived from the cluster analysis which were also used (UES-F' and UES-S') consisted of 20 items each (#3, 8, 14, 17, 20, 23, 25, 26, 28, 35, 36, 38, 39, 40, 41, 43, 46, 47, 50, 51).

Interpersonal Behavior Survey. The Interpersonal Behavior Survey (IBS) (Mauger & Adkinson, 1980) was developed to distinguish assertive behaviors from aggressive behaviors and to sample subclasses of these behaviors. It has also been used as a measure of social skills (Heiby,

1986). The full survey consists of 272 true-false items which fall under four categories: validity, aggressiveness, assertiveness, and relationship scales. Each of these scales is further divided into additional (but overlapping) subscales. Three strategies were reported to be used in constructing the scales of the IBS. An initial set of scales was developed through internal consistency item analysis. Items having significant correlations with the Denial scale were deleted to minimize the effects of social desirability. The resulting scales were then evaluated by item analysis procedures based on a multitrait model. Empirical item analysis techniques were also used in the development of other subscales.

Reliability was determined by using a test-retest procedure over both a 2-day and 10-week period and by assessing the internal consistency of each scale. These reliabilities of the scales range from the low. 70's to the mid .90's (Mauger & Adkinson, 1980). A number of validity studies was conducted comparing relations with a number of other self-report scales. The scale measuring General Assertiveness correlated .47 with the Dominance scale of the California Psychological Inventory, .64 with the College Self-Expression Scale, and .74 with the Rathus Assertiveness Schedule. The discriminant validity of this subscale was also shown in a minimal correlation (r=.22) with the Aggression scale on the Edwards Personal Preference Schedule.

The IBS has also been used to measure treatment outcome (L'Herrison, 1979). The IBS was used here to study the effects of the sex of group leaders on female participants in assertiveness training groups. Results showed that participants in groups with male and female

co-leaders had significant increases in aggressiveness following training, while participants in groups with two female co-leaders showed no significant changes in pre-post aggressiveness scores. For both groups, however, there were significant pre-post differences obtained on every IBS assertiveness scale. Margalit and Mauger (1984) have also used the IBS in a cross-cultural demonstration of the orthogonality of assertiveness and aggressiveness in Israeli and U.S. students. Results showed that differences exist in the amount of assertiveness and aggressiveness expressed, but that both groups conceptualize these as independent classes of interpersonal behavior. In summary, Franzoi (1985) notes that the IBS "has been developed with a good deal of technical skill.... Taking these findings as a whole, a tentative conclusion is that the IBS generally has good reliability and internal consistency...[and] that the IBS scales are valid measures of aggressiveness and assertiveness" (pp. 699-700).

In the present proposed study, a short-form of the IBS will be used consisting of 72 items from the General Assertiveness scales to serve as a measure of social skills (reflective of the sensory-motor repertoire). The shorter form of this version derived from the cluster analysis which was also used (IBS') consisted of 23 of these items (#1, 3, 7, 8, 17, 20, 26, 31, 33, 38, 39, 40, 43, 45, 46, 47, 49, 50, 55, 67, 69, 71, 72).

Perceived Social Support Scales. The Perceived Social Support scales (Procidano & Heller, 1983) were designed to measure the extent to which an individual perceives that his or her needs for support, information, and feedback are fulfilled by friends (PSS-Fr) and by family (PSS-Fa). This distinction between friend and family support was considered

important since different populations may rely on or benefit from friend or family support to a different extent (see Heller & Swindle, 1983).

The PSS-Fr and PSS-Fa are each 20-item scales, with each item scored Yes, No, or Don't Know. The scales were developed on a large sample of college students. From an original pool of 84 items generated to reflect instances of provision of support, an intermediate pool of 35 items was selected according to the magnitude of the correlations between the item and the scale total. Each of these 35 items was then duplicated to refer to friends and family, and then reduced to 20 items for each. Reliability tests showed the PSS-Fr and PSS-Fa to be relatively homogeneous measures with internal consistency coefficients of .88 and .90, respectively (Procidano & Heller, 1983). Factor analyses by these authors indicated that each scale was composed of a single factor, as was expected. The shorter form of this test derived from the cluster analysis which was also used (PSS') consisted of 10 items (#1, 2, 7, 10, 13, 21, 23, 24, 31, 34).

Validity studies showed that the PSS-Fr was significantly and negatively correlated with the MMPI scales Pt and Sc, while the PSS-Fa was significantly and negatively related to the D, Pt, and Sc scales. Also, both scales were better predictors of symptomatology (as measured by the MMPI and CPI) than were life events or social network characteristics. Procidano and Heller also report the results of previous pilot studies which found that among adult male alcoholics, nonrelapsers were significantly higher in perceived social support from family and friends than relapsers. Also, for recovered schizophrenics and manic-depressives, both groups reported smaller social networks than

normal control subjects and former schizophrenics reported the lowest levels of perceived friend and family support. Fondacaro and Heller (1983) found that alcohol use among male college students was significantly positively related to high levels of social interaction and competence, but not to perceived social support. However, psychological symptomatology (as measured by the Brief Symptom Inventory) was significantly negatively related to perceived social support. Finally, using a self-constructed measure of perceived social support similar to the PSS, Warren and McEachren (1983) found that there was a significant negative association between perceived social support and depressive symptomatology in adult women.

Automatic Thoughts Questionnaire. Hollon and Kendall (1980) developed the Automatic Thoughts Questionnaire (ATQ) to measure the frequency of occurrence of automatic negative thoughts associated with depression. A total of 156 male and female undergraduates were asked to recall dysphoric experiences and report their associated cognitions. One hundred representative cognitions were selected and administered to a second sample of 156 subjects, along with the MMPI D scale and the Beck Depression Inventory. Thirty items discriminating between criterion groups of psychometrically depressed and nondepressed subjects were identified from this. The resultant 30-item questionnaire was cross-validated and found again to significantly discriminate depressed from nondepressed subjects. No differences were found between males and females on the ATQ. The split-half reliability coefficient was .97. Item-to-total correlations ranged from .47 to .78. The shorter version

of this test derived from the cluster analysis which was also used (ATQ') consisted of 10 items (#1, 3, 4, 5, 7, 9, 18, 23, 26, 28).

Harrell and Ryon (1983) examined the applicability of the ATQ to clinical populations of depressed clients. Results found that compared to nondepressed outpatients and nondepressed medical patients, significantly higher ATQ scores were found for outpatient depressed clients. The ATQ also correlated significantly with therapist ratings of depression, the MMPI D scale, and the BDI. Mean scores on the ATQ were: 88.9 for clinically depressed clients, 79.6 for subclinically depressed college students, and 38, 42, and 48 for nondepressed subjects.

Two studies have subsequently compared the ATQ with another popular measure of depressive cognitions, the Dysfunctional Attitudes Scale (DAS) (Weissman & Beck, 1978). Dobson and Breiter (1983) found that the ATQ had higher internal consistency than the DAS, .96 versus .90 for males and .95 versus .88 for females, respectively. The ATQ also had a higher correlation with the BDI, .62 versus .30 for the DAS. Hollon, Kendall, and Lumry (1986) found that ATQ scores covaried directly with levels of syndrome depression as measured by the BDI, while there was less clear specificity in covariation obtained for the DAS. These results showed that the ATQ is a rather good descriptor of cognitions in depression, while the DAS seems to reflect cognitions associated with more general psychopathology.

Procedure

The subjects were administered the questionnaires in a single packet, with the order of the inventories counterbalanced (see the

Appendix, p. 88, for a copy of the packet of questionnaires used). Completion time for the entire packet was estimated to average about 60 to 90 minutes. Total scores were computed on each scale, along with scores for the shorter versions where applicable.

On the basis of the total scores on the frequency ratings of the PES Mood-Related scale (PES-F), the subjects were divided into upper 25% (High) and lower 25% (Low). A similar procedure was done for the strength of pleasantness ratings (PES-S). Subjects were then divided into four groups as follows: those scoring in the upper 25% of both scales (High Strength-High Frequency); upper 25% of strength ratings and lower 25% of frequency ratings (High Strength-Low Frequency); lower 25% of strength ratings and upper 25% of frequency ratings (Low Strength-High Frequency); and lower 25% of both scale (Low Strength-Low Frequency). Subject breakdown was 53 in High Strength-High Frequency, 31 in High Strength-Low Frequency, 24 in Low Strength-High Frequency, and 47 in Low Strength-Low Frequency. This approach to categorizing subjects was considered to be likely to produce better differentiated groups than that used in Rose and Staats (1987). Following this, analysis of variance tests were then performed on each of the other scales used, proceeded by Bonferroni tests (Kirk, 1968; Larzelere & Mulaik, 1977) to test for the specific comparisons hypothesized. The analyses were performed using the BMDP statistical software package (Dixon, 1985).

For the secondary hypotheses related to the High Strength-Low Frequency (HS-LF) group, a median split was made on the basis of scores of the shorter version of the Unpleasant Events Schedule Frequency

ratings (UES-F'), forming High and Low groups. This scale was considered as a suitable measure of significant negative life events. *T*-tests were then performed to test the specific predictions.

Chapter VII

Results

Presented in Table 1 (see p. 68) is the correlation matrix of all the measures used. As indicated, the Pleasant Events Schedule strength of pleasantness (PES-S) and frequency (PES-F) ratings had a moderate positive correlation (r=.51, p<.01). Also, as expected, the Beck Depression Inventory (BDI) was negatively correlated with the PES-S (r=-.32, p<.01), the PES-F (r=-.32, p-<.01), the Reinforcement Survey Schedule (RSS) (r=-.24, p<.02), the Frequency of Self-Reinforcement Questionnaire (FSRQ) (r=-.44, p<.01), the Interpersonal Behavior Survey (IBS) (r=-.42, p<.01), and the Perceived Social Support Scale (PSS) (r=-.30, p<.01). The BDI was positively correlated with the Eysenck Personality Inventory (EPI) N scale (r=.45, p<.01), and the Automatic Thoughts Questionnaire (ATQ) (r=.71, p<.01). The shorter versions of seven of the instruments used all had significant positive correlations with their standard forms.

T-tests were performed to the test for sex differences on the instruments used, with all results being nonsignificant. The subjects were then divided into upper and lower quartiles based on both the strength of pleasantness and frequency ratings of the Pleasant Events Schedule Mood-Related Scale, as described in the Procedure section. Fifty-three subjects scored in the upper 25% of both strength and frequency (HS-HF), 31 scored in the upper 25% of strength and lower 25% of frequency (HS-LF), 24 scored in the lower 25% of strength and upper 25% of frequency (LS-HF), and 47 scored in the lower 25% of both strength and frequency (LS-LF). See Table 2 (p. 69) for the means on

Table 1

Correlations between Measures (all groups)*

	PES-S	PES-F	BDI	EPI	RSS	RSS'	FSRQ	FSRQ'	UES-S	UES-S'	UES-F	UES-F'	IBS	IBS'	PSS	PSS'	ATQ	ATQ'
PES-S																		
PES-F	.51																	
BDI	-.32	-.32																
EPI	-.01	-.03	.45															
RSS	.49	.29	-.24	-.06														
RSS'	.52	.40	-.31	-.07	.72													
FSRQ	.15	.17	-.44	-.37	.14	.14												
FSRQ'	.25	.23	-.28	-.10	.17	.10	.50											
UES-S	.24	.01	.16	.25	.08	.04	-.15	-.06										
UES-S'	.20	-.04	.15	.26	.11	.06	-.16	-.03	.88									
UES-F	.02	.31	.29	.25	.06	.04	-.24	-.12	.25	.14								
UES-F'	.00	.21	.32	.21	.10	.03	-.23	-.16	.27	.22	.85							
IBS	.29	.38	-.42	-.41	.18	.22	.48	.27	-.13	-.11	-.07	-.16						
IBS'	.26	.33	-.33	-.30	.10	.14	.38	.16	-.07	-.08	-.03	-.04	.71					
PSS	.34	.33	-.30	-.21	.19	.22	.23	.26	.06	-.02	-.11	-.17	.42	.31				
PSS'	.22	.26	-.20	-.19	.17	.20	.20	.20	-.03	-.11	-.11	-.11	.31	.30	.34			
ATQ	-.21	-.26	.71	.52	-.16	-.22	-.49	-.34	.29	.23	.37	.35	-.47	-.38	-.31	-.25		
ATQ'	-.13	-.21	.70	.53	-.12	-.21	-.51	-.34	.29	.22	.44	.41	-.42	-.34	-.26	-.24	.92	

*for $p < .05$, $r > .195$
for $p < .02$, $r > .230$
for $p < .01$, $r > .254$

Table 2

Mean Scores on Measures
by Strength and Frequency

	High-High	High-Low	Low-High	Low-Low
PES-S	90.79	89.13	72.29	63.77
PES-F	73.60	46.55	68.79	43.83
BDI	5.58	10.87	10.92	11.28
EPI	10.43	12.06	12.83	11.08
RSS	438.87	429.13	395.86	368.43
RSS'	74.66	70.81	67.62	59.40
FSRQ	50.21	48.10	48.08	48.06
FSRQ'	21.62	20.97	20.38	19.74
UES-S	66.24	74.36	60.83	59.23
UES-S'	23.40	26.26	21.08	22.13
UES-F	43.32	36.23	47.33	34.23
UES-F'	14.11	12.58	15.50	11.62
IBS	120.91	110.55	113.88	107.32
IBS'	39.85	35.71	36.75	34.19
PSS	31.62	27.39	28.71	24.17
PSS'	8.57	7.10	6.67	6.55
ATQ	46.51	57.64	57.25	55.23
ATQ'	16.42	20.23	19.46	18.92

all measures for these groups of subjects. The effectiveness of this categorization procedure for maximizing differences between High and Low groups on the PES was demonstrated by the finding that for both the strength of pleasantness and frequency ratings (PES-S and PES-F, respectively), the scores for both of the Low groups were significantly less (all $p < .001$) than for the corresponding High groups. Thus, since the scores differed significantly at this level for High and Low strength subjects and also for High and Low frequency subjects, it can be noted that group differences were maximized as desired.

Due to the relatively large number of statistical analyses in this study, the probability of Type I errors was inflated. To address this problem, an alpha level of .01 was set as the acceptable criterion for significance of the analysis of variance tests. Planned group comparisons were conducted for all measures yielding a significant overall analysis of variance at the .01 level. To then correct for the inflated alpha levels due to the multiple comparisons done for each ANOVA, the .05 alpha level for these planned *t*-tests was divided by 6 (the total number of group comparisons for each ANOVA), yielding as the criterion a *p* value of less than .0083 to consider groups significantly different (Larzelere & Mulaik, 1977). Table 3 (see p. 71) presents the results for the main effects and interactions for Strength of Pleasantness and Frequency of Pleasant Events for each of the instruments used, and Table 4 (see p. 72) presents the *t*-test values from the Bonferroni tests for the planned comparisons of the groups on all measures.

Table 3

F-Values for Effects of Strength of Pleasantness and Frequency of Pleasant Events

	Strength	Frequency	Interaction
BDI	7.01**	6.79**	5.17*
EPI	0.82	0.01	4.64*
RSS	23.80**	3.08	0.70
RSS'	21.90**	9.39**	1.23
FSRQ	1.32	1.29	1.24
FSRQ'	6.11*	1.65	0.00
UES-S	8.43**	0.85	1.88
UES-S'	5.38*	1.98	0.43
UES-F	0.19	19.19**	1.70
UES-F'	0.05	8.02**	1.51
IBS	5.12*	13.92**	0.70
IBS'	5.49*	11.56**	0.64
PSS	5.29*	10.82**	0.01
PSS'	4.63*	2.95	1.43
ATQ	2.40	2.88	5.99**
ATQ'	0.86	3.05	5.43*

*$p < .05$
**$p < .01$

Table 4

T-Values for Planned Comparisons of Groups

	LS-LF: LS-HF	LS-LF: HS-LF	LS-LF: HS-HF	LS-HF: HS-LF	LS-HF: HS-HF	HS-LF: HS-HF
BDI	0.21	0.25	4.29**	0.03	3.76**	3.93**
EPI	-1.84	-0.91	0.69	0.67	2.34	1.44
RSS	-1.91	-4.40**	-5.39**	-2.15	-2.90*	-0.69
RSS'	-3.02*	-4.61**	-5.91**	-1.28	-2.71*	-1.65
FSRQ	-0.02	-0.02	-2.16	-0.01	-2.06	-1.32
FSRQ'	-0.85	-1.79	-3.17*	-0.74	-1.71	-0.98
UES-S	-0.34	-3.64**	-1.55	-2.92*	-1.09	1.80
UES-S'	0.55	-2.75*	-0.72	-2.79*	-1.14	1.66
UES-F	-3.90**	-0.70	-3.21*	3.21*	1.16	-2.41
UES-F'	-2.85*	-0.85	-2.17	1.99*	0.94	-1.21
IBS	-2.25	-0.86	-5.49**	0.85	-2.60	-2.87*
IBS'	-1.95	-0.92	-4.87**	0.66	-2.99*	-2.87*
PSS	-2.15	-1.70	-4.96**	0.56	-1.42	-2.32
PSS'	-0.21	-0.88	-2.79*	-0.65	-2.49	-1.81
ATQ	-0.53	-0.64	2.76*	-0.09	-2.83*	2.96*
ATQ'	-0.39	-1.02	2.25	-0.51	2.23	3.04*

* Significant at .05 level
**Significant at .01 level

Effects for Depression and General Psychopathology

Considering the Beck Depression Inventory, the results replicated the findings of the Rose and Staats (1987) study. It was again predicted here that the High Strength-Low Frequency (HS-LF) group would score significantly higher (i.e., more dysphoric) than the nondepressed High Strength-High Frequency (HS-HF) group, and that the two Low Strength groups (LS-HF and LS-LF) would not differ significantly from each other. The results of the planned comparisons showed that the LS-LF, LS-HF, and HS-LF groups all scored significantly higher than the HS-HF group, and were not significantly different from each other, thereby supporting these hypotheses.

In contrast to the above findings, for the Eysenck Personality Inventory N scale, the measure of general psychopathology, no effects were significant. Considered in comparison with the significant findings for the BDI, these results would suggest that the BDI was measuring something here other than just the "general psychopathology" construct supposedly being tapped by the EPI.

Emotional-Motivational Repertoire

For the Low Strength of Pleasantness groups (LS-LF and LS-HF), it was predicted that scores would be lower on those measures tapping the emotional-motivational repertoire, thereby reflecting deficits in this system. These measures included the Reinforcement Survey Schedule (RSS), the Frequency of Self-Reinforcement Questionnaire (FSRQ), and the Unpleasant Events Schedule strength of unpleasantness ratings (UES-S). Results showed that subjects with a low strength of pleasantness scored significantly lower on the RSS and UES-S than did those with a high

strength of pleasantness, as was expected (similar results were found for the shorter versions, RSS' and UES-S'). For the FSRQ, however, there was no effect of strength, frequency, or interaction (for the FSRQ', the Low Strength groups scored slightly lower, but this was not significant at the .01 level). For this measure, the groups were all fairly close in scores.

With respect to the planned comparisons among the groups, for the Reinforcement Survey Schedule (RSS), the difference between the High Strength groups (HS-HF and HS-LF) was not significant, nor was the difference between the Low Strength groups (LS-LF and LS-HF). The HS-HF group was significantly higher than the LS-HF and LS-LF groups, and the HS-LF group was significantly higher than the LS-LF group, thus supporting the hypothesis that the Low Strength conditions would score lower on this measure. A similar pattern of results was also found for the RSS', although here the LS-HF group scored slightly higher than the LS-LF group.

For the Unpleasant Events Schedule strength of unpleasantness ratings (UES-S, and also its shorter version, UES-S'), as for the RSS, the HS-HF:HS-LF and LS-LF:LS-HF comparisons were not significant. The High Strength-Low Frequency (HS-LF) group scored significantly higher (i.e., greater unpleasantness for the events) than the Low Strength groups (LS-HF and LS-LF), supporting the prediction that the Low Strength subjects would score lower on this measure, showing less aversiveness for these unpleasant events (i.e., less negative emotional response). Thus, for two of the three measures of the emotional-motivational repertoire (RSS and UES-S, and their shorter versions), the

predictions of lower scores for the Low Strength conditions were obtained, thereby supporting the hypothesized deficits in this repertoire for these individuals.

Sensory-Motor Repertoire and Environmental Situation

For the High Strength of Pleasantness-Low Frequency (HS-LF) condition, it was predicted that these individuals would score lower than the Low Strength groups on scales measuring aspects of the sensory-motor repertoire, such as social skills. In addition, HS-LF subjects were expected to report less social support and a greater number of negative events. These domains were assessed by the Interpersonal Behavior Survey (IBS), the Perceived Social Support Scale (PSS), and the Unpleasant Events Schedule frequency ratings (UES-F), respectively.

Results of the analysis of variance tests showed that the two High Frequency of Pleasant Events conditions had significantly higher scores on the Interpersonal Behavior Survey (IBS), Perceived Social Support Scale (PSS), and Unpleasant Events Schedule frequency ratings (UES-F) than the Low Frequency conditions (similar results were found for their shorter versions, IBS' and UES-F', but results did not reach significance for the PSS'). Thus, as was expected, it was found that for subjects with a low frequency of occurrence for pleasant events, there were deficits in social skills and social support. These subjects did not, however, have a greater number of unpleasant events. In fact, they had a significantly fewer number.

With respect to the planned comparisons, for the Interpersonal Behavior Survey (IBS), the nondepressed HS-HF group indicated a higher level of social skills than all other groups, as expected. Contrary to

what was predicted, though, the High Strength-Low Frequency (HS-LF) group was not significantly lower than either Low Strength group (similarly for the IBS'). Thus, the results showed that there was a social skills deficit across the depressed/dysphoric HS-LF, LS-HF, and LS-LF groups.

On the Perceived Social Support Scale (PSS, and its shorter version, PSS'), the nondepressed HS-HF group reported significantly higher social support than the Low Strength-Low Frequency (LS-LF) group. But, contrary to prediction, the High Strength-Low Frequency (HS-LF) group did not score significantly lower than the LS-HF group. Results showed that the depressed/dysphoric HS-LF, LS-HF, and LS-LF groups did not significantly differ from each other in terms of perceived social support.

On the Unpleasant Events Schedule frequency ratings (UES-F), contrary to the prediction, the High Strength-Low Frequency of Pleasant Events (HS-LF) group reported significantly fewer unpleasant events than the Low Strength-High Frequency (LS-HF) condition. Further, the two High Frequency groups (LS-HF and HS-HF) were not significantly different from each other. These results indicate that subjects with a low frequency of pleasant events also experienced a lower number of unpleasant events, and that this relationship was not affected by the strength of pleasantness for pleasant events.

Language-Cognitive Repertoire

For the High Strength-Low Frequency (HS-LF) condition, it was also predicted that these subjects would evidence greater dysfunction in the language-cognitive system, as indicated by higher scores on the

Automatic Thoughts Questionnaire (ATQ), than the Low Strength subjects. The ANOVA results showed that the main effects for both strength of pleasantness and frequency of pleasant events were nonsignificant for this measure (and also for the shorter version, ATQ'). The interaction component, however, was significant at the .01 level.

The planned comparisons of the groups showed that the nondepressed HS-HF condition had significantly less cognitive dysfunction than all other groups, which were approximately equivalent with each other. Thus the depressed/dysphoric HS-LF, LS-HF, and LS-LF groups all showed a dysfunctional language-cognitive repertoire, as measured by this instrument.

Influence of Negative Life Events on HS-LF Subjects

For the High Strength-Low Frequency (HS-LF) subjects, a median split was performed on the scores of the shorter version of the frequency ratings of the Unpleasant Events Schedule (UES-F'), a measure of strong negative life events. The mean number of the negative events for the subjects with a high frequency of their occurrence was 16.8, and the mean for the group with a low frequency of the negative events was 8.6 ($p < .001$).

T-tests were then performed on all other measures. Table 5 (see p. 78) presents the mean scores for both groups on all measures and the results of the t-tests. As predicted, the results showed that subjects with a high frequency of the negative events had a significantly higher level of depression (BDI), as well as greater cognitive dysfunction (ATQ and ATQ'). However, the groups were not significantly different on measures of social skills (IBS, IBS') or social support (PSS, PSS').

Table 5

Mean Scores of HS-LF Subjects Using
Median Split on UES-F'

	Mean		
	Low	High	t
BDI	7.8	10.9	-2.76**
EPI	10.7	12.1	-1.80
RSS	402.9	416.2	-1.19
RSS'	67.3	69.2	-0.91
FSRQ	49.7	47.7	2.27*
FSRQ'	21.1	20.3	1.77
UES-S	62.4	67.9	-1.58
UES-S'	22.6	24.0	-0.99
IBS	114.9	112.0	1.25
IBS'	36.9	36.7	1.07
PSS	28.2	28.0	0.14
PSS'	7.6	7.0	1.07
ATQ	49.6	57.2	-2.86**
ATQ'	17.0	20.2	-3.50**

*$p < .05$
**$p < .01$

Chapter VIII

Discussion

Correlations among Measures

As indicated in the Results chapter, the correlations of the Beck Depression Inventory (BDI) with the other instruments were all in the direction expected and in keeping with the findings of previous studies. The correlations of the strength of pleasantness and frequency ratings of the Pleasant Events Schedule (PES-S and PES-F) with the other measures were also as expected, except for the Eysenck Personality Inventory (EPI) N scale. This study found a nonsignificant correlation between the PES-S and EPI-N of -.01, compared to -.33 ($p<.05$) in the Bouman and Luteijn (1986) study, and a correlation of -.03 between the PES-F and the EPI-N, compared to -.32 ($p<.05$) by Bouman and Luteijn. Differences between the present study and theirs which could possibly help account for the differences include that they used a Dutch translation of the scale, and also used a patient sample, not an analogue one. Further work seems necessary here to help determine what the actual relationship between these measures is.

The shorter versions of the instruments used all had significant positive correlations with the standard forms. These correlations were quite strong for the Reinforcement Survey Schedule, Unpleasant Events Schedule strength and frequency ratings, the Interpersonal Behavior Survey, and the Automatic Thoughts Questionnaire (ranging from .71 to .92), and moderate for the Frequency of Self-Reinforcement Questionnaire ($r=.50$). Only the Perceived Social Support Scale showed a lower, but still significant, correlation with its shorter form ($r=.34$). The

pattern of differences for the planned comparisons between the standard and shorter forms was quite similar for most of the instruments, but the predicted greater differentiation by the shorter forms was not obtained. Still, these initial results suggest that viable shorter forms of these standard instruments can be constructed and used, although more work is necessary to further refine these shorter versions.

Hypotheses of Study

With respect to the hypotheses of the study, first, the results of the Rose and Staats (1987) study were replicated, as predicted. It was found again that for individuals with a high reported strength of pleasantness for mood-related pleasant events, those with a low frequency of the occurrence of these events had a significantly higher level of reported depression/dysphoria than did those individuals with a high level of frequency. Furthermore, the mean score on the BDI for the subjects in the High Strength-Low Frequency (HS-LF) group was still slightly above the cutoff mark for mild depression/dysphoria (Kendall et al., 1987) (10.87 in the present study, 10.44 in Rose & Staats [1987]). For those subjects with a low level of reported strength of pleasantness for the pleasant events, the level of frequency of occurrence did not significantly affect reported depression. Both of these groups with a low strength of associated pleasantness also had mean BDI scores slightly above the cutoff mark for mild depression/dysphoria (10.92 for LS-HF and 11.28 for LS-LF, compared to 10.59 and 12.12, respectively, for Rose & Staats [1987]).

A different pattern of results was obtained for these groups on the Eysenck Personality Inventory N scale, designed to be a measure of "neuroticism" or "general psychopathology". For this measure, there were no significant differences between any of the four groups. These results suggest that, in this sample, high/low strength of pleasantness and frequency of pleasant events were associated with depression/dysphoria (as measured by the BDI), but were not associated with the "general psychopathology" construct supposedly being tapped by the EPI. Whatever this latter test measures, these findings indicate that it does not concern such things as the individual's emotional-motivational system or life situation, with respect to the strength and frequency variables which may be productive of depression.

The next set of hypotheses, which predicted that for the Low Strength of Pleasantness groups, scores would be lower on measures tapping the emotional-motivational personality repertoire, was supported for two of the three measures of this system (the Reinforcement Survey Schedule and the Unpleasant Events Schedule strength of aversiveness ratings). The Low Strength of Pleasantness subjects were found to have experienced a lower level of positive reinforcement, indicative of poor positive emotional conditioning. These subjects were also found to report a lower level of aversiveness attached to unpleasant events, thereby indicating a lower level of emotional responding to negative events as well. Thus, overall, the Low Strength individuals appeared to be characterized by significant deficits in the emotional-motivational system, as predicted.

The lack of significant differences between the two Low Strength conditions (LS-HF and LS-LF) on all of the measures except one (the frequency ratings of the Unpleasant Events Schedule) lends support to paradigmatic behaviorism's analysis of the emotional properties of the events under study, described previously, the basis upon which the hypotheses were made. That is, the frequency of occurrence of the events for individuals who reported that these events only weakly elicited positive emotional responses in them, had no significant effect upon their emotional state (as was posited by the theory) and was not indicative of differences in the personality repertoires. Thus, the Low Strength of Pleasantness groups can be considered as essentially one subtype, as posited in Rose and Staats (1987), and characterized mainly by a deficit emotional-motivational repertoire.

Additional hypotheses tested related to predicted deficits in the sensory-motor and language-cognitive repertoires for the High Strength-Low Frequency (HS-LF) group. As expected, the main effects for these instruments showed that subjects with a low frequency of occurrence for pleasant events did display reported deficits in social skills and social support. The planned comparisons, however, showed that the HS-LF group was not significantly lower in these areas, but rather that scores on these measures were fairly constant across all three depressed/dysphoric groups (HS-LF, LS-HF, and LS-LF). A similar pattern of comparison results was found with the measure of the language-cognitive system. Thus, all of the depressed/dysphoric groups showed a similar deficit level within measures for social skills, social support, and cognitive functioning.

An interesting finding here was that the subjects with a lower frequency of the pleasant events also had a lower frequency of unpleasant events (the frequency of unpleasant events for the HS-LF group was significantly lower than for the LS-HF group). This could be due to these individuals having a lower overall rate of interactions or activities in their social environment, and thus experiencing a lower frequency of both pleasant and unpleasant events. Considered in comparison with Lewinsohn's studies described earlier which did not find a consistent relationship between the frequency of pleasant and unpleasant events, these findings suggest that when different subtypes of depression are analyzed, significant differences can be found. Further work seems needed now to replicate this finding and to determine what factors are involved.

A secondary set of hypotheses related specifically to the High Strength-Low Frequency (HS-LF) group. It was suggested that these individuals would form two distinct sub-groups: one type with a recent history of experiencing some major negative life events, and another, more deprived type, without this history. As predicted, results showed that those individuals with a high frequency of the negative events had a significantly higher level of depression/dysphoria, as well as cognitive dysfunction. One explanation could be that the intense, disruptive impact of recently experiencing these negative events would help account for these greater negative effects on mood level (as well as on cognitive functioning in such areas as view of the world and the future). Contrary to what was predicted, however, differences were not found between the two sub-groups on measures of social skills or social

support. Perhaps just looking at the presence or absence of one particularly highly significant negative life event (e.g., onset of a major illness or injury, divorce, etc.) among individuals in the High Strength of Pleasantness-Low Frequency of Pleasant Events group would be better able to produce the hypothesized differences in these areas.

Summarizing the results, for identifying and classifying subtypes of unipolar depression, it was indicated that one such subtype would involve a low strength of emotional response for pleasant events, with either a high or low frequency of their occurrence. This subtype in the present theory is further characterized as involving, generally, a deficit emotional-motivational repertoire. This receives support from the finding that there is low responding to positive and negative emotional events. In addition, the subtype is characterized as having deficits in social skills and cognitive functioning (aspects of the sensory-motor and language-cognitive repertoires).

Another subtype involves individuals with a high strength of pleasantness for pleasant events but with a low frequency of their occurrence. This subtype does not show a deficient emotional-motivational system, but does have the deficits in the sensory-motor and language-cognitive systems, which produces the low frequency of pleasant events. There is some preliminary evidence for further distinctions within this group, based on a high or low number of negative life events, but additional work needs to be done to elaborate on this.

Implications of Findings

It is also of interest to place the present findings within the larger context of the classification scheme presented by the Staats-

Heiby theory of depression. As described previously, the present study, as well as the Rose and Staats (1987) study, in applying a paradigmatic behaviorism analysis to the investigation of pleasant events and depression, has been able to study a unique variable posited by the theory, poor positive emotional conditioning (Heiby, 1987; see Figure 1, p. 26). The Rose and Staats (1987) study, by identifying a subtype of depression involving a low strength of response for pleasant events, offered initial confirmation for this variable of poor positive emotional conditioning. This finding is strengthened by the replication of this subtype in the present study. Further support comes from the finding here that this subtype is characterized by measured deficits in the emotional-motivational system. Thus, it can be seen how the specification the repertoires and environmental elements in the Staats-Heiby theory led to the identification of a unique variable, and then to its empirical confirmation.

Paradigmatic behaviorism theory further posits that once the determinants of depression are identified and validated, treatments for depression will be able to be matched to correct the particular deficits involved in each specific case (Heiby, 1986, 1987). For the subtypes identified in the present study, the findings lend support to the differential treatment implications suggested in Rose and Staats (1987). Thus, for the High Strength-Low Frequency subtype, treatment would still seem best to focus upon working to increase the individual's level of pleasant activities and also upon improving his/her social skills as part of this process (again, similar to the treatment program advocated by Lewinsohn). For the other subtype, Low Strength of Pleasantness,

treatment would still seem to be better focused at first upon working to modify aspects of the individual's emotional-motivational personality repertoire (an approach that would not derive from Lewinsohn's theory). The work that is now needed on these subtypes involves their confirmation within actual clinical samples of depressives and then testing of the treatment differences proposed above.

Conclusion

In conclusion, although it can be noted now that there is some overlap between Lewinsohn's revised theory and the Staats-Heiby theory, the greater development and integration of the personality repertoires in the Staats-Heiby model is still of greater heuristic value. Because its propositions are more testable, it provides a greater opportunity for the empirical analysis of different subtypes of depression. Such was the case with the present study, where specific hypotheses regarding predicted subtypes were derived from the theory, which were then verified in an analogue sample and can now serve as the foundation for future studies on treatment differences. The present approach can in this manner be contrasted to the earlier unitary approaches, where a failure to distinguish among subtypes of depression led to confusing and inconsistent results (see also Doerfler, 1981).

The present work in depression can also be seen as relating to the much larger area of psychology in general. Lewinsohn et al. (1985) noted that theories of depression are important not only because of the prevalence and seriousness of the disorder, but, at a more general level, because of their potential relevance for larger theories of behavior. This is such that depression involves interactions between

overt and covert behavior; among emotions, cognitions, and behaviors; and between current and remote situations. Theories of depression thereby "provide a testing ground for many of the more important issues in psychology" (p. 352). This ties in well with the philosophy of the present approach, which has as its goal the task of unifying these traditionally separated theories of behavior and areas of knowledge within psychology (see Staats, 1983). The Staats-Heiby theory thus places a high level of importance on this task of identifying subtypes of depression and then ultimately integrating them into a cohesive, unified framework which follows from the larger, general theory of human behavior.

This work in depression is but one example of how the paradigmatic behaviorism theory of psychopathology has been applied over various different domains of problems, including anxiety and panic disorders (Campos, 1986; Eifert, in press) and childhood behavior disorders (Burns, 1987). Such efforts help support the philosophy of paradigmatic behaviorism (Staats, 1986a) and its program of research efforts directed toward the integration and unification of the knowledge of psychology.

Appendix

SURVEY OF THOUGHTS AND MOODS

(Gordon D. Rose & Arthur W. Staats)

The following set of questionnaires concerns feelings, thoughts, opinions, and behaviors that are characteristic of you. We are interested in your responses to these items across different dimensions and in a variety of situations.

We would like you to complete all the attached scales, in one sitting if possible. There are nine rating scales in total. There are specific instructions on each of the individual questionnaires; please be sure to read these carefully before beginning any test. There are no right or wrong answers, just how you would rate yourself. All responses are strictly confidential. You will be identified only by a study number which will be assigned at a later date. Some of the scales ask for your name or initials; you do not need to give this information.

Please complete all items. If you are not sure of a response, try your best to estimate how you might best respond. After completing the information below, you may begin the survey. Thank you for your participation.

Date:_____ Age:_____

Sex:_____ Ethnicity:_____

Class (e.g., Psy 100, section 2):_____

PLEASANT EVENTS SCHEDULE - SHORT FORM (MR)

This schedule is designed to find out about the things you have enjoyed during the past two weeks. The schedule contains a list of events or activities which people sometimes enjoy. You are asked to go over the list and indicate whether or not each event has happened in the last two weeks and the strength of pleasantness for you. Your answers are confidential.

Directions: Rate each item for how often it occurred during the past two weeks and how strong the pleasantness was. If the event did not occur in the past two weeks, indicate how enjoyable it would have been if it had occurred.

how often:	not at all	one to six times	seven or more times
	0	1	2
how strong:	not at all pleasant	somewhat pleasant	very pleasant
	0	1	2

1. Being in the country.
   how often: _____ how strong: _____
2. Meeting someone new of the same sex.
   how often: _____ how strong: _____
3. Planning trips or vacations.
   how often: _____ how strong: _____
4. Reading stories, novels, poems, or plays.
   how often: _____ how strong: _____
5. Driving skillfully.
   how often: _____ how strong: _____
6. Breathing clean air.
   how often: _____ how strong: _____
7. Saying something clearly.
   how often: _____ how strong: _____
8. Thinking about something good in the future.
   how often: _____ how strong: _____
9. Laughing.
   how often: _____ how strong: _____
10. Being with animals.
    how often: _____ how strong: _____
11. Having a frank and open conversation.
    how often: _____ how strong: _____

how often:	not at all	one to six times	seven or more times
	0	1	2
how strong:	not at all pleasant	somewhat pleasant	very pleasant
	0	1	2

12. Going to a party.
    how often: _____ how strong: _____
13. Wearing informal clothes.
    how often: _____ how strong: _____
14. Being with friends.
    how often: _____ how strong: _____
15. Being popular at a gathering.
    how often: _____ how strong: _____
16. Watching wild animals.
    how often: _____ how strong: _____
17. Sitting in the sun.
    how often: _____ how strong: _____
18. Seeing good things happen to my family or friends.
    how often: _____ how strong: _____
19. Planning or organizing something.
    how often: _____ how strong: _____
20. Having a lively talk.
    how often: _____ how strong: _____
21. Having friends come to visit.
    how often: _____ how strong: _____
22. Wearing clean clothes.
    how often: _____ how strong: _____
23. Seeing beautiful scenery.
    how often: _____ how strong: _____
24. Eating good meals.
    how often: _____ how strong: _____
25. Doing a job well.
    how often: _____ how strong: _____
26. Having spare time.
    how often: _____ how strong: _____
27. Being noticed as sexually attractive.
    how often: _____ how strong: _____

how often:	not at all	one to six times	seven or more times
	0	1	2
how strong:	not at all pleasant	somewhat pleasant	very pleasant
	0	1	2

28. Learning to do something new.
    how often: _____ how strong: _____
29. Complimenting or praising someone.
    how often: _____ how strong: _____
30. Thinking about people I like.
    how often: _____ how strong: _____
31. Kissing.
    how often: _____ how strong: _____
32. Feeling the presence of the Lord in my life.
    how often: _____ how strong: _____
33. Doing a project in my own way.
    how often: _____ how strong: _____
34. Having peace and quiet.
    how often: _____ how strong: _____
35. Being relaxed.
    how often: _____ how strong: _____
36. Sleeping soundly at night.
    how often: _____ how strong: _____
37. Petting, necking.
    how often: _____ how strong: _____
38. Amusing people.
    how often: _____ how strong: _____
39. Being with someone I love.
    how often: _____ how strong: _____
40. Having sexual relations with a partner of the opposite sex.
    how often: _____ how strong: _____
41. Watching people.
    how often: _____ how strong: _____
42. Being with happy people.
    how often: _____ how strong: _____
43. Smiling at people.
    how often: _____ how strong: _____

how often:	not at all	one to six times	seven or more times
	0	1	2
how strong:	not at all pleasant	somewhat pleasant	very pleasant
	0	1	2

44. Being with my husband or wife (boyfriend or girlfriend).
    how often: _____ how strong: _____
45. Having people show interest in what I have said.
    how often: _____ how strong: _____
46. Having coffee, tea, a coke, etc., with friends.
    how often: _____ how strong: _____
47. Being complimented or told I have done well.
    how often: _____ how strong: _____
48. Being told I am loved.
    how often: _____ how strong: _____
49. Seeing old friends.
    how often: _____ how strong: _____

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