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A COMPARISON OF FOUR MEASURES OF SELF-CONTROL SKILLS

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Introduction

In the present investigation, self-control skills (SC) were defined as a multidimensional construct that results from the interdependent operation of the constituent processes of self-monitoring (SM), self-evaluating (SE), and self-reinforcing (SR; Kanfer, 1970). According to this definition, SC are the outcome of adaptive and effective SM, SE, and SR during periods in which environmentally controlled reinforcement is delayed or absent. This characterization of SC is associated with various treatment or training strategies that have been designed to improve SC, and many of these interventions have demonstrated effectiveness in areas of clinical concern, including disturbances in affect (depression and anxiety) and habit (problem drinking, tobacco smoking, overeating; Febbraro & Clum, 1998; Walters, 2000). Thus, accurate assessment of SC is needed to facilitate and inform current and future treatment decisions. There are currently at least four adult self-report questionnaires that have been developed to assess SC: the Self-Control Questionnaire (SCQ; Rehm, Kornblith, O'Hara, Lamparski, Romano, & Volkin, 1981), the Frequency of Self-Reinforcement Questionnaire (FSRQ; Heiby, 1982), the Cognitive Self-Management Test (CSM; Rude, 1986), and the Lifestyle Approaches Inventory (LSA; Williams, Moore, Pettibone, & Thomas, 1992). The purpose of this investigation is to compare the psychometric characteristics of each of these questionnaires, and to draw conclusions regarding their clinical applicability. Initially, a literature review was presented that summarized the available published evidence for the reliability and validity of these SC instruments. Following the literature review, two studies further investigated the reliability and validity of the four SC instruments. Study 1

compared each instrument in terms of a procedure designed to evaluate content validity, or the degree to which elements of an instrument are relevant to and representative of the SC construct (Haynes, Richard, & Kubany, 1995), as based on the three-component SC model (Kanfer, 1970). Then, Study 2 assessed the reliability and validity of the four measures in a sample of ethnically diverse undergraduate students. Finally, the data from the literature review, Study 1, and Study 2, were discussed in terms of how they inform the selection of instruments for specific assessment purposes, and what future research investigations appear most pressing.

Definitions of Self-Control Skills

Historically, self-control has been a phenomenon of great interest to researchers and philosophers alike. The questions of whether and how individuals are able to influence their circumstances in the face of prevailing environmental pressures has been a significant epistemological and empirical question. Indeed, tentative answers to these questions have widespread implications for an expansive range of topics associated with human behavior, including the development of technologies to enhance behavioral performance (Thoresen & Mahoney, 1974). Skinner (1953) was among the first to approach the topic of self-control in a systematic, scientific manner. Moreover, Skinner's work represented an approach to self-control that emphasized self-control as a collection of specific strategies or skills rather than as an undifferentiated trait, which is often represented by terms such as 'willpower'.

The self-control skills (SC) advanced by Skinner primarily involved the altering of observable contingencies, including social and physiological stimuli. Hence, in this

respect, SC were firmly situated in a radical behavioral perspective. From this perspective, SC were defined principally as a means to inhibit or reduce the frequency of behaviors that initially produce reinforcement, but that pose negative delayed consequences. However, Skinner's model could not account as easily for those instances in which individuals perform behaviors that initially produce punishment, but that pose positive delayed consequences (Kanfer, 1970). Hence, it was the advent of cognitive-behavioral approaches to the analysis of behavior (including actions, thoughts, and emotions), which provided the tools to devise mediational models of SC that could account for both the inhibition of maladaptive behaviors, and the facilitation of adaptive ones.

In the past three decades, the set of skills individuals employ to modulate their behaviors has been referred to and included in terms such as self-control (Kanfer, 1970), self-instruction (Meichenbaum, 1977), self-management (Rehm & Rokke, 1988; Rokke & Rehm, 2001), learned resourcefulness (Rosenbaum, 1990), self-regulation (Bandura, 1991), and lifestyle organization (Williams et al., 1992). Although numerous terms have been coined, and various skills or elements are subsumed under each term, they all represent a cognitive-behavioral approach to the characterization of SC. That is, all of these terms recognize SC as the planning and implementation of actions, thoughts, and emotions in the service of initiating and maintaining motivation. Hence, in the absence of external contingencies that promote adaptive behaviors, an individual with the requisite learning history can still set these behaviors as goals, and systematically work toward them by using SC.

Kanfer's initial three-component model of self-control (Kanfer, 1970; 1972; Rehm, 1977; Bandura, 1986; 1991) has been instrumental in framing much of the original and continuing research on SC. Kanfer's model defines SC in terms of an iterative closed feedback loop of three interdependent processes: self-monitoring (SM), self-evaluating (SE), and self-reinforcing (SR; refer to Figure 1). In the SM phase, an individual monitors the status of some target behavior (i.e., an action, thought, or emotion). Next, during the SE phase, the referent behavior is compared to an internalized standard of that behavior, and discrepancies are identified. Finally, in light of this comparison, an individual engages in SR, which may include not only self-reward but also self-punishment. The outcomes of the SC processes are themselves actions, thoughts, and emotions that subsequently influence whether the SC processes will be repeated, modified, or abandoned. Hence, an individual is able to exert control upon the probability of a target behavior occurring in the future by repeatedly reinforcing effective monitoring and evaluating of stimuli associated with that behavior.

So, in Kanfer's model, self-control is achieved when an individual can effectively negotiate the processes of SM, SE, and SR. Furthermore, according to Kanfer and Karoly (1972), the achievement of self-control is demonstrated by one's ability to initiate or persist in a low probability target behavior in opposition to competing higher probability behaviors, and without the aid of contingent environmental reinforcement or support. For example, through the repeated implementation of adaptive SM, SE, and SR, an individual who typically avoids exercise may act to increase the future probability of engaging and persisting in target exercises, without requiring aid from a personal trainer (which may

include environmental prompts, evaluations of performance, or social reinforcement).

Likewise, using SC, an individual who is typically hurt and deflated by criticism, may act to note and alter personal cognitions and affect, to instead become challenged or angered by future criticisms, without recourse to the contingent external reinforcement provided by a counselor or therapist.

As alluded to earlier, Kanfer's model of SC is not exhaustive of what many consider to be included in the theoretical construct of SC. Differences in the definition of SC are often due to the articulation of this construct within alternative theoretical formulations or traditions. Hence, there are multiple usages for the term SC, and related terms often characterize SC in differing ways. Moreover, over the years, there has been a shift away from the term self-control; for example, Rehm and Rokke (1988; Rokke & Rehm, 2001) preferred using the term self-management. Following is a brief survey of a few notable characterizations of SC, other than that just presented. In addition, definitions of SC are presented in Table 1.

Self-regulation (Bandura, 1986; 1991). Self-regulation is a definition of SC that is closely affiliated with Kanfer's (1970) model. Hence, the structure of self-regulation includes all three of the processes of SM, SE, and SR. However, self-regulation also contains the element of self-efficacy. Self-efficacy is defined here as the degree to which one is confident of success at a particular task. According to Bandura (1991), self-efficacy is included in self-regulation because people's beliefs in the efficacy of their actions influences whether and in what manner self-regulation will be implemented. That is, the role of self-efficacy in the self-regulation construct is to influence whether and to what

extent an individual will initiate and persist in the processes of SM, SE, and SR. In other words, self-efficacy with respect to particular tasks affects the perseverance with which an individual undertakes the behavioral regulation necessary for task goals to be realized.

Self-instruction (Meichenbaum, 1977; 1985). In the framework of self-instruction, SC are characterized as the internalization of self-directive speech. The construct of self-instruction was developed within the context of designing interventions for behavioral change, such as stress reduction, and persistence in challenging tasks. In these applied settings, a 'hypothesis testing' model was encouraged. Namely, clients were first trained to self-monitor current self-statements during stressful events or while completing challenging tasks. After sufficient data were collected, clients were encouraged to tentatively adopt markedly positive styles of self-instruction (i.e., positive self-talk) contingent on their efforts and persistence on a second set of challenging tasks. Finally, clients were instructed to compare their behavioral outcomes during situations in which they engaged in their typical self-statements, versus situations in which they engaged in the imposed positive self-statements. That is, clients referred to their behavioral outcome data (e.g., number of task problems solved) to test the hypothesis that the provided positive self-statements were more beneficial to performance than their original self-statements. These comparisons were designed to help clients abandon their original patterns of self-talk, and to adopt the positive self-statements in their place. Thus, self-instruction appears to subsume the elements of SM and SR; however, because the instructors provided the SR statements, there seems to be a disjoint between SM and SR,

in that there was no comparison of present behaviors to an internalized standard, or SE.

Thus, SE does not appear to be included in the construct of self-instruction.

Lifestyle organization (Williams et al., 1992). Lifestyle organization involves “defining goals for oneself and then systematically using cognitive and behavioral strategies to reach those goals” (p.217). While Williams and colleagues (1992) mention the processes of Kanfer’s (1970) three-component model in their description of SC, they do not draw clear parallels between his model and the components of lifestyle organization. Nevertheless, the elements of the three-component model of SC may be construed from the definition of lifestyle organization. For example, SE may mirror the process of defining goals and evaluating whether goals have been reached. Similarly, SM may be considered a cognitive strategy applied to the attainment of established goals, insofar as monitoring one’s behavior is a cognitive prerequisite for the comparison of behavior to defined goals. Finally, given that systematic covert and overt SR can increase the likelihood of progress toward goal attainment, SR may be represented in that part of the definition of lifestyle organization that refers to the systematic application of cognitive and behavioral strategies in the attainment of preset goals. However, it is emphasized that these potential relationships between lifestyle organization and Kanfer’s (1970) model of SC are posited, as Williams and colleagues (1992) did not articulate them. Moreover, it is clear that lifestyle organization includes additional SC elements beyond SM, SE, and SR, including awareness of lifetime goals, and soliciting feedback from others.

Learned resourcefulness (Rosenbaum, 1990). Learned resourcefulness is a personality characteristic or repertoire, comprised of a relatively stable constellation of cognitive and behavioral responses, or coping skills, such as emotion and impulse restraint, problem solving, and expectations of self-efficacy. The construct of learned resourcefulness is of special mention because Rosenbaum (1980a) originally referred to the set of skills represented by learned resourcefulness as self-control, and he developed an instrument to measure this construct, the Self-Control Schedule (SCS; Rosenbaum, 1980a). Although the SCS has accrued voluminous evidence concerning its construct validity (M. Rosenbaum, personal communication, November 25, 1999), it will not be considered here as a measure of self-control *per se*; the construct of learned resourcefulness is ostensibly related to, but not synonymous with, self-control. Indeed, Rosenbaum (1990) has designated SM, SE, and SR as primary cognitive responses, which may subserve the diverse higher-order cognitive and behavioral attributes that comprise the learned resourcefulness personality repertoire.

The current investigation will define SC in terms of Kanfer's (1970) three-component model. Although Kanfer has since elaborated on his three-component model of SC (Kanfer, 1996; Kanfer & Schefft, 1988; Kanfer & Hagerman, 1981), these developments have not altered the core SC model, and do not impinge on the goals of this investigation. Kanfer's (1970) conceptualization of SC provides a parsimonious, cohesive, clearly delineated construct, in which each SC component or process is inextricably linked to the other two in the performance of target behaviors. Moreover, the three-component model of SC is extensively cited in the self-control research literature,

and is widely recognized as a fundamental contributor to the assessment of SC (Rosenbaum, 1980a; Rehm et al., 1981; Brandon, Oescher, & Loftin, 1990), and to the articulation and implementation of SC training and therapy (Febbraro & Clum, 1998; Fuchs & Rehm, 1977).

The influence of Kanfer's (1970) model on the development of various SC training and therapy programs cannot be overemphasized. Indeed, many of these programs have been evaluated for their effectiveness, and these evaluations have provided evidence that training in SC (i.e., SM, SE, and SR) can facilitate adjustment in several populations of clinical concern. Strategies aimed at enhancing SC have shown some success in alleviating agoraphobia, habit disturbances (obesity and smoking), insomnia, unipolar depression (Febbraro & Clum, 1998), and problem drinking (Walters, 2000). Moreover, self-control therapy for depression (Fuchs & Rehm, 1977) is recognized as a 'probably efficacious treatment' by the American Psychological Association's Division 12 Task Force on Psychological Interventions (Chambless, Baker, Baucom, Beutler, Calhoun, Crits-Cristoph, Daiuto, DeRubeis, Detweiler, Haaga, Johnson, McCurry, Mueser, Pope, Sanderson, Shoham, Stickle, Williams, & Woody, 1998). Furthermore, in addition to the clear clinical merits of SC training or therapy, there is also some evidence that enhanced SC can help individuals persist in targeted thoughts, emotions, and actions, such as health-related regimens (see Heiby, Gafarian, & McCann, 1989; Brandon et al., 1990).

Measures of Self-Control Skills

Unfortunately, although considerable research has been invested in the evaluation and refinement of SC training and therapy programs, relatively little research has been conducted on improving the assessment of SC. Further, inasmuch as improved SC have shown treatment utility across a variety of target behaviors, there is a pressing need to effectively assess individual differences in this construct. The goal of the present study was to take steps towards meeting this need by evaluating the reliability and validity of four self-report questionnaires that were designed to measure SC among adults. The four instruments are briefly described in Table 2. These instruments were located through PSYCHINFO searches and reference list reviews, and were selected for inclusion in this study because they met the following criteria: (1) The instrument is self-report, (2) The instrument is written in English, (3) The instrument was designed for adults as opposed to children, (4) The instrument is not a scale or subtest of a broader instrument or battery, i.e., it is freestanding, (5) A claim is made that the instrument measures SC, and (6) The discussion of SC makes reference to the three-component model (Kanfer, 1970; Rehm, 1977).

A summary of published reliability and validity estimates for each of the four SC instruments follows. Estimates of reliability and validity were primarily obtained by conducting a repeated, recursive PSYCHINFO search. Following Keyword and Anywhere searches of relevant terms (e.g., self-control questionnaire, self-reinforcement questionnaire), repeated Author searches were conducted, in which all the publications of

authors of studies that included analyses of a SC instrument were reviewed. In addition, the reference lists of all obtained studies were reviewed.

A Review of Adult Self-Report Instruments Designed to Measure SC

The Self-Control Questionnaire (SCQ; Rehm, Kornblith, O'Hara, Lamparski, Romano, & Volkin, 1981)

The SCQ consists of 40 items scored on a five-point Likert scale (zero to four), with a total score ranging from 0 to 160; no norms or cutoff scores are available. The SCQ was designed with the purpose of serving as an outcome measure for a manualized self-control treatment protocol for depression (see Fuchs & Rehm, 1977). To serve this purpose, the items of the SCQ were constructed to assess "attitudes and beliefs about [self-control; self-management] behaviors and cognitions related to depression" (Rehm & Rokke, 1988, p. 158; Rokke & Rehm, 2001, p. 198). More specifically, the items of the SCQ were designed to assess depressed affect in terms of dysfunctional attitudes and beliefs concerning SM, SE, and SR.

Reliability. SCQ internal consistency estimates include coefficient alphas of .82, (O'Hara, Rehm, & Campbell, 1982), and .69 (Rude, 1989). The stability of the SCQ was indicated by a test-retest correlation of .82 over a five-week interval (O'Hara et al., 1982).

Validity. Details regarding the development of the SCQ are unavailable in the literature, so the manner in which items were selected as exemplars of SC is not public knowledge. It may be noted, however, that Rokke and Rehm (2001) reported that the SCQ was "written on a logical basis" (p. 198), although it is not clear what this means.

Nevertheless, because the SCQ was developed as an outcome measure of the Fuchs and Rehm (1977) self-control/management model of depression, which is an adaptation of Kanfer's (1970) model (Rehm, 1977), the items of the SCQ would be expected to measure SC. Indeed, Fuchs and Rehm's (1977) self-control depression treatment conceptualizes the symptomatology of depression in terms of irregularities in SM, SE, and SR (Rehm, 1977). According to Rehm (1977), each of these three aspects of SC may be inaccurate in two areas. Thus, the SCQ was designed to measure SC along these six dimensions (L. P. Rehm, personal communication, October 9, 2000). Each of these areas are briefly presented below.

Inaccuracies in SM include (1) SM of negative events, and (2) SM of immediate versus delayed consequences of behavior. SCQ items that seem to be measuring these problematic cognitions may include (a) "I always seem to remember the bad things that happen to me more than the good," and (b) "It's just as important to think about what will happen later as a result of my actions, as it is to watch for immediate effects." Next, potential inaccuracies in SE include (1) SE with regard to exceedingly demanding standards, and (2) SE in terms of outcomes that are not under personal control or responsibility. Sample SCQ items for these areas may include, (a) "Unless I set and reach very high goals, my efforts are likely to be wasted," and (b) "There isn't anything to do when I want something important other than be patient and hope for good luck." Finally, SR may be inaccurate in terms of (1) deficits in self-reward, or (2) the administration of excessive self-punishment. An example item for the former SR distortion may be, (a)

“Rewarding myself for progress toward a goal is unnecessary and may actually spoil me,” and an example of the latter SR distortion may be, (b) “Criticizing myself is often the best way to help me get through a difficult task.” Thus, all six self-control content areas posited by Rehm (1977) are identifiable in the item content of the SCQ.

Rude (1989) conducted an exploratory factor analysis, as well as a hierarchical clustering analysis (ADDTREE; Sattath & Tversky, 1977), both of which included the SCQ. The exploratory factor analysis yielded a six-factor oblique solution for the SCQ. The six factors were labeled (1) Positive focus, (2) Self-reward and long-range focus, (3) External locus of control, (4) External standards for self-appraisal, (5) Self-punishment, and (6) Fatalism. According to Rude (1989), Factor 2 (Self-reward) taps the SC of both SR and SM, as the two do not load separately. Further, Rude (1989) noted that Factors 1 (Positive focus) and 5 (Self-punishment) selectively measured the process of SR. Finally, Rude (1989) reported that Factor 4 (External standards for self-appraisal) assessed SE. Thus, although the content of each of the definitional components of SC is measured by the SCQ, the item content of the SCQ is not clean with respect to selectively loading on each of the SC components. Moreover, the SCQ appears to contain superfluous content, as Factors 3 (External locus of control) and 6 (Fatalism) do not conform with the SC model.

The ADDTREE analysis (Rude, 1989) was conducted with the SCQ, CSM (Rude, 1986), and the measure of learned resourcefulness, the SCS (Rosenbaum, 1980a). Three primary clusters of factors were formed, (1) Positive self-reactions, (2) Negative self-

reactions, and (3) Systematic problem solving. The factors of the SCQ that were obtained by Rude (1989) fell exclusively in clusters 1 (Positive self-reactions) and 2 (Negative self-reactions), which appear to have closer affinities to the construct of SC than cluster 3 (Systematic problem solving). Indeed, the factors of the SCS, a measure of learned resourcefulness did not fall under clusters 1 and 2, but rather were exclusively subsumed by cluster 3. Furthermore, most of the factors of the CSM, also a purported SC instrument, were similarly subsumed by clusters 1 and 2, suggesting that these clusters may indeed represent SC content.

The most abundant evidence for the validity of the SCQ as a measure of SC is provided by numerous treatment outcome studies that demonstrate expected increases in SCQ scores from pre-treatment to subsequent tests during and after self-control/management therapy for depression (Rokke, Tomhave, & Jovic, 2000; Rokke, Tomhave, & Jovic, 1999; Rehm, Kaslow, & Rabin, 1987; Rehm, 1984; Kornblith, Rehm, O'Hara, & Lamparski, 1983; Roth, Bielski, Jones, Parker, & Osborn, 1982; Rehm et al., 1981). Rokke and colleagues (2000) also found evidence for the sensitivity of the SCQ, as higher subsequent SCQ scores were obtained in a self-management therapy condition, as opposed to another active intervention condition, i.e., education and support. Furthermore, scores on the SCQ were found to be predictive of postpartum depression when administered during the second trimester of pregnancy (O'Hara et al., 1982), in line with theoretical predictions of a relationship between SC and depression. A summary of validity studies is presented in Table 3.

The Frequency of Self-Reinforcement Questionnaire (FSRQ; Heiby, 1982)

The FSRQ consists of 30 items scored as 'true' or 'false', with a total score ranging from 0 to 30. For clinical and qualitative decision-making, a cutoff score of 17 has been used to discriminate between high and low degrees of self-reinforcement skills (Heiby, 1982, 1983a, 1983b; Varese, Pelowski, Riedel, & Heiby, 1998). The FSRQ was designed to measure SC in terms of differences in rates of self-reinforcement. With this approach, the SR component of SC becomes the primary focus of measurement, and SM and SE are considered more as precursors to SR (Heiby, 1982).

Reliability. The internal consistency of the FSRQ was indicated by alpha values of .92 (Heiby, 1983a), .73 (Wagner, Holden, & Jannarone, 1988), .83 (Heiby, Campos, Remick, & Keller, 1987), and a split-half reliability value of .87, using the Spearman-Brown correction (Heiby, 1983a). The stability of the FSRQ was indicated by a test-retest correlation of .92 over an eight-week interval (Heiby, 1983a). Furthermore, the stability of the FSRQ was supported by evidence that the number of SR statements made by individuals across multiple situations correlated highly with their FSRQ scores ($r = .72 - .79$), but the absolute number of SR statements recorded in each of these situations did not differ significantly (Heiby, 1982). Hence, the FSRQ appeared to measure a relatively stable behavioral characteristic (i.e., SR statements). Moreover, these findings provide evidence for the validity of the FSRQ, given that scores on the FSRQ covaried with the number of self-rated SR statements.

Validity. The FSRQ was developed based on Rehm's (1977) definition of SC, which had adapted Kanfer's (1970) model to explain depressive symptomatology. Initially, Heiby (1982) generated 100 potential questionnaire items. These items were then submitted to 10 judges who were instructed to endorse those items that conformed to Rehm's (1977) definition of SC, and that were also amenable to a 'true' or 'false' response format. For an item to be retained, inter-judge agreement had to be at least 80%. This process yielded the 30-item FSRQ.

Although there are no published claims regarding the representativeness of the FSRQ items with respect to the three SC processes of SM, SE, and SR, items tapping each of these areas may be identified. Furthermore, Heiby (1982) referred to Rehm's (1977) definition of SC as self-reinforcement, and presented definitions for each of the three components of self-reinforcement, analogous to definitions of the three components of SC. Hence, an example of an item in the FSRQ that may measure SM includes, "I don't often think positive things about myself." An item possibly tapping SE could be, "I can keep trying at something when I stop to think of what I've accomplished." Finally, an item measuring SR may include, "The way I achieve my goals is by rewarding myself every step along the way."

Wagner, Holden, and Jannarone (1988) conducted an exploratory factor analysis of the FSRQ. A principal factor analysis with varimax rotation suggested a five-factor solution: (1) Self-evaluation, (2) Self-reinforcement and self-reward, (3) Don't self-praise, (4) Be self-critical, and (5) Responding emotionally to criticism and to self-

evaluation. As Wagner and colleagues (1988) noted, Factors 2 (Self-reinforcement and self-reward) and 4 (Be self-critical) coincided with the SR process of the SC model. Further, the SE process appeared to be represented by Factors 1 (Self-evaluation), 3 (Don't self-praise), and 5 (Responding emotionally to criticism and to self-evaluation). However, Wagner and colleagues contended that none of the resultant factors assessed the SM component of SC. Thus, based on the analyses of Wagner and colleagues (1988), the FSRQ failed to measure one of the components of SC, although the other two components, SE and SR, were selectively represented by three and two factors respectively, and no factors were formed by content not subsumed by the SC model.

Evidence for the validity of the FSRQ as a measure of SC is primarily provided by research supporting numerous predicted relationships between the FSRQ and a diverse set of hypothetically related constructs. For example, the FSRQ demonstrated significant positive correlations with reported self-praise on analogy and anagram tasks (Heiby, 1983a), frequency of daily self-monitored self-reinforcement (Heiby, 1982), experimenter ratings of participants' tendencies to self-reinforce (Heiby, 1982), engagement in regular exercise (Heiby, Onorato, & Sato, 1987), motivation to engage in regular exercise (Heiby, Onorato et al., 1987), self-motivation (Heiby, Onorato et al., 1987), ego strength (Cernovsky, 1989), assertiveness skills (Sato & Heiby, 1992), learned resourcefulness (Kennett & Ackerman, 1995), and life satisfaction (Seybolt & Wagner, 1997). In addition, the FSRQ demonstrated significant negative relationships with external health loci of control (Heiby, Onorato et al., 1987), neuroticism (Wilkinson, 1997), trait anxiety

(Heiby, Onorato et al., 1987), alcoholism (Cernovsky, 1989), elevations on the MMPI (Cernovsky, 1989), self-punishment (Holden & Wagner 1990; Sato & Heiby, 1992), and depressive symptomatology (Heiby, 1983c; Heiby et al., 1987; Sato & Heiby, 1992; Wilkinson, 1997; Varese et al., 1998). With respect to depression, Heiby (1986) also reported a times-series crossover treatment study of four cases of depression. Based on inspecting trends and noting changes in normative group membership (i.e., depressed to non-depressed, and deficient self-reinforcement to adequate self-reinforcement), the two cases that presented with deficient SC were shown to achieve improvements in both affect and SC as a result of self-control therapy for depression, but not as a result of social skills training. In addition, among a sample of clinically depressed individuals, lower scorers on the FSRQ tended to be suppressors of dexamethasone, coinciding with the prediction that low SC may be a risk factor for individuals with nonendogenous depression (i.e., depression that is not associated with poor physiological suppression of dexamethasone; Heiby, Campos et al., 1987). Moreover, another experimental study demonstrated that scores on the FSRQ increased statistically significantly as a result of an adapted form of self-control therapy for depression (Heiby, Ozaki, & Campos, 1984). Furthermore, experimental manipulation of environmentally controlled reinforcement indicated that low scorers on the FSRQ reported increased depressed mood as a result of decreased experimenter-controlled reinforcement, whereas high scorers reported no mood change (Heiby, 1983b). Finally, FSRQ scores have improved from pre- to post- test self-

control therapy for older adults reporting elevated depression (Rokke et al., 2000; Rokke et al., 1999). A summary of validity studies is presented in Table 4.

The Cognitive Self-Management Test (CSM; Rude, 1986)

The CSM consists of 26 items, rated on a five-point Likert scale. However, although items are summed to obtain a simple total score, no uniform scoring guidelines have been established for the CSM (S. S. Rude, personal communication, February 21, 2000), so the range of total scores, norms, and cutoffs scores are currently unavailable. The CSM was developed by Rude (1986) to supplement the SCQ, and a measure of learned resourcefulness, the Self-Control Schedule (SCS; Rosenbaum, 1980a), by providing a more comprehensive assessment of the cognitive aspects of SC. Specifically, the CSM was designed to “tap feelings of efficacy in approaching new tasks, and style of self-talk (supportive vs. disparaging)” (Rude, 1986, p. 391).

Reliability. The internal consistency of the CSM was indicated by an alpha value of .51, suggesting moderate interrelatedness of items (Rude, 1989). At this time, the temporal stability of the CSM has yet to be evaluated.

Validity. A description of the development of the CSM is unavailable. However, the item content of the CSM appears to coincide with the aforementioned stated purpose of measuring (1) self-perceived efficacy in approaching new tasks, (2) positive self-talk, and (3) disparaging self-talk.

Hence, with regard to the SC model, the CSM appears to have an obvious intent of measuring an aspect of SR (i.e., style of self-talk). However, no claims are made

concerning whether the CSM is additionally capable of assessing SM or SE.

Nevertheless, as mentioned in the section on the FSRQ, the interdependence of the three processes of SC may have the serendipitous consequence of promoting the measurement of all three even if only one process is targeted. Moreover, this may particularly be the case when instruments are designed to measure SR, simply because SM and SE must precede the administration of SR for specific, targeted goals. That is, if a target behavior is not monitored or compared to a standard, it cannot be selectively reinforced.

Rude (1989) conducted an exploratory factor analysis of the CSM, which yielded four oblique factors: (1) Positive focus, (2) Task efficacy and persistence, (3) Self-blame, and (4) Perfectionism. Rude (1989) suggested that Factor 2 (Task efficacy and persistence) reflected self-efficacy, and she provided a sample item that loaded on this factor: "Once I set my mind to do something I'm confident that I'll do it." Further, Rude (1989) indicated that Factor 1 likely mirrored the positive self-talk (or the self-reward component of SR) content area, and a sample item that loaded on this factor was, "I usually give myself a 'pat on the back' for even small accomplishments." Finally, Rude indicated that Factor 3 (Self-blame) seemed to parallel the content area of negative self-talk (or the self-punishment component of SR), and an item that loaded on this factor included, "If I do something wrong I tend to make myself suffer for it." However, Rude (1989) was unable to account for the content of Factor 4 (Perfectionism). Even so, it may be suggested that Factor 4 assesses for the process of SE, as the setting of standards, including high or unattainable standards, i.e., Perfectionism, could be considered a

hallmark of SE. Indeed, the SCQ was designed to assess a similar maladaptive presentation of SE, i.e., the setting of exceedingly high evaluative criteria (Rehm, 1977). Thus, on the basis of the Rude (1989) factor analysis, Factors 1 and 3 measure SR, Factor 4 may measure SE, and Factor 2 appears to measure the related construct of self-efficacy.

As discussed in the section on the SCQ (Rehm et al., 1981), Rude (1989) conducted a hierarchical cluster analysis, using the ADDTREE program, that included the factors Rude (1989) had obtained for the CSM, SCQ, and the measure of learned resourcefulness, the SCS (Rosenbaum, 1980a). Again, three primary clusters were formed, (1) Positive self-reactions, (2) Negative self-reactions, and (3) Systematic problem solving. The factors of the CSM fell primarily in clusters 1 (Positive self-focus) and 2 (Negative self-reactions). However, Factor 2 (Task efficacy and persistence) was subsumed by cluster 3 (Systematic problem solving). As stated earlier, all of the factors of the SCQ, also a purported SC instrument, similarly fell in clusters 1 and 2, while all of the factors of the SCS fell in cluster 3. Moreover, these results are particularly interesting because the CSM Factor 2 was identified as a measure of self-efficacy as opposed to SC, and accordingly was grouped with a separate cluster of factors. Therefore, those factors of the CSM that were identified as measures of SC clustered with a second SC instrument, i.e., the SCQ, while the factor identified as a measure of the related construct of self-efficacy clustered with a measure of another related construct, i.e., learned resourcefulness. Unlike the other SC instruments, the CSM has yet to accumulate

numerous studies providing evidence for its validity; hence, a summary table was omitted.

The Lifestyle Approaches Inventory (LSA; Williams, Moore, Pettibone, & Thomas, 1992)

The LSA consists of 16 items scored on a five-point Likert scale (zero to four), with a total score ranging from 0 to 64; no norms or cutoff scores are available. The LSA was developed to measure SC as reflected by the construct of lifestyle organization, i.e., “defining goals for oneself and then systematically using cognitive and behavioral strategies to reach those goals” (Williams et al., 1992, p. 217), and to serve as a measure of various psychological markers of physical health, including self-efficacy and health habits. An additional impetus for the development of the LSA was to provide an instrument that offered a balanced measure of SC, that included both cognitive elements of SC, as measured by the SCQ (Rehm et al., 1981), CSM (Rude, 1986), and the SCS (Rosenbaum, 1980a; which was originally thought to measure SC, but is now recognized more as a measure of learned resourcefulness), as well as the behavioral outcomes of SC, as measured by the Self-Control Questionnaire (SCQ-Brandon; Brandon et al., 1990).

Reliability. The internal consistency of the LSA was indicated by an obtained alpha of .81 (Williams et al., 1992). In addition, the temporal stability of the LSA was estimated by a test-retest coefficient of .90 over a one-week interval (Williams et al., 1992).

Validity. The LSA was developed from material presented in the text Manage Your Life (Williams & Long, 1991), which summarizes 20 years of self-management

research in the context of a self-help book. Initially, Williams (Williams et al., 1991) prepared a pool of 48 items. The pool of 48 items was then reduced by conducting a principal components analysis with varimax rotation; the most comprehensible solution yielded a six-factor, 22-item instrument. Williams and colleagues (1991) proceeded to evaluate the reliability and validity of this 22-item instrument by investigating the total scale and each of the six factors in terms of internal consistency and correlations with hypothesized related and unrelated constructs. The outcome of these analyses resulted in the elimination of two of the six factors; one of the factors had low internal consistency, and both of the factors did not correlate as expected with the comparison variables. The resultant 16-item, four-factor instrument was reanalyzed using a principal component analysis with varimax rotation, based on the scores of the total sample, as well as scores obtained from two randomly split samples of the total sample. All three principal component analyses confirmed the 16-item, four-factor structure of the LSA.

Williams and his colleagues (1992) did not draw direct parallels between the content of the LSA and each of the components of SC. Nevertheless, the factors that were yielded during the development of the LSA may be interpreted in terms of the components of the SC model. The four factors of the LSA and an example item for each factor follow: (1) Performance focus and efficiency, "I have difficulty matching various tasks with my energy level"; (2) Goal directedness, "I have a clear sense of what I most want to experience in my life"; (3) Timelines of task accomplishment, "I subdivide big tasks into a series of smaller tasks"; and (4) Organization of physical space, "I keep my

work space well-organized” (Williams et al., 1992). Factor 1 (Performance focus and efficiency) assesses attention to behavioral performance, as well as judgments concerning the efficiency of performance, which appear to resemble the SC components of SM and SE respectively. Likewise, Factors 2 (Goal directedness) and 3 (Timeliness of task accomplishment) also appear to include elements of SM and SE, because defining a task or behavioral goal, and achieving that goal in a timely manner, appear to involve monitoring of a target behavior, and successive evaluation of the status of that behavior in relation to the behavioral goal. However, Factor 4 (Organization of physical space) does not seem to be consistent with any of the SC, although it may be considered a behavioral outcome measure of the successful application of SC. Therefore, the LSA may be measuring the SM and SE processes of SCS, but does not appear to assess the presence of SR.

One of the measurement goals in developing the LSA was to design an instrument that would measure SC as they are related to health-related behaviors. Thus, the validity of the LSA has been supported by predicted significant positive correlations with self-efficacy, life satisfaction, purpose in life, optimism, physical health status, and health habits, and significant negative correlation with external locus of control and perceived stress (Williams et al., 1992). In addition, a second study found that individuals who developed Carpal Tunnel Syndrome tended to have lower scores on the LSA (Vogelsang, Williams, & Lawler, 1994). Moreover, more generally, lower scorers on the LSA tended to report a stronger relationship between life events and experienced illness (Vogelsang et

al., 1994), which is in line with the theoretical proposition that individuals with low SC are more vulnerable to changes in environmental contingencies. Furthermore, in accordance with the expectation that a lower degree of SC would be conducive to the development of problem-drinking behaviors, i.e., consumption of alcohol that significantly impairs one's daily functioning, McKee (1996) found that high scorers on the Michigan Alcoholism Screening Test (MAST; Selzer, 1971) had significantly lower scores on the LSA than low scorers on the MAST. The LSA has also been found to correlate with posited behavioral outcomes of SC, as measured by the SCQ-Brandon, as well as with the related construct of learned resourcefulness, as measured by the SCS (Rosenbaum, 1980a).

Two additional investigations have displayed the broad applicability of the LSA. One study found relationships between the LSA and several measures of learning motivation, engagement in academic studies, and efficiency of study habits, among a sample of students with the potential of majoring in education (Long, Gaynor, Erwin, & Williams, 1994). The second study supported a predicted negative relationship between the Judgment-Perception index of the Myers-Briggs Type Indicator (Myers & McCaulley, 1985) and the LSA (Williams, Verble, & Price, 1995), suggesting that self-management is related to a preference for orderliness and control. Williams and colleagues (1995) suggested that high scorers on the LSA might prefer order and organization because it may facilitate the achievement of behavioral goals. A summary of validity studies is presented in Table 5.

The review of the current evidence for the reliability and validity of these four SC instruments provided the background for the following two studies. As discussed above, Study 1 further explored the content validity of the SC instruments, and Study 2 evaluated the psychometric properties of these measures. The purposes of both Study 1 and Study 2 were to provide information that was absent in the current literature, and to augment information that has already accumulated.

Study 1

Method

Participants

Three clinical psychology graduate students were selected to constitute a panel of content validity judges. Participants were recruited from a clinical psychology graduate program that emphasizes training in behavioral and cognitive-behavioral approaches to assessment and intervention. The explicit aim was to select judges who possessed a broad-based knowledge of behavioral and cognitive-behavioral principals and processes, but who had not studied SC *per se*, and therefore would not be unduly biased by well-articulated theoretical perspectives regarding the nature of content valid SC items. The panel was composed of two doctoral-level and one masters-level students. Two were female and judges ranged in age from 25 to 27.

Materials

Rating form. The items of the SCQ (Rehm et al., 1981), FSRQ (Heiby, 1982), CSM (Rude, 1986), and LSA (Williams et al., 1992) were randomly sorted, using a

random numbers table, and subsequently combined in a single rating form. Items were numbered 1 through 112, and each item was followed by three columns for the entry of content validity ratings (i.e., one column for each of the SC processes of SM, SE, and SR), providing space for a total of 336 ratings. The ratings were on a four-point (one to four) Likert scale with the following stem statements: (1) Not at all, (2) Somewhat, (3) Quite a bit, and (4) Very much. Participants were instructed to rate the degree to which each item assessed the SC of SM, SE, and SR.

Instruction and information packet. An instruction and information packet was drafted to provide judges with the criteria for evaluating the content validity of items in terms of each of the SC. The packet was written with the intent of providing judges with sufficient direction and background in SC, while at the same time avoiding language and details that may bias the rating of items. The packet was organized by providing an opening orientation regarding the study and the tasks of the raters, followed by separate descriptions of SM, SE, and SR. The descriptions were based on the definitions of SC as found in Kanfer and Karoly (1972). Thus, SM was defined as the utilization of input from the external environment, as well as from response-produced cues, which can include verbal-symbolic, proprioceptive, or autonomic stimuli; SE was defined as the process of making a discrimination or judgment about the adequacy of an action relative to a subjectively held standard or comparison criterion; and SR was defined as the self-administration of positive or aversive stimulation, occurring within the parameters of an individual's social learning history and current situational factors (Kanfer & Karoly,

1972). In addition to these basic definitions of SC, the packet included commentaries designed to elaborate upon and further explain the definitions (e.g., by clarifying terms such as ‘verbal-symbolic stimuli’), an applied behavioral example of the SC process (i.e., a SC program for weight-managment), and clues pertaining to characteristics of statements suggestive of the presence of an element of SC (e.g., SE statements may be more likely to involve some statement of performance adequacy).

Procedure

Each judge was initially provided a copy of the rating form, as well as the instruction and information packet. Subsequently, judges independently rated the items on the rating form along the dimensions of SM, SE, and SR. Following the completion of independent rating, judges convened to discuss discrepant ratings and arrive at consensus ratings. At that time, judges were provided copies of the completed rating forms of their fellow judges. The primary investigator also attended the consensus ratings meeting to moderate the proceedings, answer any questions, and record consensus results. At the outset of the meeting, the primary investigator informed the judges that consensus may be achieved by any means they find agreeable, and that his role is to answer any questions they may have and to record their consensus results. The process of arriving at consensus ratings included the suggestion of a consensus rating by any one of the judges, followed by affirmations or proposed modifications by her or his colleagues. This procedure resulted in consensus ratings for all 336 ratings.

Results

Results were primarily analyzed by considering the percentage of items in a given instrument that were judged to assess each of the elements of SC (i.e., item scores of two to four on the Likert scale), as well as by comparing the mean scores on each element across instruments. These two strategies were used to provide complementary analyses of the content validity of each instrument. Specifically, the comparison of percentage scores was intended to provide information regarding potential differences in the emphasis of item content with reference to the elements of SC, while the comparison of mean scores was intended to provide information regarding potential differences in the degree to which elements of SC are assessed. In addition to these primary analyses of the consensus ratings, estimations of inter-rater agreement for each of the elements of SC were calculated on the independently completed rating forms, with the purpose of providing information about the face validity of items (i.e., the degree to which the content of items appears to appropriately reflect the construct they were designed to measure; Anastasi & Urbina, 1997).

Inter-rater agreement was assessed by computing separate kappa values for SM, SE, and SR based on the original ratings of each content validity judge. The kappa value for SM was .20, the kappa for SE was .22, and the kappa for SR was .46. Thus, according to guidelines provided by Landis and Koch (1977), inter-rater agreement ranged from slight to moderate.

The representativeness of item content in terms of the elements of SC was evaluated by computing the percentages of items in each instrument that were judged to measure SM, SE, and SR. Namely, percentages were computed for items that received consensus ratings of two or higher for a given SC component (refer to Table 6).

The relative ability of each instrument to assess the separate elements of SC was evaluated by the across-instrument comparison of mean item consensus ratings for SM, SE, and SR. Setting the instruments as the predictor variable, three one-way Analyses of Variance (ANOVA), one for each SC component, indicated no significant mean score differences on SC elements across instruments (refer to Table 7).

Discussion

This brief discussion of Study 1 is continued and expanded in the final discussion section. The reason for including part of the Study 1 discussion here is to highlight its results as related to the interpretation of Study 2. The first point is that these results suggested that SC instruments vary in their item content emphases with respect to the individual SC components of SM, SE, and SR. However, none of the four SC instruments differed significantly in their ability to assess the SC construct as a whole, as indicated by the nonsignificant ANOVA across all three components of SC. Therefore, as the multidimensional construct of SC is the construct of interest, as opposed to its constituent elements of SM, SE, and SR, it may be contended that all four instruments are comparable in terms of content validity. Furthermore, as related to the interpretation of Study 2, these results suggested that because each of the SC instruments were similarly

content valid, the validity predictions evaluated in Study 2 would not be expected to be informed by the results of Study 1.

Study 2

Method

Design

Study 2 was designed to evaluate the SC instruments in terms of both reliability and validity. The reliability of the SC instruments was estimated by evaluating their internal consistency, as well as their temporal stability. The validity of the four SC instruments was investigated by considering their relationships with each other, as well as evaluating the relationships between the SC instruments and theoretically related and unrelated constructs. Related constructs included those that have responded to SC interventions, and those that have been developed and recognized in the literature as related. Thus, SC interventions have been efficacious with (1) depression and (2) anxiety, and so-called habit disturbances, including (3) weight-management, (4) excessive alcohol consumption, and (5) excessive tobacco smoking (Febbraro & Clum, 1998; Walters, 2000). As well, two additional theoretically related constructs are considered: (6) learned resourcefulness, and (7) behavioral outcomes of SC. As discussed above, learned resourcefulness is a personality characteristic in which the composite cognitions and actions have been understood as extensions of basic SC (Rosenbaum, 1990). Finally, commonplace behavioral outcomes of SC have been developed in the literature (Brandon

et al., 1990), and would be expected to be closely related to measures of the SC themselves.

Four constructs that were not expected to vary with SC were assessed in this investigation to evaluate the specificity of the SC instruments as measures of SC. These included, (8) Social desirability, or the tendency to seek the approval of others, which was thought to be independent from SC. That is, as SC are characterized primarily in terms of intra-individual processes, i.e., SM, SE, and SR, there is no clear conceptual link between these processes and the desire to gain approval by others within an interpersonal, social context. Moreover, it should be noted that the instrument used to measure social desirability, the Marlowe-Crowne Social Desirability Scale (MCSD; Crowne & Marlowe 1960), was also used to exclude individuals suspected of engaging in a socially desirable response bias; i.e., those who scored three or more standard deviations above the mean; refer to the Participants section). Thus, the range of scores on the MCSD was truncated, and analyses were limited to those who scored under 25 on the possible range of 1 to 33. In addition to social desirability, there does not seem to be a theoretical rationale for expecting various beliefs or values to be related to SC, including (9) moral beliefs, (10) attitudes towards sexuality, or (11) religiosity, i.e., the importance of religion in one's life. Thus, the relationships between the selected SC instruments and the preceding 11 constructs were evaluated in this investigation. Descriptions of the instruments used to measure each construct are below.

Participants

The initial pool of respondents was composed of a sample of 393 students enrolled in undergraduate psychology courses at the University of Hawaii at Manoa. Participating students volunteered for inclusion in this study, and received course credit for completing the questionnaire packets. The sample contained 99 males (25%), and ranged in age from 18 to 71, with a mean age of 22 and a standard deviation of 6.42. Ninety-nine (25%) participants endorsed identification with at least two ethnic groups. The ethnic groups endorsed by monoethnic and multiethnic participants included Japanese (n = 156), Caucasian (n = 104), Filipino (n = 58), Chinese (n = 53), Hawaiian (n = 30), Korean (n = 22), Portuguese (n = 14), Hispanic (n = 11), Vietnamese (n = 10), African American (n = 8), Samoan (n = 3), other Pacific Islanders (n = 3), and other ethnic group affiliations (n = 20). The marital status of the original sample was predominantly single (n = 335), but also included cohabiting (n = 24), married (n = 23), and divorced (n = 7) participants. A measure of long-standing integration in the local culture of the state of Hawaii was obtained by asking participants whether they had attended high school in Hawaii, to which 281 participants (72%) answered in the affirmative. Of the original sample, three cases were removed due to numerous missing values (i.e., equal to or more than 10% of item data missing in any given instrument), and 21 cases were removed due to extreme values of social desirability (i.e., greater than three standard deviations above the mean). Thus, the data from 369 participants were retained for analysis in the current study.

Materials

The SC instruments evaluated in this investigation were the SCQ, FSRQ, CSM, and LSA. Detailed descriptions of these instruments were provided in the introduction section. As there are no set guidelines for assigning stem score values for the CSM, the five-point Likert scale was coded with the numerical values of one through five, so that total scale scores range from 26 to 130.

Depression: Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979).

The revised BDI was one of two instruments used to consider the correlations between measures of SC and depression or depressed mood. The BDI is a 21-item instrument designed to measure intensity of depression in terms of symptoms and attitudes indicative of depressed mood. The BDI was developed based on clinical consensus in the selection of symptoms that were thought to distinguish between depressed and nondepressed psychiatric patients; hence, each of the 21 items represents a symptom or attitude associated with clinically severe depression (Beck, Steer, & Garbin, 1988).

The internal consistency estimates of the BDI among nonpsychiatric samples has ranged from coefficient alphas of .73 to .92 across 15 samples, with a mean coefficient alpha of .81 (Beck et al., 1988). Further, among nonpsychiatric samples, temporal stability coefficients ranged from .62, with a four-month test-retest interval, to .90, with a two-week test-retest interval (Beck et al., 1988).

The validity of the BDI has been supported by positive correlations between the BDI and measures of suicidal behaviors, anxiety, stress, medical symptoms, and social

desirability (Beck et al., 1988). The BDI has been shown to have significant positive correlations with numerous alternative measures of depression, including independent clinical ratings, the Hamilton Psychiatric Rating Scale for Depression (Hamilton, 1960), and the Self-Rating Depression Scale (SDS; Zung, 1965; Beck et al., 1988).

Depression: Self-Rating Depression Scale (SDS; Zung, 1965). The SDS was a second instrument used to assess depressive symptomatology. The SDS was selected because it may be considered to measure depression more in terms of behavioral and somatic symptoms (Shaver & Brennan, 1991), while the BDI affords relatively more weight to cognitive aspects of depression. The complementarity of the BDI and the SDS is also suggested by the manner in which symptoms are rated, the BDI assesses the severity of depressive symptomatology, while the SDS was designed to measure the frequency of depressive symptoms. Thus, the SDS may offer an alternative perspective in the measurement of aspects of clinical depression. The SDS is a 20-item instrument that was designed to measure depression in terms of affective, physiological, psychomotor, and psychological symptomatology (Zung, 1965).

The internal consistency of the SDS was indicated with a split-half reliability value of .73, using the Spearman-Brown correction, and alpha values of .79 (Knight, Waal-Manning, & Spears, 1983) and .92 (Zung, 1986). Values indicating the temporal stability of the SDS were not found in the literature.

The validity of the SDS has been supported by evidence of decreased SDS scores during the course of treatment for depression, and by its ability to discriminate between

individuals diagnosed with depression and those diagnosed with an anxiety disorder (Bramley, Easton, Morley, & Snaith, 1988). Furthermore, the extensive use of the SDS in Asian cultures, such as Japan and China (e.g., Sakamoto, Kijima, Tomoda, & Kambara, 1998; Lee, 1990) may provide additional utility within the present multicultural sample. Finally, the SDS also achieved significant positive correlations with other instruments designed to measure depression and with physicians' global ratings of depression (Biggs, Wylie, & Ziegler, 1978).

Anxiety: Clinical Anxiety Scale (CAS; Westhuis & Thyer, 1989). The CAS was used to measure the construct of phobic anxiety. The CAS was deemed a particularly suitable measure of anxiety for the current investigation because much of its validation data was produced with individuals who met diagnostic criteria for agoraphobia and panic disorder. As it happens, much of the SC intervention outcome research was similarly conducted with individuals primarily presenting with agoraphobic symptomatology (Febbraro & Clum, 1998). Moreover, the literature suggests that anxiety symptoms characterized by sudden autonomic arousal (e.g., phobias, panic) can be distinguished from anxiety symptoms of a more chronic nature (e.g., worry, obsessions), and that separate vulnerabilities are implicated in each case (Watson & Clark, 1992). Therefore, it is desirable to select an anxiety instrument that was designed to measure the types of anxiety symptoms that have received the most attention in the SC intervention literature. Hence, the CAS is a 25-item instrument that was designed to measure symptoms of

anxiety, particularly symptoms of anxiety associated with phobias and panic (Westhuis & Thyer, 1989).

The internal consistency of the CAS was indicated by a coefficient alpha value of .94 (Westhuis & Thyer, 1989). Moreover, the temporal stability of the CAS ranged between .67 and .74 across biweekly administrations (Thyer & Westhuis, 1989).

The validity of the CAS has been supported by its ability to discriminate between individuals diagnosed with anxiety disorders and comparison groups drawn from military and student populations (Westhuis & Thyer, 1989). In addition, the CAS demonstrated a positive significant correlation with another measure of phobic anxiety, the Mobility Inventory for Agoraphobia (Chambless, Caputo, Jasin, Gracely, & Williams, 1985; Westhuis & Thyer, 1989). Finally, scores on the CAS were not affected by status variables such as age, sex, and level of education (Westhuis & Thyer, 1989).

Weight-management competencies: Dieter's Inventory of Eating Temptations (DIET; Schlundt & Zimering, 1988). The DIET was used to measure competencies associated with weight-management, such as eating and exercise habits. The DIET is a 30-item instrument that was designed to measure competencies in behavioral domains associated with effective weight-management. The DIET was developed by having weight-management clinicians generate situations that represent frequently encountered challenges to healthy weight maintenance. The resulting 50 situations were grouped into six content areas by expert judges, and the items were subsequently pared down to a 30-item instrument, while it retained the six-subscale structure (Schlundt & Zimering, 1988).

The internal consistency of the DIET was indicated by an alpha of .93. The stability of the DIET was evaluated with a test-retest interval of seven days, and a correlation coefficient of .96.

The validity of the DIET has been demonstrated by negative correlations with emotional distress associated with binge eating (Goodrick, Pendleton, Kimball, Poston, Reeves, & Foreyt, 1999; Bunn, Poston, Haddock, Dill, Goodrick, & Foreyt, 2000), and a positive correlation with self-esteem (Bunn et al., 2000). Moreover, the DIET accurately discriminated between normal weight and overweight subjects (Schlundt & Zimering, 1988). Finally, DIET scores reliably predicted self-monitored behavioral patterns that are associated with weight-management (Schlundt & Zimering, 1988).

Excessive alcohol consumption: CAGE Alcohol Interview Schedule (CAGE; Mayfield, McLeod, & Hall, 1974). Patterns of alcohol consumption that interfere in an individual's typical functioning was measured with the CAGE. Although the CAGE was initially developed as an interview, it has since been successfully adapted to questionnaire format (Werner & Greene, 1992). The CAGE is a brief four-item instrument that was designed to screen for potential alcohol related problems, and not to detect the presence of alcoholism *per se* (Mayfield et al., 1974).

The internal consistency of the CAGE was indicated by an alpha of .71. Values indicating the temporal stability of the CAGE were not found in the literature.

The validity of the CAGE has been supported by significant correlations with scores on other measures of alcohol abuse, diagnoses of alcohol abuse or dependence, and levels of alcohol use (e.g., Lee & DeFrank, 1988). Moreover, the CAGE effectively discriminated between inpatients diagnosed with alcoholism and other psychiatric inpatients (Bernadt, Mumford, & Murray, 1984), and identified alcoholic individuals more accurately than blood tests (e.g., Lairson, Harlow, Cobb, Harrist, Martin, Ramby, Rustin, & Swint, 1992), and physician diagnoses (Moore, Bone, Geller, Mamon, Stokes, & Levine, 1989).

Excessive tobacco smoking: Fagerstrom Test for Nicotine Dependence (FTND; Heatherton, Kozlowski, Frecker, & Fagerstrom, 1991). The habitual or addictive consumption of tobacco cigarettes was assessed with the FTND. The FTND was a revision of a longstanding, widely used questionnaire used to measure nicotine dependence and tolerance (see Fagerstrom & Schneider, 1989); thus, it is situated in a tradition of nicotine dependence assessment. The FTND is a six-item instrument designed to assess behavioral indicators of nicotine dependence (Heatherton et al., 1991).

Internal consistency values for the FTND have ranged from alphas of .61 to .64 (Heatherton et al., 1991; Pomerleau, Carton, Lutzke, Flessland, & Pomerleau, 1994). The stability of the FTND was indicated by a test-retest correlation coefficient of .88, with a test-retest interval ranging from two to six weeks (Pomerleau et al., 1994).

The validity of the FTND has been supported by a correlation between FTND scale scores and years of tobacco cigarette smoking (Heatherton et al., 1991). In addition,

the FTND was significantly correlated with levels of carbon monoxide in breath samples, levels of a nicotine metabolite in salivary samples, and scores on a measure assessing for addictive reasons for smoking (Heatherton et al., 1991; Pomerleau et al., 1994).

Learned resourcefulness: Self-Control Schedule (SCS; Rosenbaum, 1980a). As discussed above, learned resourcefulness shares a theoretical affinity to SC. Indeed, SC were conceptualized as basic component processes of the varied and complex cognitive and behavioral responses that constitute the personality repertoire of learned resourcefulness (Rosenbaum, 1990). As a measure of learned resourcefulness, the SCS was developed to measure the diverse cognitions and behaviors subsumed by this construct. The development of the SCS began with a pool of 50 items that were designed to present situation-specific scenarios to which resourceful behaviors could be applied (Rosenbaum, 1980a; Rosenbaum, 1990). Thirty of these items were developed to measure the ability to regulate undesirable emotional and physiological states, and the remaining 20 items were designed to measure resourcefulness in response to situations necessitating restraint, such as occasions that drew upon problem-solving skills or the ability to delay gratification. The pool of 50 items was then submitted to two judges, who appraised the comprehensibility, face validity, and applicability of each item for a range of individuals. The two judges also evaluated the comprehensibility and face validity of 10 additional items that were created to assess general beliefs regarding self-efficacy. Items that garnered poor inter-judge agreement were eliminated, so that 44 items remained of the original 60-item pool. The 44-item scale was further reduced with the removal of items

that failed to have each of their response options endorsed, exhibited low variance, or did not increase the internal consistency of the scale. The remaining 36 items constituted the SCS: 12 items refer to the control of physiological sensations and emotions, 11 items refer to the application of problem-solving skills, 4 items refer to the ability to delay gratification, and 9 items refer to expectations of self-efficacy (Rosenbaum, 1980a). A wide range of scores have been reported when using the SCS, and the median is usually used as the cutoff to discriminate between high-resourceful and low-resourceful individuals (Rosenbaum, 1990).

The internal consistency of the SCS was indicated across seven samples, in which alphas ranged from .78 to .91 (Rosenbaum, 1980a; Redden, Tucker, & Young, 1983; Rohde, Lewinsohn, Tilson, & Seeley, 1990). The temporal stability of the SCS was indicated by test-retest correlations of .86 over an interval of four weeks (Rosenbaum, 1980a), .77 over an interval of eleven months (Leon & Rosenthal, 1984), and .76 over an interval of two years (Rohde et al., 1990).

The validity of the SCS has been supported by an extensive research literature (Rosenbaum, personal communication, November 25, 1999). Some of the supported relationships between the SCS and theoretically related constructs may be highlighted in comparisons between high and low resourceful individuals. High resourceful individuals were found to possess a greater tolerance for pain, for example in a cold pressor task (Rosenbaum, 1989), better coping with symptoms of illness, such as sea sickness (Rosenbaum & Rolnick, 1983), and a higher likelihood of initiating and persisting in

various health-promoting activities, such as quitting smoking, changing eating habits, and curbing alcohol use (Rosenbaum, 1990). Furthermore, the SCS also correlated with measures of coping skills, self-esteem, and ego strength (Rosenbaum, 1990).

Behavioral outcomes of SC: Self-Control Questionnaire (SCQ-Brandon; Brandon, Oescher, & Loftin, 1990). The SCQ-Brandon was designed to measure the behavioral outcomes of SC. In the context of instrument development, SC were operationally defined as, “choosing to engage in a low probability behavior over a high probability behavior for emotional or physical health enhancement” (Brandon et al., 1990, p. 5). Hence, this definition closely paralleled Kanfer and Karoly’s (1972) previously presented criteria for the demonstration of effective SC, namely, persistence in a low probability target behavior in opposition to competing higher probability behaviors, without supportive environmental reinforcement. In establishing the content validity of the SCQ-Brandon, Brandon and colleagues (1990) identified 10 areas (e.g., eating behaviors, emotional control, exercise behavior, study habits) in which behavioral outcomes of SC could be assessed, and generated six to eight items for each of these areas. Items were then reviewed by six expert judges who were instructed to select behavioral outcome items that were highly dependent on SC, and that most clearly indicated the presence or absence of SC. Finally, items that were selected by the judges were field tested with undergraduate students, and those that obtained low item-total correlations were eliminated, so that the final instrument consisted of 16 items (Brandon et al., 1990). An exploratory factor analysis of the SCQ-Brandon yielded the following

five factors defined by 16 items, with each factor followed by an example item: (1) eating behavior, “I avoid eating high-caloric, fatty, or sweet foods”; (2) time management, “I manage my time carefully”; (3) emotional control, “I lose my temper regularly”; (4) social behavior, “I have difficulty saying ‘no’ to others”; and (5) financial planning, “I manage my personal or family budget well” (Brandon et al., 1990).

The internal consistency of the SCQ-Brandon was indicated by a coefficient alpha of .80 (Brandon et al., 1990). The temporal stability of the SCQ-Brandon has not yet been evaluated.

The validity of the SCQ-Brandon has been supported by predicted relationships with related constructs, such as exercise and general measures of SC. For example, Brandon and colleagues (1990), and Brandon and Loftin (1991), found a significant positive correlation between the SCQ-Brandon and the fitness level of cyclists, as measured by maximal oxygen consumption and heart rate. Moreover, Brandon and colleagues (1990) found that SCQ-Brandon scores significantly discriminated between a group of cyclists who exercised regularly and a group of college students who did not. Finally, the SCQ-Brandon correlated significantly with the California Personality Inventory-Self-Control subscale, which may be considered a broad measure of SC (Brandon et al., 1990).

Social desirability: Marlowe-Crowne Social Desirability Scale (MCSD; Crowne & Marlowe, 1960). The MCSD was designed to assess social desirability in terms of an individual’s tendency to act in a manner that avoids the disapproval of others (Crowne,

1979). The MCSD is frequently used in instrument batteries to help assure the validity of participant reports, i.e., high scorers on the MCSD are considered to have answered with a socially desirable response set, and these cases are typically removed from further analyses. The MCSD is a 33-item instrument, scored in a “true” or “false” format.

The internal consistency of the MCSD has ranged from alphas of .73 to .88 (Paulhus, 1991). In addition, the temporal stability of the MCSD was indicated by test-retest correlation coefficients of .88 over a one-month interval (Crowne & Marlowe, 1964) and .84 over a one-week interval (Fisher, 1967).

The validity of the MCSD has been indicated by covariations between the MCSD and a variety of constructs expected to be related to the avoidance of social disapproval. Some of the relationships that were evaluated included correlations between the MCSD and social reinforcement, aggression inhibition, amenability to social influence and evaluation, and a preference for low-risk interpersonal behaviors (see Crowne, 1979 for a review).

Moral beliefs: Morally Debatable Behaviors Scales (MDBS; Harding & Phillips, 1986). The MDBS was developed as part of a survey battery that was assembled to evaluate normative moral values across 10 European nations (Harding & Phillips, 1986). The role of the MDBS was to assess attitudes regarding the moral justifiability of engaging in specific behaviors that were considered morally contentious (Harding & Phillips, 1986). The MDBS is a 22-item instrument, and has normative data available for 10 European nations. However, reliability values were not reported in the literature.

The validity of the MDBS has been supported by relationships between MDBS scores and various status variables expected to influence tolerance of moral ambiguities. For example, the MDBS was found to differ as predicted among groups varying in age, education, political affiliation, and religiosity (Harding & Phillips, 1986).

Attitudes towards sexuality: Hendrick Sexual Attitude Scale (HSAS; Hendrick & Hendrick, 1987). The HSAS is composed of four subscales that together were designed to measure attitudes towards sexuality. The HSAS is a 43-item instrument with norms developed for women, men, and various ethnic groups.

The internal consistency of the HSAS was supported by subscale alphas ranging from .71 to .94. In addition, the temporal stability of the HSAS was indicated by subscale test-retest correlation coefficients that ranged from .66 to .88, with an interval of approximately one month (Hendrick & Hendrick, 1987).

The validity of the HSAS has been supported by evidence of significant correlations with related measures of sex and love (Hendrick & Hendrick, 1987). Moreover, HSAS scores varied as predicted between individuals who claimed to be in love, and individuals who did not claim to be in love (Hendrick & Hendrick, 1987).

Religiosity: Goal and Mode Values Inventories—Traditional Religiosity Scale (GMVI-TR; Braithwaite & Law, 1985). The GMVI-TR was developed to assess the degree to which being religious is considered a valued personal trait. The GMVI-TR is a four-item scale that is part of a large inventory that was designed to measure the aspirations and cherished beliefs of individuals (Braithwaite & Law, 1985).

The internal consistency of the GMVI-TR was indicated by alphas of .75 and .70. In addition, the temporal stability of the GMVI-TR was suggested by a test-retest correlation of .93, with a test-retest interval of three weeks (Braithwaite & Law, 1985).

The validity of the GMVI-TR has been supported by positive correlations with church attendance and involvement in church organizations (Braithwaite & Scott, 1991). Moreover, the GMVI-TR also achieved predicted significant correlations with instruments that were similarly designed to measure personal values (Braithwaite & Scott, 1991).

Demographics form. A Demographics Form was designed for this investigation. The form included items designed to measure sex, age, marital status, ethnicity, and long-standing integration in the culture of Hawaii (i.e., whether a participant attended school in the State).

Informed consent form. An informed consent form was designed for this investigation. The form conformed to local Institutional Review Board policies, and included information regarding a participant's rights, the duties associated with participating, and the risks and benefits of participation.

Questionnaire packet cover sheet. A questionnaire packet cover sheet was designed for this investigation. The cover sheet allowed the information provided by participants to remain confidential. The cover sheet included a space for the last five digits of the participants Social Security Number (SSN), and provided instructions for the return of the questionnaire packet.

Procedure

Research assistants arranged to speak at classes to announce the availability of an extra-credit opportunity. The investigation was introduced as “a study of beliefs, attitudes, and self-control.” The research assistants informed the classes that participation in the study required participants to be available to complete two packets of questionnaires during their free time, and to return the packets on the day following their distribution. The potential participants were further informed that the packets would be distributed in-class, one week apart, and that there would be a research assistant available at a designated on-campus office to accept the completed questionnaire packets during specified hours on the days after each packet was distributed. Finally, the classes were informed that responses to the questionnaires would be anonymous, and that class credit would be assigned in correspondence to the final five digits of each participant’s SSN, as recorded on the questionnaire packet cover sheet that would be separated from the questionnaire packets upon receipt. On the days of questionnaire packet distribution, packets were made available to students at either the beginning or end of their classes. On the days of questionnaire packet collection, participants returned completed packets to a research assistant, who briefly checked that packets were completed, removed the questionnaire packet cover sheet, and for the first questionnaire packet, also removed the two signed and dated copies of the consent forms, and provided the participant with one of the consent forms.

The two questionnaire packets were not composed of identical materials. The first questionnaire packet contained 16 instruments, consisting of the SC instruments and all of the validity instruments described above, as well as the questionnaire packet cover sheet, the informed consent form, and the demographics form. The second questionnaire packet, distributed one week after the first packet, contained the four SC instruments, the SCQ-Brandon, the MCSD, as well as the questionnaire packet cover sheet. For both the first and second questionnaire packets, the order of instruments was counterbalanced using a Latin square design for unrepeated observations (Namboodiri, 1972).

Results

The exploratory data analysis suggested some departures from univariate and bivariate normality. For example, the score distributions of the BDI (Beck et al., 1979), CAS (Westhuis & Thyer, 1989), CAGE (Mayfield, 1974), and FTND (Heatherton, 1991) had higher values of skewness and kurtosis than all the other instruments, and they also appeared leptokurtic and positively skewed when viewed graphically, particularly the CAGE and FTND. In addition, the BDI, CAS, FTND, and CAGE, may all depart substantially from bivariate normality and homoscedasticity, as suggested by their bivariate score scatterplots, normal probability plots, and residual plots. However, although these variables appeared to depart considerably from the assumptions necessary for the validity of parametric statistics, at least relative to the other instruments in this investigation, the actual severity of some of the departures was equivocal, and prior research has supported the robustness of parametric statistical procedures in departures

from normality (e.g., Sawilosky & Blair, 1992; Boneau, 1960); although, these findings have been contested under specific conditions (Bradley, 1984; Bradley, 1982). Hence, all Pearson product-moment correlations conducted in this investigation were duplicated with the nonparametric bivariate correlation statistics of Kendall's rank correlation coefficient, and Spearman's rank correlation coefficient. The results of the nonparametric tests replicated the findings of the Pearson product-moment correlations in terms of the significance or nonsignificance of all bivariate correlations. Moreover, the relative rankings of the SC instruments with respect to their strengths of relationships amongst themselves and with respect to other related measures were supported without exception.

The summary statistics and reliability estimates for the SC instruments, as well as all other instruments used in this investigation, are presented in Table 8. In terms of internal consistency, most SC instruments obtained coefficient alphas of at least .80, although the LSA (Williams et al., 1992) obtained an alpha of .67. According to the literature, coefficient alphas of .80 or higher may be considered an "exemplary" rating of internal consistency, while coefficient alphas falling in the .60 to .69 range may be considered a "moderate" rating of internal consistency (Robinson, Shaver, & Wrightsman, 1991a). The temporal stability of the SC instruments was evaluated over a one-week test-retest interval. The SCQ, FSRQ, and CSM obtained correlation coefficients between .83 and .88. However, the LSA again demonstrated relatively poorer reliability, with a test-retest correlation coefficient of .68.

In the current investigation, the evaluation of the validity of SC instruments included the computing of 54 *a priori* bivariate correlations. Due to the high number of computed correlations, and the potential threat of inflating the Type I error rate, a Bonferroni correction was adopted. Hence, all subsequent reported correlations were significant at the .0009 alpha level to satisfy a Bonferroni-corrected alpha of .05.

Given that each of the SC instruments were designed to measure SC, each instrument should correlate with all the other instruments. Hence, the first set of validity analyses examined the bivariate correlations of all four SC instruments (refer to Table 9). As can be seen in Table 8, the SCQ (Rehm et al., 1981), FSRQ (Heiby, 1982), and CSM (Rude, 1986) intercorrelations ranged from .66 to .70. In contrast, the correlation coefficients between the LSA and the other three instruments ranged from .35 to .49.

The intercorrelations of the SC instruments were further investigated by use of Fisher's *z* transformations (Meng, Rosenthal, & Rubin, 1992). Fisher's *z* transformations may be used to compare the equivalency of two correlations, in which both correlations have a common dependent variable but separate independent variables. In these and following analyses, Fisher's *z* transformations were used to indicate whether the correlations of two variables with a third, common variable were significantly different from each other, with the alpha level set at .05. In this instance, a series of Fisher's *z* transformation comparisons indicated the equivalence of all of the bivariate correlations between the SCQ, FSRQ, and CSM. However, *z* transformation comparisons also indicated that all of the bivariate correlations between the LSA and each SC instrument,

as compared with another SC instrument, were significantly different from each other, with the LSA consistently demonstrating the weaker correlations.

The correlations between each SC instrument and related constructs are presented in Table 10. As predicted, all SC instruments correlated significantly with measures of depression, anxiety, weight-management competencies, learned resourcefulness, and behavioral outcomes of SC. However, none of the SC instruments attained significant correlations with the measures of excessive alcohol consumption, and excessive tobacco smoking. Inspections of the frequency distributions for the CAGE and FTND revealed that 221 participants (60%) obtained scores of zero on the CAGE ($M = .78$, $SD = 1.12$), and 321 participants (87%) obtained scores of zero on the FTND ($M = .43$, $SD = 1.31$).

Further analyses investigated whether certain SC instruments attained significantly stronger correlations with each of the measures of related constructs. According to z transformation comparisons, the FSRQ and the CSM both obtained stronger correlations with the BDI than either the SCQ or the LSA. In addition, the SCQ obtained a stronger correlation with the BDI than the LSA (refer to Table 11). Similarly, the SCQ, FSRQ, and CSM were all significantly more closely correlated with the SDS (Zung, 1965) than the LSA (refer to Table 12).

The z transformation comparisons between each of the SC instruments and the measure of anxiety, the CAS, are presented in Table 13. Hence, the FSRQ and CSM had significantly stronger correlations with the CAS than either the SCQ or the LSA.

The z transformation comparisons between each of the SC instruments and the measure of weight-management competencies, the DIET (Schlundt & Zimering, 1988), are presented in Table 14. In this instance, the LSA achieved a significantly stronger correlation with the DIET than either the SCQ or the FSRQ; however, the correlation coefficients of the LSA and CSM did not differ significantly.

Finally, the correlations between the SC instruments and the constructs of learned resourcefulness, and the behavioral outcomes of SC, were compared. For learned resourcefulness, the CSM obtained a statistically stronger correlation with the SCS (Rosenbaum 1980a) than any of the other SC instruments (refer to Table 15). For the behavioral outcomes of SC, the CSM and LSA both correlated more strongly with the SCQ-Brandon (Brandon et al., 1990) than either the SCQ or the FSRQ (refer to Table 16).

The correlations between the SC instruments and the measures of theoretically unrelated constructs are presented in Table 17. As expected, none of the SC instruments were found to correlate with the measures of moral beliefs, attitudes towards sexuality, and religiosity. However, only the FSRQ failed to correlate with social desirability as measured by the MCS (Crowne & Marlowe, 1960).

Discussion

The goal of the current investigation was to review the published reliability and validity data of instruments designed to measure SC, as well as to contribute to the empirical literature by providing further insight into the comparative psychometric

properties of these instruments. To this end, SC first had to be defined. This task was made easier because theoretical descriptions of SC in both the assessment and treatment literature, as well as the documented effectiveness of practical applications of SC interventions, converged to suggest the adoption of Kanfer's (1970) basic model of SC. Hence, four instruments were identified that were developed to some degree in accordance with this model of SC. Thus, the SCQ (Rehm et al., 1981), FSRQ (Heiby, 1982), CSM (Rude, 1986), and LSA (Williams et al., 1992) were the targets of this investigation.

The literature review of these SC instruments revealed substantive differences in how each instrument was developed, and in the amount and types of published reliability and validity data that each instrument has accumulated. Hence, the SCQ was developed for the specific purpose of serving as an outcome measure for a SC therapy for depression, and accordingly, all published validity data links the SCQ with depression, and particularly with the remittance of depression specifically due to SC therapy. In contrast, the FSRQ was designed to serve as a general measure of self-reinforcement, and has accumulated a diverse body of empirical evidence bearing on the relationships between the FSRQ and numerous related constructs. The CSM was similarly designed to serve as a general measure of the cognitive elements of SC; however, historically it has been used primarily as a supplemental measure, and has yet to accrue much evidence for its validity or reliability. Finally, the LSA, a relatively newer measure of SC, was designed to measure SC in terms of lifestyle organization, a model of SC that appears to

resemble Kanfer's (1970) model. However, while Kanfer's (1970) model of SC was articulated largely in terms of conceptualizing emotional and behavioral dysfunction, Williams and Long (1991) developed the construct of lifestyle organization primarily in terms of promoting self-help skills for enhanced functioning for the general populace. Thus, the accumulated evidence for the validity of the LSA has included variables associated with optimal personal functioning (e.g., optimism, study habits), as well as variables typically associated with pathological states (e.g., problematic alcohol consumption).

Thus, the specific goals of SC assessment across SC instruments are diverse, and the results of Study 1 suggested that the operationalization of the assessment of SC may likewise be diverse. Perhaps the most striking result of Study 1 was the low agreement among content validity judges, as indicated by low values of kappa. This finding may indicate the poor face validity of the item content of SC instruments in terms of the processes of SM, SE, and SR. Hence, the purpose of individual items does not appear to be evident across SC instruments. There are multiple reasons why low agreement may have occurred: (1) insufficient or varying familiarity of the raters with the characteristics of SC, (2) diversity in the wording or phrasing of items measuring SC, and (3) diversity in the theoretical contexts in which SC instruments were developed. Moreover, it is likely that all three of these factors are implicated, because (1) judges received minimal training in the identification of SC, with even less training in the practical rating of SC items, (2) the different purposes of each instrument likely influenced how constituent items were

worded, and (3) none of the SC instruments were explicitly designed to generally measure SM, SE, and SR, so that various alternative theoretical bases likely influenced instrument content.

Nevertheless, as indicated by the consensus ratings of the content validity judges, there appear to be potentially meaningful differences in assessment emphases among SC instruments. For example, the SCQ and LSA appear to emphasize the assessment of SM in the context of measuring SC, while the CSM appears to have a relatively weaker *representation of items assessing for SM*. In contrast, relative to the other three instruments, the CSM appears to stress the assessment of the SC element of SE. Furthermore, the SC element of SR appears to be underrepresented in the item content of the LSA as compared to the other instruments.

These obtained differences in item content emphases may be of value in both clinical and research endeavors. From a clinical perspective, there may be circumstances in which approaching the adequacy of a client's SC with the use of an instrument emphasizing or deemphasizing a particular SC element may prove beneficial; for example, the SC difficulties of a client may be characterized primarily by hypothesized deficits in SE, in which case measuring SC with the CSM, all other considerations aside, may provide greater sensitivity and scope in identifying the situations in which SC deficits play a role in the client's distress. From a research viewpoint, greater knowledge about the item composition of SC instruments may allow for descriptions of these instruments that are more accurate, and more detailed investigations regarding their

clinical strengths and weaknesses, with an aim of facilitating future attempts at instrument refinement and development.

Even so, the differences among instruments in their representativeness of items devoted to the measurement of each SC element did not underlie statistically significant differences in the global assessment of SC elements across instruments. The reason for this discrepancy is suggested by a scan of the consensus ratings. Namely, the vast majority of items were rated as assessing more than one SC element. Thus, this observation further supports the notion that the interrelatedness of the SC processes may trump those differences that appear to exist across instruments in specific SC item content. Moreover, it may be noted that the SC component ANOVA means presented in Table 7 were low across instruments (ranging from 1.38 to 2.25), and that this restricted range of endorsement may have influenced whether a statistically significant difference could be detected. These results suggest a few mutually inclusive scenarios: (1) the SC instruments are similarly poor measures of SC, (2) the judges lacked the expertise to detect the assessment of SC, and (3) the item content of SC instruments does not make clear distinctions between SC components and does not provide clear exemplars of these components. Furthermore, as concluded in the discussion of the low inter-rater agreement of content validity judges, it is likely a combination of factors that produced these low, restricted mean values.

The results of Study 2 underscore the fundamental differences between these four SC instruments, as well as their oft-convergent success in the assessment of related

constructs, and lack of success in the assessment of unrelated constructs. First, it is salient to note that although the obtained summary statistics and estimates of reliability were typically similar to prior studies, a puzzling exception was the low reliability estimates that were obtained for the LSA, particularly in light of much higher previously obtained coefficient alphas and test-retest correlation coefficients, likewise obtained over a one-week test-retest interval (Williams et al., 1992). It is not altogether clear why the LSA obtained these relatively low estimates of reliability, particularly because the previous estimates of reliability were similarly obtained from a college student sample. Furthermore, the LSA's lower obtained estimates of reliability, as compared to the other SC instruments, likely introduced relatively more measurement error in the LSA's subsequent correlational analyses, and may have attenuated correlations between the LSA and measures of related constructs. Thus, although this discussion will suggest additional rationale for lower correlations between the LSA and certain posited related constructs, the LSA's lower obtained reliability estimates are likely one influential reason for these results. In contrast, both the SCQ and FSRQ obtained reliability estimates that approximated some of the earlier internal consistency and temporal stability findings of these instruments. Moreover, the CSM, which previously had only one estimate of reliability (i.e., an alpha of .51; Rude, 1989), obtained stronger evidence for its internal consistency, and also obtained evidence pertaining to its temporal stability.

The first phase of investigating the validity of the SC instruments was conducted by evaluating their intercorrelations. Although all the instruments were significantly

correlated with each other, it was found that the LSA consistently obtained significantly weaker correlations than its counterparts. Albeit, this finding was not entirely unexpected. As mentioned in the section describing the LSA, the LSA was designed to measure both the cognitive aspects as well as the behavioral outcomes of SC. In contrast, the SCQ, FSRQ, and CSM all measure SC strictly in terms of cognitions, such as tendencies of thinking and responding to oneself. Thus, this fundamental discrepancy in the targets of assessment may have accounted for these lower, though still significant, correlations between the LSA and the three other instruments. Moreover, the magnitude of all obtained *intercorrelations* was not so large as to suggest that the SC instruments are redundant; a conclusion that would support the content emphases and apparent theoretical differences suggested in this investigation.

Many of the relationships between the SC instruments and related constructs were borne out in this investigation, and provided evidence for their similar strengths of assessment. Thus, all four instruments correlated significantly with measures of depression, anxiety, weight-management competencies, learned resourcefulness, and behavioral outcomes of SC. However, none of the instruments correlated, as anticipated, with the measures of excessive alcohol consumption and excessive tobacco smoking. The reasons for this uniform lack of significant correlations between SC instruments and these constructs may be due to characteristics of the participant sample and the brevity of the instruments. Hence, the majority of participants endorsed scores of zero on the CAGE (Mayfield et al., 1974; 60%) and the FTND (Heatherton et al., 1991; 87%), suggesting

their lack of frequent or problematic use of alcohol and tobacco. Thus, one possibility is that there was an exceedingly low base rate of excessive alcohol and tobacco use in the current sample. Alternatively, or in addition, the low number of items in both these instruments may not have adequately assessed the breadth of these constructs. Regardless, for both the CAGE and FTND, the restriction in the range of values that were endorsed, as evidenced by low standard deviations, would act to reduce the overall variance of these instruments, in turn reducing the maximum possible correlations that could be attained with other variables.

The relative strengths of the SC instruments in the assessment of related constructs, as demonstrated by Fisher's z transformation comparisons, may provide evidence for fundamental differences between them. For example, the SCQ, FSRQ, and CSM correlated more closely with the measures of depression than the LSA did. As mentioned above, these results could be expected given the relative emphases of the SCQ, FSRQ, and CSM on the measurement of variables associated with dysfunction, as compared to the LSA's relative emphasis on measuring variables associated with optimal functioning. What is more surprising though, are the higher correlations of the FSRQ and CSM with the BDI (Beck et al., 1979), as compared to the SCQ. Given the ample previous evidence for the SCQ's sensitivity in measuring changes in clinical depression, it may be the case that the FSRQ and CSM are instead more predictive of subclinical levels of depression, of the type that would be expected in a class-attending, undergraduate student population.

Another interesting result of the comparisons of the SC instruments with related constructs was the relative strengths of the FSRQ and CSM in their relationships with anxiety. Relative to the SCQ, the FSRQ and CSM's significantly higher correlations with the CAS may again be attributable to the subclinical presentations that are likely present in the given sample. However, it may also be that the SCQ's design focus on the assessment of depression, and the negative affectivity that underlies it, may make it a less effective measure of the physiological arousal aspects of phobic anxiety. In contrast, the more generalist assessment goals of the FSRQ and CSM may better account for the arousal as well as the affectivity aspects of anxiety. Furthermore, as with depression, the LSA's lack of emphasis on impairing symptomatology may account for its relatively weaker strength of relationship with the CAS as compared to the FSRQ and CSM.

The finding that the LSA correlated significantly more with weight-management competencies than either the SCQ or FSRQ may lend credence to the conclusion that the LSA may be more suited to the assessment of SC within a more limited window of skills deficits and their corresponding functional impairments, as opposed to the impairments associated with more debilitating conditions, such as depression and anxiety. Moreover, the LSA's dual emphasis on measuring the cognitive and behavioral aspects of SC may serve it well when assessing for behavioral correlates of weight-management.

The CSM performed unexpectedly well in comparisons with the related constructs of learned resourcefulness and the behavioral outcomes of SC. For example, the CSM was more closely correlated with the SCS than any of the other SC instruments. Similarly,

both the CSM and LSA were more closely correlated with the SCQ-Brandon than both the SCQ and FSRQ. Moreover, while the LSA's stronger correlations with the SCQ-Brandon may be accounted for by the fact that the LSA contains items designed to measure the behavioral outcomes of SC, the CSM's significantly higher correlations cannot be explained as easily.

The significant correlations of most of the SC instruments with the measure of social desirability is a sobering finding. Not only was social desirability conceptualized as an unrelated construct, but these correlations with social desirability may also undermine the interpretability of instrument scores. Namely, scores on the SCQ, CSM, and LSA are influenced by social impression management, so that it may not be clear whether an individual has a certain degree of SC, or whether the individual is attempting to convey a certain degree of SC. However, it is encouraging that although the correlations were significant, the magnitude of explained variance appeared rather small across instruments, i.e., between 4% and 14%.

Therefore, the results of Study 2 evaluated many relationships between SC instruments and related and unrelated constructs, some of which may bear directly on current SC clinical and research issues. First, on the clinical front, these results have suggested that some SC instruments may be more relevant to the assessment of SC in certain areas of clinical concern rather than others. Hence, the FSRQ and CSM appear to be well suited for the assessment of SC when depression or anxiety is present. Similarly, the LSA may be preferred in SC assessment situations in which weight-management is

the area of central concern. However, it should be cautioned that these choices would be guided by differences found to be statistically significant, and not necessarily clinically significant. With respect to informing current research on the assessment of SC, Study 2 provided several results worthy of further evaluation. For example, it would be beneficial to conduct further reliability analyses on the LSA, to discover whether the present findings were anomalous. Further, the relationships between the SC instruments and the constructs of excessive alcohol consumption and excessive tobacco smoking could be reattempted using different instruments or a different sample. Finally, additional research should be devoted to determining whether and to what extent the SCQ, CSM, and LSA are influenced by tendencies towards attaining social desirability.

The current investigation contains several methodological caveats. For example, in Study 1, it was not determined whether judges were provided with sufficient training to satisfy the requirements of conducting valid and reliable estimates of content validity. Moreover, by not using some independent method to assess the accuracy of judges in identifying SC, the obtained differences in the content emphases of SC instruments could be confounded by the inaccurate ratings of judges. Albeit, this threat may have been reduced given the ability of the judges to arrive at consensus scores, and the use of the consensus scores for the main analyses. Thus, the obtained results were not dependent on a single individual, but rather on the product of three individuals. A related limitation with respect to the participants of Study 1 was the use of a single, small sample of judges. This limitation is all the more stark given that the judges did not have expertise in the

area of SC. That is, although it was contended that there were benefits to having naïve judges, i.e., that they were less likely to have their personal convictions about SC color the content validity results, a drawback was that they may have been more likely to make inaccurate ratings. Moreover, this drawback could have been addressed by having more than one set of judges, and evaluating whether results replicated. Finally, it is important to emphasize the methodological point that content validity is only one facet when considering the overall validity of an instrument, and provides limited usefulness when considered apart from a comprehensive validation procedure. Hence, the results of Study 1 are best understood in conjunction with the results of Study 2.

As with Study 1, the results of Study 2 are also limited in several respects. For example, the student sample that was used in this investigation was limited with respect to the conclusions that can be drawn from their results, particularly as these results may inform areas of serious clinical concern. Moreover, as discussed above, the selection of the CAGE and FTND to assess the constructs of excessive alcohol consumption and excessive tobacco smoking, respectively, was likely a mistake for the given student population. Finally, in many ways the current investigation evaluated relationships between SC instruments and a host of related constructs in a rather superficial, cursory manner. Although two self-report instruments were used to assess depression, all other constructs were represented by only one instrument, and in all cases self-report was the only modality used. Hence, there is a need for multi-method assessment, and the conclusions obtained here will require considerable follow-up research.

Moreover, more generally, it is believed that further research in SC assessment is long overdue. More specifically, a systematic program of research is sorely needed. On the one hand, a sustained effort should be made to evaluate, compare, and potentially refine current SC instruments. On the other hand, the usefulness of developing a new measure of general SC should be pursued. As noted here and elsewhere (Heiby, Mezo, & Kameoka, in press), there is considerable theoretical diversity among current measures of SC, and even those espousing close ties to the SC model were nevertheless designed for specialized purposes (e.g. outcome assessments for depression, and rates of self-reinforcement). Further, the success of self-management therapy for depression has prompted others to suggest the possibility of developing a comprehensive SC therapy that would cut across diagnostic categories (Dobson & Dozois, 2001). The development of such a therapy would require the simultaneous development of reliable and valid measures of its applicability and efficacy. The construct of SC has demonstrated its usefulness; it is incumbent on us to better assess this construct for the benefit of others.

Appendix A:
Tables

Table 1. Self-Control Skills and Related Constructs.

Construct	Definition
Self-control skills	Applying the processes of self-monitoring, self-evaluating, and self-reinforcing to alter the probability of a response in the relative absence of immediate external support. ^a
Self-instruction	Applying alternative, specific, coping self-statements to the resolution of each phase in the solution of a problem. ^b
Self-regulation	Applying the processes of self-monitoring, self-evaluating, and self-reinforcing, as well as self-efficacy, to the mediation of most external influences and the motivation of purposeful action. ^c
Lifestyle Organization	Setting goals for oneself and then systematically using cognitive and behavioral strategies to reach those goals. ^d
Learned Resourcefulness	A personality repertoire consisting of relatively stable beliefs, self-control skills, and behaviors. ^e

Note. ^aRehm, 1977 (p. 790); Kanfer (1970). ^bMeichenbaum, 1985 (p. 69). ^cBandura, 1991 (p. 248). ^dWilliams et al., 1992 (p. 217). ^eRosenbaum, 1990 (p. 14).

Table 2. Self-Control Skills Instruments.

Instrument	Source	Purpose
Self-Control Questionnaire (SCQ)	Rehm, Kornblith, O'Hara, Lamparski, Romano, & Volkin, 1981	assess attitudes and beliefs about self-control behaviors and cognitions related to depression
Frequency of Self-Reinforcement Questionnaire (FSRQ)	Heiby, 1982	measure self-control in terms of differences in rates of self-reinforcement
Cognitive Self-Management Test (CSM)	Rude, 1986	assess cognitive aspects of self-control in terms of feelings of efficacy in approaching new tasks and style of self-talk (i.e., supportive vs. disparaging)
Lifestyle Approaches Inventory (LSA)	Williams, Moore, Pettibone, & Thomas, 1992	measure self-control as reflected in defining goals for oneself and then systematically using cognitive and behavioral strategies to reach those goals, particularly goals related to self-efficacy and health habits

Table 3. Validity data for the Self-Control Questionnaire (Rehm, Kornblith, O'Hara, Lamparski, Romano, & Volkin, 1981).

Reference	Participants	Construct or Comparison	Measure or Procedure	Test statistic
Rokke, Tomhave, & Jovic, 2000	Adult volunteers over 60 years of age who met diagnostic criteria for major depression	Pre- and post-intervention outcome comparisons	Treatment vs. Waitlist	$F(1, 31) = 4.07, p < .05$
			Self-management therapy vs. Education and support	$F(1, 25) = 4.13, p < .05$
Rokke, Tomhave, & Jovic, 1999	Adult volunteers over 60 years of age with self-report scores indicating clinically meaningful levels of depression	Pre- and post-intervention outcome comparisons	Self-management therapy vs. Waitlist	$F(1, 37) = 16.10, p < .001$
			Behavioral self-management therapy vs. Cognitive self-management therapy	<i>ns</i>
			Participant choice in type of treatment vs. no choice in type of treatment	<i>ns</i>
Rehm, Kaslow, & Rabin, 1987	Adult female volunteers who met diagnostic criteria for nonpsychotic, nonbipolar, Major Affective Disorder	Pre- and post-intervention outcome comparisons	Combined self-control therapy	$t(31) = -3.28, p < .005$
			Behavioral self-control therapy	$t(33) = -7.11, p < .001$
			Cognitive self-control therapy	$t(34) = -4.69, p < .001$
Kornblith, Rehm, O'Hara, & Lamparski, 1983	Adult, female volunteers who met diagnostic criteria for nonpsychotic Major Affective Disorder	Pre- and subsequent intervention outcome comparisons	Comprehensive self-control therapy at week 1, week 5, week 9, posttest, follow-up	<i>ns</i> , <i>ns</i> , <i>ns</i> , $t(11) = 5.82, p < .05$, <i>ns</i>
			Self-monitoring plus self-evaluation at week 1,	<i>ns</i> ,

Table 3. (Continued) Validity data for the Self-Control Questionnaire.			week 5, week 9, posttest, follow-up	$t(12) = 5.56, p < .05,$ <i>ns</i> , $t(12) = 5.86, p < .005,$ <i>ns</i>
			Self-control therapy plus homework at week 1, week 5, week 9, posttest, follow-up	<i>ns</i> , <i>ns</i> , <i>ns</i> , $t(11) = 6.25, p < .005,$ $t(11) = 6.06, p < .01$
			Psychotherapy control at week 1, week 5, week 9, posttest, follow-up	<i>ns</i> , <i>ns</i> , <i>ns</i> , <i>ns</i> , $t(5) = 5.88, p < .05$
			Main treatment parts at week 1, week 5, week 9, posttest, follow-up	<i>ns</i> , <i>ns</i> , <i>ns</i> , <i>ns</i> , <i>ns</i>
O'Hara, Rehm, & Campbell, 1982	Adult female volunteers in second trimester of pregnancy	Prediction of postpartum depression	Beck Depression Inventory (Beck, Rush, Shaw, & Emery, 1979) – administered in second trimester and postpartum	$r(149) = .31, p < .001$
Roth, Bielski, Jones, Parker, Osborn, 1982	Adult volunteers who met diagnostic criteria for Major	Pre- and post- intervention	Self-control therapy Self-control therapy plus	$t(12) = 1.85, p < .05$

Table 4. Validity Data for the Self-Reinforcement Questionnaire (FSRQ; Heiby, 1982).

Reference	Participants	Construct or Comparison	Measure or Procedure	Test statistic
Rokke, Tomhave, & Jovic, 2000	Adult volunteers over 60 years of age who met diagnostic criteria for major depression	Pre- and post-intervention outcome comparisons	Treatment vs. Waitlist	$F(1, 31) = 11.63, p < .001$
			Self-management therapy vs. Education and support	<i>ns</i>
Rokke, Tomhave, & Jovic, 1999	Adult volunteers over 60 years of age with self-report scores indicating clinically meaningful levels of depression	Pre- and post-intervention outcome comparisons	Self-management therapy vs. Waitlist	$F(1, 37) = 11.21, p < .01$
			Behavioral self-management therapy vs. Cognitive self-management therapy	<i>ns</i>
			Participant choice in type of treatment vs. no choice in type of treatment	<i>ns</i>
Varese, Pelowski, Riedel, & Heiby, 1998	Female prison inmate volunteers	Depression	Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979) – low scorers vs. high scorers	$F(1, 42) = 25.09, p < .0001$
Seybolt & Wagner, 1997	Undergraduate students in psychology classes participating for class credit	Life satisfaction	Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985)	$r(182) = .47, p < .0001$
		Sex	Males vs. Females	<i>ns</i>
Wilkinson, 1997	Students in an introductory psychology class participating for class credit and volunteers from	Depression	BDI	$r(366) = -.44, p < .01$
		Frequency of pleasant events	Pleasant Event Schedule (MacPhillamy & Lewinsohn,	

Table 4. (Continued) Validity data for the Self-Reinforcement Questionnaire.	the general community		1976) – Main effect, Interaction with FSRQ on BDI	$r(366) = .29, p < .01$, Final $B = .63, p < .01$
		Frequency of unpleasant events	Unpleasant Event Schedule (UES; Lewinsohn, Mermelstein, Alexander, & MacPhillamy, 1983) – Main effect, Interaction with FSRQ on BDI	$r(366) = -.34, p < .01$, Final $B = -1.02, p < .01$
		Neuroticism, Extraversion	Eysenck Personality Questionnaire (Eysenck & Eysenck, 1975) – scales: Neuroticism, Extraversion	$r(366) = -.45, p < .01$, <i>ns</i>
		Sex		<i>ns</i>
		Age	Males vs. Females In years	$r(366) = .22, p < .01$
Kennett & Ackerman, 1995	University community volunteers who met criteria for being overweight	Pre-intervention and subsequent outcome comparisons	posttest, follow-up	<i>ns</i> , <i>ns</i>
		Pre-intervention and subsequent outcome comparisons with learned resourcefulness	Self-Control Schedule (Rosenbaum, 1980a) at pretest, posttest, follow-up	$r(13) = .60, p < .05$, $r(13) = .81, p < .001$, $r(13) = .70, p < .05$
Parmar & Cernovsky, 1993	Psychiatric hospital volunteers	Between groups comparisons	Paranoid schizophrenic inpatients vs.	

Table 4.
(Continued)
Validity data for the
Self-Reinforcement
Questionnaire.

		Currently manic bipolar mood-disordered inpatients vs. Substance-abuse patients vs. Psychiatric nurse controls		<i>ns</i>
		Sex	Males vs. Females	<i>ns</i>
		Age	In years	<i>ns</i>
Sato & Heiby, 1992	Female volunteers who reported physical victimization by a partner during a one-year period	Depression	Self-Rating Depression Scale (SDS; Zung, 1965)	$r(134) = -.42, p < .05,$ $t(112) = -2.72, p < .01$
		Self-blame for violence inflicted by partner	Attribution Questionnaire (AQ; Sato & Heiby, 1992)	$r(134) = -.48, p < .05$
		Realistic assessment of abusive relationship	AQ	$r(134) = -.20, p < .05$
		Frequency of abuse inflicted by partner	Conflict Tactic's Scale (CTS; Straus, 1979)	<i>ns</i>
		Frequency of abuse inflicted by self	CTS	<i>ns</i>
		Relationship satisfaction	Dyadic Adjustment Scale (Spanier, 1976)	<i>ns</i>
		Assertiveness skills	Interpersonal Behavior Survey (Mauger, Adkinson, Zoss, Firestone, & Hook, 1980)	$r(134) = .39, p < .05$
		Social support	Provisions of Social Relations Scale (Turner, Frankel, & Levin, 1983)	$r(134) = -.37, p < .05$
		History of depression	Schedule for Affective	

Table 4. (Continued) Validity data for the Self-Reinforcement Questionnaire.			Disorders and Schizophrenia (Spitzer, Endicott, & Robins, 1978)	$r(134) = -.22, p < .05$
		Relationship-related losses of reinforcement	Total losses (Sato & Heiby, 1992)	$r(134) = -.26, p < .05$
Holden & Wagner, 1990	Undergraduate students enrolled in psychology courses participating for class credit and who met criteria for either Type A or Type B behavior	Type A/B behavior	Jenkins Activity Survey (Krantz, Glass, & Snyder, 1974) and Thurstone Activity Scale (Thurstone, 1949)	$F(1, 71) = 3.7, p < .06$ Type Bs obtained higher FSRQ scores
		Self-punishment	Recognition Memory Task (RMT; Holden & Wagner, 1990) under challenge condition	
		Sex	Males vs. Females	$r(75) = -.36, p < .01$ <i>ns</i>
Cernovsky, 1989	Adult inpatients diagnosed as chronic alcoholics, and adult controls	Alcoholism	Controls vs. chronic alcoholics	$t(62) = 4.6, p < .001$
		Personality and psychopathology	MMPI scales: Lie, Infrequency, Correction, Hypochondriasis, Depression,	<i>ns</i> , $r(62) = -.26, p < .05$, <i>ns</i> , $r(62) = -.33, p < .01$, $r(62) = -.55, p < .001$,
			Conversion Hysteria, Psychopathic Deviate, Masculinity-femininity, Paranoia, Psychasthenia,	$r(62) = -.38, p < .01$, $r(62) = -.46, p < .001$, <i>ns</i> , <i>ns</i> , $r(62) = -.55, p < .001$

Table 4.
(Continued)
Validity data for the
Self-Reinforcement
Questionnaire.

			Schizophrenia, Hypomania, Social Introversion, Barron's Ego Strength (Barron, 1953), Welsh's Anxiety (Welsh, 1956), Welsh's Repression (Welsh, 1956)	.001, $r(62) = -.52, p < .001$, <i>ns</i> , $r(62) = -.62, p < .001$, $r(62) = .36, p < .001$, $r(62) = -.48, p < .001$, $r(62) = -.36, p < .01$
Heiby, Campos, Remick, & Keller, 1987	Outpatient and inpatient adults who met criteria for Major Depression without psychotic features, or Major Depressive Disorder, Endogenous Subtype	Depression	Compared dexamethasone suppressors and nonsuppressors with high and low scorers on the FSRQ	$\chi^2(1) = 4.13, p < .04$ Low scorers on the FSRQ tended to be suppressors of dexamethasone
Heiby, Onorato, & Sato, 1987	Volunteers participating in a Marathon Clinic	Self-motivation	Dishman Self-Motivation Inventory (Dishman & Ickes, 1981)	$r(220) = -.38, p < .05$
		Health Locus of Control	Wallston's Health Locus of Control Scale (Wallston, Wallston, & DeVellis, 1978) – scales: internal, powerful others, chance	<i>ns</i> , $r(220) = -.22, p < .05$, $r(220) = -.24, p < .05$

Table 4. (Continued) Validity data for the Self-Reinforcement Questionnaire.		Depression	Self-rating Depression Scale (Zung, 1965)	$r(220) = -.48, p < .05$
		Anxiety	State-Trait Anxiety Inventory (Spielberger, Gorsuch, & Lushene, 1970)	$r(220) = -.63, p < .05$
		Exercise	Exercise scale (Heiby et al., 1987) – items: exercise, ability, enjoyable, motivation	$r(220) = .10, p < .05$, <i>ns</i> , <i>ns</i> , $r(220) = .14, p < .05$
Heiby, 1986	Four female clients referred for depression: Two with self-control skills deficits	Crossover, time-series treatment response comparisons	Low scorers on FSRQ sequentially administered self- control skills therapy and social skills therapy with the order of treatment balanced	Treatment gains corresponded with introduction of self- control therapy
	Two with social skills deficits		Low scorers on the IBS sequentially administered self- control skills therapy and social skills therapy with the order of treatment balanced	Treatment gains corresponded with introduction of social skills therapy
Heiby, Ozaki, & Campos, 1984	Students enrolled in an introductory psychology class participating for class credit	Pre- and post- intervention outcome comparisons	Self-reinforcement/reward training group vs. control group	$F(1, 59) = 8.29, p < .01$
Heiby, 1983a	Undergraduate student volunteers enrolled in psychology courses	Self-report frequency of self-reinforcement/self- praise	Self-rated praise following completion of each analogy in an analogies task	$r(198) = .69, p < .0001$

Table 4. (Continued) Validity data for the Self-Reinforcement Questionnaire.			Self-rated praise following completion of each anagram in an anagrams task (Hicks, Hicks, & Mansfield, 1969)	$r(98) = .65, p < .001$
Heiby, 1983b	Students enrolled in introductory psychology classes:	Prediction of lowered mood	Lubin Adjective Checklist (Lubin, 1965) – administered pre- and post- decreased experimenter-controlled reinforcement	$F(3, 72) = 5.54, p < .002$
	Low scorers on the FSRQ High scorers on the FSRQ			ns
Heiby, 1983c	Students enrolled in introductory level psychology courses	Depression	BDI	ns
		Frequency of unpleasant events	Interaction of FSRQ and UES on BDI	$F(1, 84) = 10.21, p < .05$, Low scorers on UES and FSRQ score high on BDI
Heiby, 1982	Students enrolled in an introductory psychology class participating for class credit	Social desirability	Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960)	ns
		Self-reinforcement	Frequency of self- reinforcement: Experimenter rated, Self-monitored	$r(51) = .42, p < .001$, $r(51) = .78, p < .001$

Table 5. Validity Data for the Lifestyle Approaches Inventory (LSA; Williams, Moore, Pettibone, & Thomas, 1992).

Reference	Participants	Construct or Comparison	Measure or Procedure	Test statistic
McKee, 1996	Undergraduate college student volunteers	Problematic alcohol consumption	Michigan Alcoholism Screening Test (Selzer, 1971) Problem drinkers vs. Nonproblem drinkers	$t(284) = 3.97, p < .05$
Williams, Verble, & Price, 1995	Students enrolled in educational psychology courses	Jungian personality dimensions	Myers-Briggs Type Indicator (MBTI; Myers & McCaulley, 1985) – scales: extraversion-introversion for total, females, males; sensing-intuition for total, females, males; thinking-feeling for total, females, males; judging-perceiving for total, females, males	$r(347) = -.12, p < .03, ns,$ $ns;$ $r(347) = -.13, p < .02,$ $r(268) = -.26, p < .02, ns;$ $ns,$ $ns,$ $ns;$ $r(347) = -.40, p < .0001,$ $r(268) = -.38, p < .0001,$ $r(79) = -.42, p < .0001$
		Jungian personality types	MBTI – types: Judging types vs. Perceiving types, Sensing types vs. Intuition types	Neuman Keuls(2, 175), $p < .001$ Judging types have higher LSA scores, Neuman Keuls(2, 175), $p < .001$ Sensing types have

Table 5.
(Continued)
Validity data for
the Lifestyle
Approaches
Inventory.

higher LSA scores

Long, Gaynor, Erwin, & Williams, 1994	Undergraduate students enrolled in an introduction to teaching course	Orientation toward learning	Approaches to Studying Inventory (Entwistle & Ramden, 1983) – scales: internal motivation, high scorers on LSA vs. low scorers on LSA, prediction of membership in high or low LSA scorers' groups; external motivation, high scorers on LSA vs. low scorers on LSA, prediction of membership in high or low LSA scorers' groups; disorganized study methods, high scorers on LSA vs. low scorers on LSA, prediction of membership in high or low LSA scorers' groups	$r(195) = .32, p < .01,$ $df = 2, 70, p < .0001,$ $\Lambda(72) = .57, p < .00001;$ <i>ns,</i> <i>ns,</i> <i>ns;</i> $r(195) = -.54, p < .01,$ $df = 2, 70, p < .0001,$ $\Lambda(72) = .48, p < .00001;$
		Efficiency of study habits	Study Habits and Attitudes Inventory (Nixon & Frost, 1990), high scorers on LSA vs. low scorers on LSA, prediction of membership in high or	$r(195) = -.46, p < .01,$ $df = 2, 70, p < .00001,$

Table 5. (Continued) Validity data for the Lifestyle Approaches Inventory.			low LSA scorers' groups	$\Lambda(72) = .45, p < .00001$
		Perception of academic experiences	Perceived Quality of Academic Life Scale (Okun, Kardash, Stock, Sandler, & Baumann, 1986), high scorers on LSA vs. low scorers on LSA, prediction of membership in high or low LSA scorers' groups	$r(195) = -.25, p < .01,$ $df = 2, 70, p < .0005$ $\Lambda(72) = .43, p < .00001$
		Academic achievement	Grade Point Average	<i>ns</i>
Vogelsang, Williams, & Lawler, 1994	Adult volunteers diagnosed with Carpal Tunnel Syndrome (CTS) and matched participants	Carpal Tunnel Syndrome (CTS)	Participants diagnosed with CTS vs. Participants not diagnosed with CTS, Prediction of membership in either CTS or non-CTS groups	$t(2, 98), p < .05,$ $\chi^2(8, N = 100) = 4.8205,$ $p < .05$
		Relationship between life events and illness	Social Readjustment Rating Scale (Holmes & Rahe, 1967) in CTS group, in non-CTS group	$r(100) = -.44,$ $r(50) = -.434,$ $r(50) = -.368$
Williams, Moore, Pettibone, & Thomas, 1992	University and college undergraduate students, graduate students, and nonstudent adults, including adults from two mental health centers	Self-efficacy	Self-Efficacy Scale (Sherer, Maddux, Mercandante, Prentice- Dunn, Jacobs, & Rogers, 1982)	$r(735) = .71, p < .01$
		Life satisfaction	Life Satisfaction Index Z (Wood, Wylie, & Sheafor, 1969)	$r(735) = .43, p < .01$
		Life purpose or meaning	Modified Purpose in Life Scale (1983-1984)	$r(735) = .51, p < .01$
		Optimism	Life Orientation Test (Scheier &	

Table 5.
(Continued)
Validity data for
the Lifestyle
Approaches
Inventory.

	Carver, 1985)	$r(735) = .46, p < .01$
Physical health status	Health Perceptions Questionnaire (Ware, 1976) – Current Health Scale	$r(735) = .32, p < .01$
Health habits	Health Habits Scale (Williams, Thomas, Young, Jozwiak, & Hector, 1991)	$r(735) = .34, p < .01$
External locus of control	Rotter I-E Scale (Rotter, 1966)	$r(735) = -.30, p < .01$
Perceived stress	Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983)	$r(735) = -.47, p < .01$
Learned resourcefulness	Self-Control Schedule (Rosenbaum, 1980a)	$r(183) = .68, p < .01$
Behavioral outcomes of self-control	Self-Control Questionnaire (Brandon, Oescher, & Loftin, 1990)	$r(111) = .69, p < .01$

Table 6. Measurement Emphases of Self-Control Skills Elements Across Instruments.

<u>Self-Control Skills Instruments</u>	<u>Self-Monitoring</u>	<u>Self-Evaluating</u>	<u>Self-Reinforcing</u>
<u>SCQ</u>	68	53	50
<u>FSRQ</u>	57	40	50
<u>CSM</u>	42	65	42
<u>LSA</u>	69	50	19

Note. Numbers represent percentage of items judged to measure the specific self-control skill. SCQ: Self-Control Questionnaire (Rehm, Kornblith, O'Hara, Lamparski, Romano, & Volkin, 1981). FSRQ: Frequency of Self-Reinforcement Questionnaire (Heiby, 1982). CSM: Cognitive Self-Management Test (Rude, 1986). LSA: Lifestyle Approaches Inventory (Williams, Moore, Pettibone, & Thomas, 1992).

Table 7. Across Instrument Comparisons on Self-Control Skills Elements.

Self-Control Skills Element	Group	df	Mean	Standard Deviation	F-ratio	Significance
<i>Self-Monitoring</i>	SCQ	3, 108	2.25	1.08	1.08	.36
	FSRQ	3, 108	2.00	1.05		
	CSM	3, 108	1.81	1.10		
	LSA	3, 108	2.25	1.07		
	Total	111	2.08	1.08		
<i>Self-Evaluating</i>	SCQ	3, 108	2.08	1.16	1.12	.35
	FSRQ	3, 108	1.73	.98		
	CSM	3, 108	2.27	1.15		
	LSA	3, 108	2.00	1.21		
	Total	111	2.02	1.13		
<i>Self-Reinforcing</i>	SCQ	3, 108	2.10	1.22	1.83	.15
	FSRQ	3, 108	2.23	1.33		

Table 7.
(Continued) Across
Instrument
Comparisons on
Self-Control Skills
Elements.

CSM	3, 108	2.12	1.37
LSA	3, 108	1.38	0.89
Total	111	2.04	1.26

Note. SCQ: Self-Control Questionnaire (Rehm, Kornblith, O'Hara, Lamparski, Romano, & Volkin, 1981). FSRQ: Frequency of Self-Reinforcement Questionnaire (Heiby, 1982). CSM: Cognitive Self-Management Test (Rude, 1986). LSA: Lifestyle Approaches Inventory (Williams, Moore, Pettibone, & Thomas, 1992).

Table 8. Summary Statistics and Reliability Coefficients of Self-Control Skills and Validity Instruments.

	<u>N</u>	<u>Mean</u>	<u>SD</u>	<u>Range</u>	<u>Coefficient alpha</u> <u>(n = 356-369)^b</u>	<u>Test-retest</u> <u>correlation</u> <u>coefficient (n =</u> <u>132)^a</u>
<u>SCQ</u>	369	101.2	15.46	50-144	.85	.83*
<u>FSRQ</u>	369	20.6	4.93	3-30	.80	.84*
<u>CSM</u>	369	86.2	13.05	33-129	.88	.88*
<u>LSA</u>	369	36.3	7.91	19-61	.67	.68*
<u>BDI</u>	369	8.6	8.32	0-53	.91	-
<u>SDS</u>	369	37.1	8.99	20-72	.86	-
<u>CAS</u>	369	18.2	13.12	0-76	.92	-
<u>DIET</u>	369	1633.1	440.48	350-2840	.92	-
<u>CAGE</u>	369	.8	1.12	0-4	.70	-
<u>FTND</u>	369	.4	1.31	0-8	.77	-

Table 8.
(Continued)
Summary Statistics
and Reliability
Coefficients of Self-
Control Skills and
Validity
Instruments.

<u>SCS</u>	369	19.7	24.88	-56-84	.86	-
<u>SCQ-Brandon</u>	369	49.9	7.71	29-70	.71	-
<u>MCSD</u>	369	13.4	4.85	1-24	.73	-
<u>MDBS</u>	369	87.2	28.28	22-184	.88	-
<u>HSAS</u>	369	134.2	19.84	69-188	.89	-
<u>GMVI</u>	369	15.6	4.61	3-27	.61	-

Note. SCQ: Self-Control Questionnaire (Rehm, Kornblith, O'Hara, Lamparski, Romano, & Volkin, 1981). FSRQ: Frequency of Self-Reinforcement Questionnaire (Heiby, 1982). CSM: Cognitive Self-Management Test (Rude, 1986). LSA: Lifestyle Approaches Inventory (Williams, Moore, Pettibone, & Thomas, 1992). BDI: Beck Depression Inventory (Beck, Rush, Shaw, & Emery, 1979). SDS: Self-Rating Depression Scale (Zung, 1965). CAS: Clinical Anxiety Scale (Westhuis & Thyer, 1989). DIET: Dieter's Inventory of Eating Temptations (Schlundt & Zimering, 1988). CAGE: CAGE Alcohol Interview Schedule (Mayfield, McLeod, & Hall, 1974). FTND: Fagerstrom Test for Nicotine Dependence (Heatherton, Kozlowski, Frecker, & Fagerstrom, 1991). SCS: Self-Control Schedule (Rosenbaum, 1980a). SCQ-Brandon: Self-Control Questionnaire (Brandon, Oescher, & Loftin, 1990). MCSD: Marlowe-

Table 8. (Continued) Summary Statistics and Reliability Coefficients of Self-Control Skills and Validity Instruments.
 Crowne Social Desirability Scale (Crowne & Marlowe, 1960). MDBS: Morally Debatable Behaviors Scales (Harding & Phillips, 1986). HSAS: Hendrick Sexual Attitude Scale (Hendrick & Hendrick, 1987). GMVI: Goal and Mode Values Inventories–Traditional Religiosity Scale (Braithwaite & Law, 1985). ^aTest-retest coefficients are based on a subset sample of 132. ^bCoefficient alpha's are based on sample sizes between 356 and 369 due to missing values.
 * $p < .05$ (2-tailed). Alpha level of correlations adjusted with Bonferroni correction.

Table 9. Bivariate correlations among Self-Control Skills Instruments.

	<u>SCQ</u>	<u>FSRQ</u>	<u>CSM</u>	<u>LSA</u>
<u>SCQ</u>	-			
<u>FSRQ</u>	.68*	-		
<u>CSM</u>	.66*	.70*	-	
<u>LSA</u>	.45*	.35*	.49*	-

Note. SCQ: Self-Control Questionnaire (Rehm, Kornblith, O'Hara, Lamparski, Romano, & Volkin, 1981). FSRQ: Frequency of Self-Reinforcement Questionnaire (Heiby, 1982). CSM: Cognitive Self-Management Test (Rude, 1986). LSA: Lifestyle Approaches Inventory (Williams, Moore, Pettibone, & Thomas, 1992).

* $p < .05$ (2-tailed). Alpha level of correlations adjusted with Bonferroni correction.

Table 10. Correlations between Self-Control Skills Instruments and Measures of Hypothesized Related Constructs.

<u>Construct</u>	<u>Measure</u>	<u>Self-Control Skills Instruments</u>			
		SCQ	FSRQ	CSM	LSA
Depression	BDI	-.48*	-.60*	-.57*	-.30*
Depression	SDS	-.58*	-.62*	-.63*	-.38*
Anxiety	CAS	-.42*	-.51*	-.53*	-.33*
Weight-management competencies	DIET	.21*	.18*	.25*	.32*
Excessive alcohol consumption	CAGE	-.03	-.08	-.08	-.03
Excessive tobacco smoking	FTND	-.08	-.06	-.09	-.08
Learned resourcefulness	SCS	.53*	.52*	.70*	.54*
Behavioral outcomes of Self-Control Skills	SCQ-Brandon	.47*	.47*	.56*	.57*

Note. SCQ: Self-Control Questionnaire (Rehm, Kornblith, O'Hara, Lamparski, Romano, & Volkin, 1981). FSRQ: Frequency of Self-Reinforcement Questionnaire (Heiby, 1982). CSM: Cognitive Self-Management Test (Rude, 1986). LSA: Lifestyle Approaches Inventory (Williams, Moore, Pettibone, & Thomas, 1992). BDI: Beck Depression Inventory (Beck, Rush, Shaw, & Emery, 1979). SDS: Self-Rating Depression Scale (Zung, 1965). CAS: Clinical Anxiety Scale (Westhuis & Thyer, 1989). DIET: Dieter's Inventory of Eating Temptations (Schlundt & Zimering, 1988). CAGE: CAGE Alcohol Interview Schedule (Mayfield, McLeod, & Hall, 1974).

Table 10. (Continued) Correlations between Self-Control Skills Instruments and Measures of Hypothesized Related Constructs. FTND: Fagerstrom Test for Nicotine Dependence (Heatherton, Kozlowski, Frecker, & Fagerstrom, 1991). SCS: Self-Control Schedule (Rosenbaum, 1980a). SCQ-Brandon: Self-Control Questionnaire (Brandon, Oescher, & Loftin, 1990). * $p < .05$ (2-tailed). Alpha level of correlations adjusted with Bonferroni correction.

Table 11. Fisher's z transformation comparisons between Self-Control Skills Instrument correlations with the BDI.

	<u>SCQ</u>	<u>FSRQ</u>	<u>CSM</u>	<u>LSA</u>
<u>SCQ</u>	-			
<u>FSRQ</u>	-3.54*	-		
<u>CSM</u>	-2.54*	0.95	-	
<u>LSA</u>	3.67*	5.95*	5.90*	-

Note. Numbers represent z-scores of the magnitude of difference between compared correlations. Positive z-scores indicate a higher bivariate correlation with the validity measure for the instrument in the column heading. Negative z-scores indicate a higher bivariate correlation with the validity measure for the instrument in the row heading. BDI: Beck Depression Inventory (Beck, Rush, Shaw, & Emery, 1979). SCQ: Self-Control Questionnaire (Rehm, Kornblith, O'Hara, Lamparski, Romano, & Volkin, 1981). FSRQ: Frequency of Self-Reinforcement Questionnaire (Heiby, 1982). CSM: Cognitive Self-Management Test (Rude, 1986). LSA: Lifestyle Approaches Inventory (Williams, Moore, Pettibone, & Thomas, 1992).

* $p < .05$ (2-tailed).

Table 12. Fisher's z transformation comparisons between Self-Control Skills Instrument correlations with the SDS.

	<u>SCQ</u>	<u>FSRQ</u>	<u>CSM</u>	<u>LSA</u>
<u>SCQ</u>	-			
<u>FSRQ</u>	-1.25	-		
<u>CSM</u>	-1.54	-0.33	-	
<u>LSA</u>	4.37*	4.98*	5.80*	-

Note. Numbers represent z -scores of the magnitude of difference between compared correlations. Positive z -scores indicate a higher bivariate correlation with the validity measure for the instrument in the column heading. Negative z -scores indicate a higher bivariate correlation with the validity measure for the instrument in the row heading. BDI: Beck Depression Inventory (Beck, Rush, Shaw, & Emery, 1979). SCQ: Self-Control Questionnaire (Rehm, Kornblith, O'Hara, Lamparski, Romano, & Volkin, 1981). FSRQ: Frequency of Self-Reinforcement Questionnaire (Heiby, 1982). CSM: Cognitive Self-Management Test (Rude, 1986). LSA: Lifestyle Approaches Inventory (Williams, Moore, Pettibone, & Thomas, 1992).

* $p < .05$ (2-tailed).

Table 13. Fisher's z transformation comparisons between Self-Control Skills Instrument correlations with the CAS.

	<u>SCQ</u>	<u>FSRQ</u>	<u>CSM</u>	<u>LSA</u>
<u>SCQ</u>	-			
<u>FSRQ</u>	-2.49*	-		
<u>CSM</u>	-2.98*	-0.60	-	
<u>LSA</u>	1.81	3.46*	4.34*	-

Note. Numbers represent z -scores of the magnitude of difference between compared correlations. Positive z -scores indicate a higher bivariate correlation with the validity measure for the instrument in the column heading. Negative z -scores indicate a higher bivariate correlation with the validity measure for the instrument in the row heading. BDI: Beck Depression Inventory (Beck, Rush, Shaw, & Emery, 1979). SCQ: Self-Control Questionnaire (Rehm, Kornblith, O'Hara, Lamparski, Romano, & Volkin, 1981). FSRQ: Frequency of Self-Reinforcement Questionnaire (Heiby, 1982). CSM: Cognitive Self-Management Test (Rude, 1986). LSA: Lifestyle Approaches Inventory (Williams, Moore, Pettibone, & Thomas, 1992).

* $p < .05$ (2-tailed).

Table 14. Fisher's z transformation comparisons between Self-Control Skills Instrument correlations with the DIET.

	<u>SCQ</u>	<u>FSRQ</u>	<u>CSM</u>	<u>LSA</u>
<u>SCQ</u>	-			
<u>FSRQ</u>	0.73	-		
<u>CSM</u>	-0.96	1.78	-	
<u>LSA</u>	-2.10*	-2.45*	-1.40	-

Note. Numbers represent z-scores of the magnitude of difference between compared correlations. Positive z-scores indicate a higher bivariate correlation with the validity measure for the instrument in the column heading. Negative z-scores indicate a higher bivariate correlation with the validity measure for the instrument in the row heading. BDI: Beck Depression Inventory (Beck, Rush, Shaw, & Emery, 1979). SCQ: Self-Control Questionnaire (Rehm, Kornblith, O'Hara, Lamparski, Romano, & Volkin, 1981). FSRQ: Frequency of Self-Reinforcement Questionnaire (Heiby, 1982). CSM: Cognitive Self-Management Test (Rude, 1986). LSA: Lifestyle Approaches Inventory (Williams, Moore, Pettibone, & Thomas, 1992).

* $p < .05$ (2-tailed).

Table 15. Fisher's z transformation comparisons between Self-Control Skills Instrument correlations with the SCS.

	<u>SCQ</u>	<u>FSRQ</u>	<u>CSM</u>	<u>LSA</u>
<u>SCQ</u>	-			
<u>FSRQ</u>	0.29	-		
<u>CSM</u>	-5.33*	-5.94*	-	
<u>LSA</u>	-0.23	-0.42	4.25*	-

Note. Numbers represent z-scores of the magnitude of difference between compared correlations. Positive z-scores indicate a higher bivariate correlation with the validity measure for the instrument in the column heading. Negative z-scores indicate a higher bivariate correlation with the validity measure for the instrument in the row heading. BDI: Beck Depression Inventory (Beck, Rush, Shaw, & Emery, 1979). SCQ: Self-Control Questionnaire (Rehm, Kornblith, O'Hara, Lamparski, Romano, & Volkin, 1981). FSRQ: Frequency of Self-Reinforcement Questionnaire (Heiby, 1982). CSM: Cognitive Self-Management Test (Rude, 1986). LSA: Lifestyle Approaches Inventory (Williams, Moore, Pettibone, & Thomas, 1992).

* $p < .05$ (2-tailed).

Table 16. Fisher's z transformation comparisons between Self-Control Skills Instrument correlations with the SCQ-Brandon.

	<u>SCQ</u>	<u>FSRQ</u>	<u>CSM</u>	<u>LSA</u>
<u>SCQ</u>	-			
<u>FSRQ</u>	0.00	-		
<u>CSM</u>	-2.52*	-2.67*	-	
<u>LSA</u>	-2.26*	-2.10*	-0.24	-

Note. Numbers represent z-scores of the magnitude of difference between compared correlations. Positive z-scores indicate a higher bivariate correlation with the validity measure for the instrument in the column heading. Negative z-scores indicate a higher bivariate correlation with the validity measure for the instrument in the row heading. BDI: Beck Depression Inventory (Beck, Rush, Shaw, & Emery, 1979). SCQ: Self-Control Questionnaire (Rehm, Kornblith, O'Hara, Lamparski, Romano, & Volkin, 1981). FSRQ: Frequency of Self-Reinforcement Questionnaire (Heiby, 1982). CSM: Cognitive Self-Management Test (Rude, 1986). LSA: Lifestyle Approaches Inventory (Williams, Moore, Pettibone, & Thomas, 1992).

* $p < .05$ (2-tailed).

Table 17. Correlations between Self-Control Skills Instruments and Measures of Hypothesized Unrelated Constructs.

<u>Construct</u>	<u>Measure</u>	<u>Self-Control Skills Instruments</u>			
		SCQ	FSRQ	CSM	LSA
Social desirability	MCSD	.20*	.17	.37*	.29*
Moral beliefs	MDBS	-.03	.03	-.04	-.06
Attitudes towards sexuality	HSAS	.00	-.04	-.02	.05
Religiosity	GMVI	.09	.09	.12	.16

Note. SCQ: Self-Control Questionnaire (Rehm, Kornblith, O'Hara, Lamparski, Romano, & Volkin, 1981). FSRQ: Frequency of Self-Reinforcement Questionnaire (Heiby, 1982). CSM: Cognitive Self-Management Test (Rude, 1986). LSA: Lifestyle Approaches Inventory (Williams, Moore, Pettibone, & Thomas, 1992). MCSD: Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960). MDBS: Morally Debatable Behaviors Scales (Harding & Phillips, 1986). HSAS: Hendrick Sexual Attitude Scale (Hendrick & Hendrick, 1987). GMVI: Goal and Mode Values Inventories—Traditional Religiosity Scale (Braithwaite & Law, 1985).

* $p < .05$ (2-tailed). Alpha level of correlations adjusted with Bonferroni correction.

Appendix B:
Figures

Figure 1. A Basic Model of Self-Control Skills.

Appendix C: Questionnaires

SCQ

Please read each of the following statements and indicate just how characteristic or descriptive of you the statement is by using the letters of the code given below:

A = *Very characteristic of me, extremely descriptive*

B = *Rather characteristic of me, quite descriptive*

C = *Somewhat characteristic of me, slightly uncharacteristic*

D = *Rather uncharacteristic of me, quite uncharacteristic*

E = *Very uncharacteristic of me, extremely uncharacteristic*

- ___ 1. Rewarding myself for progress toward a goal is unnecessary and may actually spoil me.
- ___ 2. Concentrating on the final goals as well as the immediate results of my efforts can help me feel better about my work.
- ___ 3. When things are going well, I often feel that something bad is just around the corner and there's nothing I can do about it.
- ___ 4. I am aware of my accomplishments each day.
- ___ 5. Thinking about how well I'm doing so far is what keeps me trying.
- ___ 6. When I do something right, I take the time to enjoy the feeling.
- ___ 7. It usually works best for me to save my special treats until after I carry out what I intended to accomplish.
- ___ 8. What is most important is how I feel about my actions, not what others think.
- ___ 9. There is nothing I can do to change things that are upsetting me.
- ___ 10. The way to achieve my goals is to reward myself along the way, in order to keep up my own efforts.
- ___ 11. Punishing myself for only making partial gains toward a goal is the smart way to keep pressure on and get the job done.
- ___ 12. I get myself through hard things largely by planning on enjoying myself afterwards.
- ___ 13. I depend heavily on other people's opinions to evaluate objectively what I do.
- ___ 14. When I don't feel like doing anything, sometimes it helps if I take time out to do something I really enjoy.
- ___ 15. I always seem to remember the bad things that happen to me more than the good.
- ___ 16. It's success at the little things that encourages me to go on trying.

- ___ 17. To get good results, I have to observe what I'm actually doing in order to decide what I need to do next.
- ___ 18. The things in life that are most important depend on chance more than anything I can do.
- ___ 19. Planning each step of what I have to do helps me to get things done well.
- ___ 20. It's no use trying to change most of the things that make me miserable.
- ___ 21. My mood is unrelated to my behavior.
- ___ 22. There isn't anything to do when I want something important other than be patient and hope for good luck.
- ___ 23. Activities which fail to lead to something immediately should be dropped in favor of those that do so.
- ___ 24. My goals seem distant and unreachable.
- ___ 25. I think talking about what you've done right or well is just boastful and tooting your own horn.
- ___ 26. Unless I set and reach very high goals, my efforts are likely to be wasted.
- ___ 27. When I feel blue, the best thing to do is focus on all the negative things happening to me.
- ___ 28. Judging what I've done realistically is necessary for me to feel good about myself.
- ___ 29. How I feel about myself has a lot to do with what I'm accomplishing.
- ___ 30. I shouldn't dwell on things I've done well in hopes of feeling good about myself.
- ___ 31. When there is some goal I'd like to reach, I find it best to list specifically what I have to do to get there.
- ___ 32. My mood changes in relation to what I'm doing.
- ___ 33. It's just as important to think about what will happen later as a result of my actions, as it is to watch for immediate effects.
- ___ 34. I'd just be fooling myself if I tried to judge my reactions myself.
- ___ 35. Keeping watch on what I do wrong is more helpful than watching what I do *correctly*.
- ___ 36. Criticizing myself is often the best way to help me get through a difficult task.
- ___ 37. Not only what goes on around us, but also the things we say and do to ourselves determine how we feel from day to day.
- ___ 38. I encourage myself to improve by treating myself to something special whenever I make progress.

- ___ 39. It's more helpful to receive criticism than praise for my actions.
- ___ 40. I'd be unlikely to change for the better if I didn't silently praise myself or feel good for every step in the right direction.

FSRQ

Below are a number of statements concerning beliefs or attitudes people have. Indicate whether the statements are characteristic and descriptive of you by circling T if the statement is somewhat or very true of yourself. Circle F if the statement is somewhat or very false for yourself. Please be as honest as possible. Your answers are completely anonymous.

T	F	1. When I fail at something, generally I am still able to feel good about myself.
T	F	2. I can stick to a tiresome task that I need to complete for a long time without someone encouraging me.
T	F	3. I don't often think positive thoughts about myself.
T	F	4. When I do something right, I take time to enjoy the feeling.
T	F	5. I have such high standards for what I demand of myself that I rarely meet those standards.
T	F	6. I seem to blame myself when things go wrong and am very critical of myself.
T	F	7. There are pleasurable activities which I enjoy doing alone at my leisure.
T	F	8. I usually get upset when I make mistakes because I rarely learn from them.
T	F	9. My feelings of self-confidence and self-esteem fluctuate a great deal.
T	F	10. When I succeed at small things, I become encouraged to go on.
T	F	11. Unless I do something absolutely perfectly, it gives me little satisfaction.
T	F	12. I get myself through hard things mostly by planning to enjoy myself afterwards.
T	F	13. When I make mistakes, I take time to criticize myself.

T	F	14. I encourage myself to improve my feeling good about myself or giving myself something special whenever I make some progress.
T	F	15. If I didn't criticize myself frequently, I would continue to do things poorly forever.
T	F	16. I think talking about what you've done right is being too boastful.
T	F	17. I find I feel better and do better when I silently praise myself for even small achievements.
T	F	18. I can keep trying at something when I stop to think of what I've accomplished.
T	F	19. The way I keep up my confidence is by acknowledging any success I have.
T	F	20. The way I achieve my goals is by rewarding myself every step along the way.
T	F	21. Praising yourself is being selfish and egotistic.
T	F	22. When someone criticizes me, my self-confidence is shattered.
T	F	23. I criticize myself more frequently than others criticize me.
T	F	24. I have a lot of worthwhile qualities.
T	F	25. I silently praise myself even when others do not praise me.
T	F	26. Any activity can provide some pleasure regardless of how it comes out.
T	F	27. If I don't do the best possible job, I think less of myself.
T	F	28. I should be upset if I make a mistake.
T	F	29. My happiness depends more on myself than it does on other people.
T	F	30. People who talk about their own better points are just bragging.

CSM

Directions: In answering the questions below, think about how you typically react to the sorts of situations described. Try to disregard thoughts of how you feel you should or would like to react

and mark the point along the scale which best describes your actual reactions. PLEASE CIRCLE ONE OF THE NOTCHED POINTS ON THE SCALE.

1. I am more attentive to evidence that I have been rejected or criticized than to positive or flattering information.

2. If something bad happens and there's nothing to be done about it I put it out of my thoughts.

3. When I approach a challenging task I'm fairly good at thinking positively enough to boost my confidence.

4. I tend to blame myself for things that go wrong.

5. I am pleased and encouraged by even small or partial successes.

6. I can't help dwelling on things that have gone wrong.

7. I can usually overcome any initial difficulties I experience in learning something new.

8. Insecurities or other negative feelings often make it difficult for me to perceive a situation clearly.
- Extremely UNcharacteristic of me | | | | Extremely Characteristic of me
9. I spend time contemplating and enjoying successes.
- Extremely UNcharacteristic of me | | | | Extremely Characteristic of me
10. If something good happens I spend more time thinking about it than if something bad happens.
- Extremely UNcharacteristic of me | | | | Extremely Characteristic of me
11. I avoid starting tasks because I doubt I'll finish them.
- Extremely UNcharacteristic of me | | | | Extremely Characteristic of me
12. Once I set my mind to do something I'm confident that I'll do it.
- Extremely UNcharacteristic of me | | | | Extremely Characteristic of me
13. I generally deal with major setbacks, failures, or rejections by gradually looking on the bright side and finding a new strategy.
- Extremely UNcharacteristic of me | | | | Extremely Characteristic of me
14. I usually give myself a "pat on the back" for even small accomplishments.
- Extremely UNcharacteristic of me | | | | Extremely Characteristic of me

15. I have difficulty maintaining a constructive attitude.
Extremely
UNcharacteristic
of me | | | | | Extremely
Characteristic
of me |
|--|--|--|--|--|--------------------------------------|
16. I often react to a failure or setback by feeling extremely low.
Extremely
UNcharacteristic
of me | | | | | Extremely
Characteristic
of me |
|--|--|--|--|--|--------------------------------------|
17. I generally feel fairly accepting of my work and my behavior.
Extremely
UNcharacteristic
of me | | | | | Extremely
Characteristic
of me |
|--|--|--|--|--|--------------------------------------|
18. My expectations for myself are often too high for me to reach.
Extremely
UNcharacteristic
of me | | | | | Extremely
Characteristic
of me |
|--|--|--|--|--|--------------------------------------|
19. If I have trouble achieving a goal I tend to figure out where the problem lies and then correct it.
Extremely
UNcharacteristic
of me | | | | | Extremely
Characteristic
of me |
|--|--|--|--|--|--------------------------------------|
20. When I approach a challenging task I tend to think a lot about what might go wrong.
Extremely
UNcharacteristic
of me | | | | | Extremely
Characteristic
of me |
|--|--|--|--|--|--------------------------------------|
21. I give myself emotional support much as one friend would give another support.
Extremely
UNcharacteristic
of me | | | | | Extremely
Characteristic
of me |
|--|--|--|--|--|--------------------------------------|
22. I feel little confidence when approaching a new task.
Extremely
UNcharacteristic
of me | | | | | Extremely
Characteristic
of me |
|--|--|--|--|--|--------------------------------------|

23. I set up step by step plans for what I want to accomplish.
- Extremely UNcharacteristic of me | | | | Extremely Characteristic of me
24. I'm reluctant to scale my goals down even when I can't seem to attain them.
- Extremely UNcharacteristic of me | | | | Extremely Characteristic of me
25. If a task seems too big I break it down into smaller parts and take it one step at a time.
- Extremely UNcharacteristic of me | | | | Extremely Characteristic of me
26. If I do something wrong I tend to make myself suffer for it.
- Extremely UNcharacteristic of me | | | | Extremely Characteristic of me

LSA

Indicate how similar each of the following items is to your personal lifestyle by using the following format:

- A = Very different from me
 B = Somewhat different
 C = Uncertain
 D = Somewhat similar to me
 E = Very similar to me

- ___ 1. In most situations, I have a clear sense of what behaviors would be right or wrong for me.
- ___ 2. When confronted with many different things to do, I have difficulty deciding what is most important to do.
- ___ 3. After making a decision about what is most important to do at any given time, I easily get sidetracked from that activity.
- ___ 4. Once I decide what is most important to do at any given time, I start on that task right away.
- ___ 5. I write down the pro's and con's of any behavior change I am considering.

- ___ 6. I have difficulty judging how long it will take me to complete a task.
- ___ 7. I seldom analyze what I am saying to myself regarding problem areas in my life.
- ___ 8. I have written down my life goals.
- ___ 9. When I begin a personal change project, I generally keep my plans to myself.
- ___ 10. I keep my work space well-organized.
- ___ 11. I have a clear sense of what I most want to experience in my life.
- ___ 12. I seldom ask for feedback from others about behaviors I need to change and how best to change those behaviors.
- ___ 13. I complete tasks at the time I say I'm going to complete them.
- ___ 14. I seldom write down my yearly goals.
- ___ 15. I'm confused as to the kind of qualities I want to develop in my life.
- ___ 16. I have difficulty matching various tasks with my energy level.

BDI-A

On this questionnaire are groups of statements. Please read each group of statement carefully. Then pick out the one statement in each group which best describes the way you have been feeling the PAST WEEK, INCLUDING TODAY! Circle the number beside the statement you picked. If several statements within the group seem to apply really well, circle each one. Be sure to read all the statements in each group before making your choice.

- 1. 0 I do not feel sad.
 1 I feel sad.
 2 I am sad all the time and I can't snap out of it.
 3 I am so sad or unhappy that I can't stand it.

- 2. 0 I am not particularly discouraged about the future.
 1 I feel discouraged about the future.
 2 I feel I have nothing to look forward to.
 3 I feel that the future is hopeless and that things cannot improve.

- 3. 0 I do not feel like a failure.
 1 I feel I have failed more than the average person.
 2 As I look back on my life, all I can see is a lot of failures.
 3 I feel I am a complete failure as a person.

4. 0 I get as much satisfaction out of things as I used to.
 1 I don't enjoy things the way I used to.
 2 I don't get real satisfaction out of anything anymore.
 3 I am dissatisfied or bored with everything.
5. 0 I don't feel particularly guilty.
 1 I feel guilty a good part of the time.
 2 I feel quite guilty most of the time.
 3 I feel guilty all of the time.
6. 0 I don't feel I am being punished.
 1 I feel I may be punished
 2 I expect to be punished.
 3 I feel I am being punished.
7. 0 I don't feel disappointed in myself.
 1 I am disappointed in myself.
 2 I am disgusted with myself.
 3 I hate myself.
8. 0 I don't feel I am any worse than anybody else.
 1 I am critical of myself for my weaknesses or mistakes.
 2 I blame myself all the time for my faults.
 3 I blame myself for everything bad that happens.
9. 0 I don't have any thoughts of killing myself.
 1 I have thoughts of killing myself, but I would not carry them out.
 2 I would like to kill myself.
 3 I would kill myself if I had the chance.
10. 0 I don't cry anymore than usual.
 1 I cry more now than I used to.
 2 I cry all the time now.
 3 I used to be able to cry, but now I can't cry even though I want to.
11. 0 I am no more irritated now than I ever am.
 1 I get annoyed or irritated more easily than I used to.
 2 I feel irritated all the time now.
 3 I don't get irritated at all by the things that used to irritate me.
12. 0 I have not lost interest in other people.
 1 I am less interested in other people than I used to be.
 2 I have lost most of my interest in other people.
 3 I have lost all of my interest in other people.

13. 0 I make decisions about as well as I ever could.
 1 I put off making decisions more than I used to.
 2 I have greater difficulty in making decisions than before.
 3 I can't make decisions at all anymore.
14. 0 I don't feel I look any worse than I used to.
 1 I am worried that I am looking old or unattractive.
 2 I feel that there are permanent changes in my appearance that make me look unattractive.
 3 I believe that I look ugly.
15. 0 I can work about as well as before.
 1 It takes an extra effort to get started at doing something.
 2 I have to *push myself very hard to do anything*.
 3 I can't do anything at all.
16. 0 I can sleep as well as usual.
 1 I don't sleep as well as I used to.
 2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
 3 I wake up several hours than I used to and cannot get back to sleep.
17. 0 I don't get more tired than usual.
 1 I get tired more easily than I used to.
 2 I get tired from doing almost anything.
 3 I am too tired to do anything.
18. 0 My appetite is no worse than usual.
 1 My appetite is not as good as it used to be.
 2 My appetite is much worse now.
 3 I have no appetite at all anymore.
19. 0 I haven't lost much weight, if any lately.
 1 I have lost more than 5 pounds
 2 I have lost more than 10 pounds.
 3 I have lost more than 15 pounds.
- I am purposely trying to lose weight by eating less. Yes __ No __
20. 0 I am no more worried about my health than usual.
 1 I am worried about physical problems such as aches and pains; or upset stomach; or constipation.
 2 I am very worried about physical problems and it's hard to think of much else.
 3 I am worried about my physical problems, that I cannot think about anything else.

21. 0 I have not noticed any recent change in my interest in sex.
 1 I am less interested in sex than I used to be.
 2 I am much less interested in sex now.
 3 I have lost interest in sex completely.

SDS

Below are twenty statements. Please rate each using the following scale:

- 1 = Some or a little of the time
 2 = Some of the time
 3 = Good part of the time
 4 = Most or all of the time

Please record your rating in the space to the left of each item.

- ___ 1. I feel down-hearted, blue, and sad.
 ___ 2. Morning is when I feel the best.
 ___ 3. I have crying spells or feel like it.
 ___ 4. I have trouble sleeping through the night.
 ___ 5. I eat as much as I used to.
 ___ 6. I enjoy looking at, talking to, and being with attractive women/men.
 ___ 7. I notice that I am losing weight.
 ___ 8. I have trouble with constipation.
 ___ 9. My heart beats faster than usual.
 ___ 10. I get tired for no reason.
 ___ 11. My mind is as clear as it used to be.
 ___ 12. I find it easy to do the things I used to.
 ___ 13. I am restless and can't keep still.
 ___ 14. I feel hopeful about the future.
 ___ 15. I am more irritable than usual.
 ___ 16. I find it easy to make decisions.
 ___ 17. I feel that I am useful and needed.
 ___ 18. My life is pretty full.
 ___ 19. I feel that others would be better off if I were dead.
 ___ 20. I still enjoy the things I used to do.

CAS

This questionnaire is designed to measure how much anxiety you are currently feeling. It is not a test, so there are no right or wrong answers. Answer each item as carefully and as accurately as you can by placing a number beside each one as follows.

- 1 Rarely or none of the time
 - 2 A little of the time
 - 3 Some of the time
 - 4 A good part of the time
 - 5 Most or all of the time
-

- 1. ____ I feel calm.
- 2. ____ I feel tense.
- 3. ____ I feel suddenly scared for no reason.
- 4. ____ I feel nervous.
- 5. ____ I use tranquilizers or antidepressants to cope with my anxiety.
- 6. ____ I feel confident about the future.
- 7. ____ I am free from senseless or unpleasant thoughts.
- 8. ____ I feel afraid to go out of my house alone.
- 9. ____ I feel relaxed and in control of myself.
- 10. ____ I have spells of terror or panic.
- 11. ____ I feel afraid in open spaces or in the streets.
- 12. ____ I feel afraid I will faint in public.
- 13. ____ I am comfortable traveling on buses, subways or trains.
- 14. ____ I feel nervousness or shakiness inside.
- 15. ____ I feel comfortable in crowds, such as shopping or at a movie.
- 16. ____ I feel comfortable when I am left alone.
- 17. ____ I feel afraid without good reason.
- 18. ____ Due to my fears, I unreasonably avoid certain animals, objects or situations.
- 19. ____ I get upset easily or feel panicky unexpectedly.
- 20. ____ My hands, arms or legs shake or tremble.
- 21. ____ Due to my fears, I avoid social situations, whenever possible.
- 22. ____ I experience sudden attacks of panic which catch me by surprise.

23. ____ I feel generally anxious.
24. ____ I am bothered by dizzy spells.
25. ____ Due to my fears, I avoid being alone, whenever possible.

DIET

Each item in this questionnaire describes a situation and a behavior that promotes weight loss or weight control. Imagine that you are in the situation described and rate the percent of the time you would behave in the way described. If you would always act in the way described then give a rating of 100%. If you would never act that way give a rating of 0%. If you would sometimes act that way then circle the number at the point on the scale that shows how often you would act as described. If you feel that you never get into a situation like the one described (it does not apply to you), then rate how often you engage in the kind of behavior described in general.

1. You're having dinner with your family and your favorite meal has been prepared. You finish the first helping and someone says, "Why don't you have some more?" What percent of the time would you turn down a second helping?
0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100
2. You would like to exercise every day but it is hard to find the time because of your family and work obligations. What percent of the time would you set aside a daily time for exercise?
0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100
3. You like to eat high calorie snack food (e.g., cookies, potato chips, crackers, cokes, beer, cake) while watching television. What percent of the time would you watch TV without eating a high calorie snack?
0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100
4. When you eat in a good restaurant, you love to order high calorie foods. What percent of the time would you order a low calorie meal?
0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100
5. When planning meals, you tend to choose high calorie foods. What percent of the time would you plan low calorie meals?
0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100

6. You are at a party and there is a lot of fattening food. You have already eaten more than you should and you are tempted to continue eating. What percent of the time would you stop with what you have already eaten?
- 0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100
7. You like to flavor your vegetables with butter, margarine, ham, or bacon fat. What percent of the time would you choose a low calorie method of seasoning?
- 0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100
8. You often prepare many of your foods by frying. What percent of the time would you prepare your food in a way that is less fattening?
- 0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100
9. You allow yourself a snack in the evening, but you find yourself eating more than your diet allows. What percent of the time would you reduce the size of your snack?
- 0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100
10. Instead of putting foods away after finishing a meal, you find yourself eating the leftovers. What percent of the time would you put the food away without eating any?
- 0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100
11. You are asked by another person to go for a walk but you feel tired and kind of low. What percent of the time would you overcome these feelings and say "yes" to the walk?
- 0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100
12. You often overeat at supper because you are tired and hungry when you get home. What percent of the time would you not overeat at supper?
- 0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100
13. When you have errands to run that are only a couple of blocks away you usually drive the car. What percent of the time would you walk on an errand when it only involves a couple of blocks?
- 0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100

14. You are invited to someone's house for dinner and your host is an excellent cook. You often overeat because the food tastes so good. What percent of the time would you not overeat as a dinner guest?
- 0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100
15. You like to have something sweet to eat on your coffee break. What percent of the time would you only have coffee?
- 0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100
16. When you cook a meal you snack on the food. What percent of the time would you wait until the meal is prepared to eat?
- 0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100
17. You planned to exercise after work today but you feel tired and hungry when the time arrives. What percent of the time would you exercise anyway?
- 0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100
18. There is a party at work for a co-worker and someone offers you a piece of cake. What percent of the time would you turn it down?
- 0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100
19. You would like to climb the stairs instead of taking the elevator. What percent of the time would you take the stairs to go one or two flights?
- 0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100
20. You are happy and feeling good today. You are tempted to treat yourself by stopping for ice cream. What percent of the time would you find some other way to be nice to yourself?
- 0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100
21. You are at a friend's house and your friend offers you a delicious looking pastry. What percent of the time would you refuse this offer?
- 0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100
22. You feel like celebrating. You are going out with friends to a good restaurant. What percent of the time would you celebrate without overeating?
- 0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100

23. You finished your meal and you still feel hungry. There is cake and fruit available. What percent of the time would you choose fruit?
- 0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100
24. You are at home feeling lonely, blue, and bored. You are craving something to eat. What percent of the time would you find another way of coping with these feelings besides eating?
- 0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100
25. Today you did something to hurt your ankle. You want to get something to eat to make yourself feel better. What percent of the time would you find some other way to take your mind off your mishap?
- 0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100
26. When you spend time alone at home you are tempted to snack. You are spending an evening alone. What percent of the time would you resist the urge to snack?
- 0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100
27. You are out with a friend at lunch time and your friend suggests that you stop and get some ice cream. What percent of the time would you resist the temptation?
- 0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100
28. You just had an upsetting argument with a family member. You are standing in front of the refrigerator and you feel like eating everything in sight. What percent of the time would you find some other way to make yourself feel better?
- 0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100
29. You are having a hard day at work and you are anxious and upset. You feel like getting a candy bar. What percent of the time would you find a more constructive way to calm down and cope with your feelings?
- 0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100
30. You just had an argument with your (husband, wife, boyfriend, girlfriend). You are upset, angry, and you feel like eating something. What percent of the time would you talk the situation over with someone or go for a walk instead of eating?
- 0 --- 10 --- 20 --- 30 --- 40 --- 50 --- 60 --- 70 --- 80 --- 90 --- 100

CAGE

For each question, circle one answer

1. Have you ever felt you should cut down on your drinking?	YES	NO
2. Have people annoyed you by criticizing your drinking?	YES	NO
3. Have you ever felt bad or guilty about your drinking?	YES	NO
4. Have you ever had a drink first thing in the morning to steady your nerves or get rid of a hang-over (eye-opener)?	YES	NO

FTND

For each question, circle one answer.

1. How soon after you wake up do you smoke your first cigarette?
 I don't smoke Within 5 minutes 6-30 minutes 31-60 minutes After 60 minutes
2. Do you find it difficult to refrain from smoking in places where it is forbidden e.g. in church, at the library, at the movie theater, etc.?
 I don't smoke Yes No
3. Which cigarette would you hate most to give up?
 I don't smoke The first one in the morning All others
4. How many cigarettes/day do you smoke?
 10 or less 11-20 21-30 31 or more
5. Do you smoke more frequently during the first hours after waking than during the rest of the day?
 I don't smoke Yes No
6. Do you smoke if you are so ill that you are in bed most of the day?
 I don't smoke Yes No

SCS

Indicate how characteristic or descriptive each of the following statements is of you by using the code given below.

+3 = Very characteristic of me
 +2 = Rather characteristic of me
 +1 = Somewhat characteristic of me
 -1 = Somewhat uncharacteristic of me
 -2 = Rather uncharacteristic of me
 -3 = Very uncharacteristic of me

Thank you for your cooperation

1.	When I do a boring job, I think about the less boring parts of the job and about the reward I will receive when I finish.	-3	-2	-1	+1	+2	+3
2.	When I have to do something that makes me anxious, I try to visualize how I will overcome my anxiety while doing it.	-3	-2	-1	+1	+2	+3
3.	By changing my way of thinking, I am often able to change my feelings about almost anything.	-3	-2	-1	+1	+2	+3
4.	I often find it difficult to overcome my feelings of nervousness and tension without outside help.	-3	-2	-1	+1	+2	+3
5.	When I am feeling depressed, I try to think about pleasant events.	-3	-2	-1	+1	+2	+3
6.	I cannot help thinking about mistakes I made.	-3	-2	-1	+1	+2	+3
7.	When I am faced with a difficult problem, I try to approach it in a systematic way.	-3	-2	-1	+1	+2	+3
8.	I usually do what I am supposed to do more quickly when someone is pressuring me.	-3	-2	-1	+1	+2	+3
9.	When I am faced with a difficult decision, I prefer to postpone it even if I have all the facts.	-3	-2	-1	+1	+2	+3
10.	When I have difficulty concentrating on my reading, I look for ways to increase my concentration.	-3	-2	-1	+1	+2	+3
11.	When I plan to work, I remove everything that is not relevant to my work.	-3	-2	-1	+1	+2	+3

12.	When I try to get rid of a bad habit, I first try to find out all the reasons why I have the habit.	-3	-2	-1	+1	+2	+3
13.	When an unpleasant thought is bothering me, I try to think about something pleasant.	-3	-2	-1	+1	+2	+3
14.	If I smoked two packs of cigarettes a day, I would need outside help to stop smoking.	-3	-2	-1	+1	+2	+3
15.	When I feel down, I try to act cheerful so that my mood will change.	-3	-2	-1	+1	+2	+3
16.	If I have tranquilizers with me, I would take one whenever I feel tense and nervous.	-3	-2	-1	+1	+2	+3
17.	When I am depressed, I try to keep myself busy with things I like.	-3	-2	-1	+1	+2	+3
18.	I tend to postpone unpleasant tasks even if I could perform them immediately.	-3	-2	-1	+1	+2	+3
19.	I need outside help to get rid of some of my bad habits.	-3	-2	-1	+1	+2	+3
20.	When I find it difficult to settle down and do a task, I look for ways to help me settle down.	-3	-2	-1	+1	+2	+3
21.	Although it makes me feel bad, I cannot help thinking about all sorts of possible catastrophes.	-3	-2	-1	+1	+2	+3
22.	I prefer to finish a job that I have to do before I start doing things I really like.	-3	-2	-1	+1	+2	+3
23.	When I feel physical pain, I try not to think about it.	-3	-2	-1	+1	+2	+3
24.	My self-esteem increases when I am able to overcome a bad habit.	-3	-2	-1	+1	+2	+3
25.	To overcome bad feelings that accompany failure, I often tell myself that it is not catastrophic and I can do anything.	-3	-2	-1	+1	+2	+3
26.	When I feel that I am too impulsive, I tell myself to stop and think before I do something about it.	-3	-2	-1	+1	+2	+3
27.	Even when I am terribly angry at someone, I consider my actions very carefully.	-3	-2	-1	+1	+2	+3

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28.	Facing the need to make a decision, I usually look for different alternatives instead of deciding quickly and spontaneously.	-3	-2	-1	+1	+2 +3
29.	Usually, I first do the thing I really like to do even if there are more urgent things to do.	-3	-2	-1	+1	+2 +3
30.	When I realize that I am going to be unavoidably late for an important meeting, I tell myself to keep calm.	-3	-2	-1	+1	+2 +3
31.	When I feel pain in my body, I try to divert my thoughts from it.	-3	-2	-1	+1	+2 +3
32.	When I am faced with a number of things to do, I usually plan my work.	-3	-2	-1	+1	+2 +3
33.	When I am short of money, I decide to record all my expenses in order to budget more carefully in the future.	-3	-2	-1	+1	+2 +3
34.	If I find it difficult to concentrate on a task, I divide it into smaller segments.	-3	-2	-1	+1	+2 +3
35.	Quite often, I cannot overcome unpleasant thoughts that bother me.	-3	-2	-1	+1	+2 +3
36.	When I am hungry and I have no opportunity to eat, I try to divert my thoughts from my stomach or try to imagine that I am satisfied.	-3	-2	-1	+1	+2 +3

SCQ-Brandon

This is a questionnaire designed to measure your level of self-control. You are asked to respond to 16 statements. Each statement describes a specific situation. You are to decide the extent to which you agree that the statement is typical of your behavior. To do so, circle one of the five descriptors beneath the statement. The following key explains the meaning of each of the descriptors.

SD = Strongly Disagree

D = Disagree

N = Neutral

A = Agree

SA = Strongly Agree

Here is a practice statement.

I have disciplined work habits.

SD

D

N

A

SA

You must decide the degree to which you agree that this statement is typical of your behavior. If you feel you almost always exhibit disciplined work habits, you would circle "SA". If

you feel you almost never exhibit disciplined work habits, you would circle "SD". A response of "A" would indicate you often exhibit disciplined work habits, and a response of "D" would indicate you seldom do so. A response of "N" should be selected only if you truly feel ambivalent about your behavior.

This is not a test. There are no "right" or "wrong" responses to any of the statements. Please answer each question as honestly as you can. Please work carefully and quickly. Do not spend a long time on any one statement. Please respond to each statement, and circle only one response to each.

1. I manage my personal or family budget well.
SD D N A SA
2. I manage my time carefully.
SD D N A SA
3. I snack between meals.
SD D N A SA
4. I control my anger in interpersonal conflicts.
SD D N A SA
5. I make major purchases on impulse.
SD D N A SA
6. I exercise regularly.
SD D N A SA
7. I procrastinate on work/study assignments.
SD D N A SA
8. I find it difficult to assert my own needs and desires.
SD D N A SA
9. I control the size of the portions of the food I eat.
SD D N A SA

10.	I avoid eating high-caloric, fatty, or sweet foods.	SD	D	N	A	SA
11.	I schedule leisure activities regularly.	SD	D	N	A	SA
12.	I have nervous habits like nail-biting, smoking, or grinding my teeth.	SD	D	N	A	SA
13.	I lose my temper regularly.	SD	D	N	A	SA
14.	I have difficulty saying "no" to others.	SD	D	N	A	SA
15.	I eat a balanced diet.	SD	D	N	A	SA
16.	I prioritize activities and work on the most important ones first.	SD	D	N	A	SA

M-CS

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is true or false as it pertains to you.

T	F	1.	Before voting I thoroughly investigate the qualifications of all the candidates.
T	F	2.	I never hesitate to go out of my way to help someone in trouble.
T	F	3.	It is sometimes hard for me to go on with my work if I am not encouraged.
T	F	4.	I have never intensely disliked anyone.
T	F	5.	On occasion I have doubts about my ability to succeed in life.
T	F	6.	I sometimes feel resentful when I don't get my way.

T	F	7. I am always careful about my manner of dress.
T	F	8. My table manners at home are as good as when I eat out in a restaurant.
T	F	9. If I could get into a movie without paying and be sure I was not seen, I would probably do it.
T	F	10. On a few occasions, I have given up doing something because I thought too little of my ability.
T	F	11. I like to gossip at times.
T	F	12. There have been times when I felt like rebelling against people in authority even though I knew they were right.
T	F	13. No matter who I'm talking to, I'm always a good listener.
T	F	14. I can remember "playing sick" to get out of something.
T	F	15. There have been occasions when I took advantage of someone.
T	F	16. I'm always willing to admit it when I make a mistake.
T	F	17. I always try to practice what I preach.
T	F	18. I don't find it particularly difficult to get along with loud-mouthed, obnoxious people.
T	F	19. I sometimes try to get even, rather than forgive and forget.
T	F	20. When I don't know something I don't at all mind admitting it.
T	F	21. I am always courteous, even to people who are disagreeable.
T	F	22. At times I have really insisted on having things my own way.
T	F	23. There have been occasions when I felt like smashing things.
T	F	24. I would never think of letting someone else be punished for my wrongdoings.
T	F	25. I never resent being asked to return a favor.
T	F	26. I have never been irked when people expressed ideas very different from my own.

7. Keeping money that you have found

1 2 3 4 5 6 7 8 9 10
NEVER ALWAYS

8. Lying in your own interest

NEVER ALWAYS

1 2 3 4 5 6 7 8 9 10

9. Married men or women having an affair.

1 2 3 4 5 6 7 8 9 10
NEVER ALWAYS

10. Sex under the legal age of consent

1 2 3 4 5 6 7 8 9 10
NEVER ALWAYS

11. Someone accepting a bribe in the course of their duties

1	2	3	4	5	6	7	8	9	10
NEVER					ALWAYS				

12. Homosexuality

1 2 3 4 5 6 7 8 9 10
NEVER ALWAYS

13. Prostitution

1 2 3 4 5 6 7 8 9 10
NEVER ALWAYS

14. Abortion

1	2	3	4	5	6	7	8	9	10
NEVER					ALWAYS				

15. Divorce

1	2	3	4	5	6	7	8	9	10
NEVER									ALWAYS

16. Fighting with the police

1 2 3 4 5 6 7 8 9 10
NEVER ALWAYS

17. Euthanasia (terminating the life of the incurably sick)

1 2 3 4 5 6 7 8 9 10
NEVER ALWAYS

18. Suicide

1	2	3	4	5	6	7	8	9	10
NEVER									ALWAYS

19. Failing to report damage you've done accidentally to a parked vehicle

1	2	3	4	5	6	7	8	9	10
NEVER									ALWAYS

20. Threatening workers who refuse to join a strike

1	2	3	4	5	6	7	8	9	10
NEVER									ALWAYS

21. Killing in self-defense

1	2	3	4	5	6	7	8	9	10
NEVER									ALWAYS

22. Political assassination

1	2	3	4	5	6	7	8	9	10
NEVER									ALWAYS

HSAS

Using the following scale, please rate each item and record your response on the space next to that item.

- 1 = Strongly agree
 2 = Moderately agree
 3 = Neutral
 4 = Moderately disagree
 5 = Strongly disagree

_____	1.	I do not need to be committed to a person to have sex with him/her.
_____	2.	Casual sex is acceptable.
_____	3.	I would like to have sex with many partners.
_____	4.	One-night stands are sometimes very enjoyable.
_____	5.	It is okay to have ongoing sexual relationships with more than one person at a time.
_____	6.	It is okay to manipulate someone into having sex as long as no future promises are made.
_____	7.	Sex as a simple exchange of favors is okay if both people agree to it.
_____	8.	The best sex is with no strings attached.
_____	9.	Life would have fewer problems if people could have sex more freely.

- ___ 10. It is possible to enjoy sex with a person and not like that person very much.
- ___ 11. Sex is more fun with someone you don't love.
- ___ 12. It is all right to pressure someone into having sex.
- ___ 13. Extensive premarital sexual experience is fine.
- ___ 14. Extramarital affairs are all right as long as one's partner doesn't know about them.
- ___ 15. Sex for its own sake is perfectly all right.
- ___ 16. I would feel comfortable having intercourse with my partner in the presence of other people.
- ___ 17. Prostitution is acceptable.
- ___ 18. It is okay for sex to be just good physical release.
- ___ 19. Sex without love is meaningless.
- ___ 20. People should at least be friends before they have sex together.
- ___ 21. In order for sex to be good, it must also be meaningful.
- ___ 22. Birth control is part of responsible sexuality.
- ___ 23. A woman should share responsibility for birth control.
- ___ 24. A man should share responsibility for birth control.
- ___ 25. Sex education is important for young people.
- ___ 26. Using "sex toys" during lovemaking is acceptable.
- ___ 27. Masturbation is all right.
- ___ 28. Masturbating one's partner during intercourse can increase the pleasure of sex.
- ___ 29. Sex gets better as a relationship progresses.
- ___ 30. Sex is the closest form of communication between two people.
- ___ 31. A sexual encounter between two people deeply in love is the ultimate human interaction.
- ___ 32. Orgasm is the greatest experience in the world.
- ___ 33. At its best, sex seems to be the merging of two souls.
- ___ 34. Sex is a very important part of life.
- ___ 35. Sex is usually an intensive, almost overwhelming experience.
- ___ 36. During sexual intercourse, intense awareness of the partner is the best frame of mind.
- ___ 37. Sex is fundamentally good.
- ___ 38. Sex is best when you let yourself go and focus on your own pleasure.

- ____ 39. Sex is primarily the taking of pleasure from another person.
- ____ 40. The main purpose of sex is to enjoy oneself.
- ____ 41. Sex is primarily physical.
- ____ 42. Sex is primarily a bodily function, like eating.
- ____ 43. Sex is mostly a game between males and females.

GMVI-TR

Instructions: Listed below are four goals that various people have used as guiding principles in their lives. By goal we mean any state of affairs that a person might strive for as well as any state of affairs that a person may wish to preserve or keep as is.

Please indicate the extent to which you accept or reject each of these goals *as a principle for you to live by*. Do this by circling one of the following numbers which you will find listed below each question.

1	2	3	4	5	6	7
I reject this	I am inclined to reject this	I neither reject nor accept this	I am inclined to accept this	I accept this as important	I accept this as very important	I accept this as of the greatest importance

You are to circle the one that is closest to your own feelings about that particular goal as a guiding principle in your life. Before you start, quickly read through the list of goals to get a feel for how to score your answers. Remember there are no right or wrong answers.

1. Salvation (being saved from your sins and at peace with God)

1	2	3	4	5	6	7
---	---	---	---	---	---	---

2. Religious or Mystical Experience (being at one with God or the universe)

1	2	3	4	5	6	7
---	---	---	---	---	---	---

3. Upholding Traditional Sexual Moral Standards (opposing sexual permissiveness and pornography)

1	2	3	4	5	6	7
---	---	---	---	---	---	---

4. Sexual Intimacy (having a satisfying sexual relationship)

1	2	3	4	5	6	7
---	---	---	---	---	---	---

References

- American Psychiatric Association, (1994). *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.). Washington, DC: American Psychiatric Association.
- Anastasi, A., & Urbina, S. (1997). *Psychological assessment* (7th ed.). Upper Saddle River, NJ: Prentice-Hall.
- Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational Behavior and Human Decision Processes*, 50, 248-287.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Beck, A. T., Steer, R. A., & Garbin, M. G. (1988). Psychometric properties of the beck depression inventory: Twenty-five years of evaluation. *Clinical Psychology Review*, 8, 77-100.
- Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). *Cognitive therapy of depression*. New York, NY: Guilford Press.
- Beckham, E. E., & Leber, W. R. (Eds.) (1985). *Handbook of depression: Treatment, assessment, and research* (Appendix 3). Homewood, IL: Dorsey.
- Bernadt, M., Mumford, J., & Murray, R. (1984). A discriminant-function analysis of screening tests for excessive drinking and alcoholism. *Journal of Studies on Alcohol*, 45, 81-86.
- Boneau, C. A. (1960). The effects of violations of assumptions underlying the t test. *Psychological Bulletin*, 57, 49-64.

- Biggs, J. T., Wylie, L. T., & Ziegler, V. E. (1978). Validity of the Zung Self-Rating Depression Scale. *British Journal of Psychiatry*, 132, 381-385.
- Bradley, J. V. (1984). The complexity of nonrobustness effects. *Bulletin of the Psychonomic Society*, 22, 250-253.
- Bradley, J. V. (1982). The insidious L-shaped distribution. *Bulletin of the Psychonomic Society*, 20, 85-88.
- Braithwaite, V. A., & Scott, W. A. (1991). Values. In J. P. Robinson, P. R. Shaver, & L. S. Wrightsman (Eds.), *Measures of Personality and Social Psychological Attitudes* (pp. 661-753). San Diego, CA: Academic Press, Inc.
- Braithwaite, V. A., & Law, H. G. (1985). Structure of human values: Testing the adequacy of the Rokeach Value Survey. *Journal of Personality and Social Psychology*, 49, 250-263.
- Bramley, P. N., Easton, A. M., Morley, S., & Snaith, R. P. (1988). The differentiation of anxiety and depression by rating scales. *Acta Psychiatrica Scandinavica*, 77, 133-138.
- Brandon, J. E., & Loftin, J. M. (1991). Relationship of fitness to depression, state and trait anxiety, internal health locus of control, and self-control. *Perceptual & Motor Skills*, 73, 563-568.
- Brandon, J. E., Oescher, J., & Loftin, J. M. (1990). The self-control questionnaire: An assessment. *Health Values*, 14, 3-9.

- Bunn, C., Poston, W. S. C., Haddock, C. K., Dill, P., Goodrick, G. K., & Foreyt, J. P. (2000). Reliability and validity of the Dieter's Inventory of Eating Temptations (DIET) in overweight binge eating women. *Eating Disorders: The Journal of Treatment & Prevention*, 8, 299-309.
- Chambless, D. L., Baker, M. J., Baucom, D. H., Beutler, L. E., Calhoun, K. S., Crits-Christoph, P., et al. (1998). Update on empirically validated therapies, II. *The Clinical Psychologist*, 51, 3-16.
- Chambless, D. L., Caputo, G., Jasin, S., Gracely, E., & Williams, S. (1985). The Mobility Inventory for Agoraphobia. *Behaviour Research & Therapy*, 23, 35-44.
- Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment*, 7, 309-319.
- Crowne, D. P. (1979). *The experimental study of personality*. Hillsdale, NJ: Erlbaum.
- Crowne, D. P., & Marlowe, D. (1964). *The approval motive*. New York: Wiley.
- Crowne, D. P., & Marlowe, D. (1960). A new scale of social desirability independent of psychopathology. *Journal of Consulting Psychology*, 24, 349-354.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction With Life Scale. *Journal of Personality Assessment*, 49, 71-75.
- Dishman, R. K., & Ickes, W. (1981). Self-motivation and adherence to therapeutic exercise. *Journal of Behavioral Medicine*, 4, 421-438.

- Dobson, K. S., & Dozois, D. J. A. (2001). Historical and philosophical bases of the cognitive-behavioral therapies. In K. S. Dobson (Ed.). *Handbook of cognitive-behavioral therapies* (2nd ed., pp. 3-39). New York, NY: Guilford.
- Entwistle, N. J., & Ramsden, P. (1983). *Understanding student learning*. London: Crom Helm.
- Eysenck, H. J., & Eysenck, S. B. G. (1975). *Manual for the Eysenck Personality Questionnaire (Junior and Adult)*. London: Hodder & Stoughton.
- Fagerstrom, K. O., Schneider, N. G., (1989). A review of the Fagerstrom Tolerance Questionnaire. *Journal of Behavioral Medicine*, 12, 159-182.
- Febbraro, G. A. R., & Clum, G. A. (1998). Meta-analytic investigation of the effectiveness of self-regulatory components in the treatment of adult problem behaviors. *Clinical Psychology Review*, 18, 143-161.
- Fisher, G. (1967). Normative and reliability data for the standard and the cross-validated Marlowe-Crowne Social Desirability Scale. *Psychological Reports*, 20, 174.
- Fuchs, C. Z., & Rehm, L. P. (1977). A self-control behavior therapy program for depression. *Journal of Consulting and Clinical Psychology*, 45, 206-215.
- Goodrick, G. K., Pendleton, V. R., Kimball, K. T., Poston, W. S. C., Reeves, R. S., & Foreyt, J. P. (1999). Binge eating severity, self-concept, dieting self-efficacy and social support during treatment of binge eating disorder. *International Journal of Eating Disorders*, 26, 295-300.

- Hamilton, M. (1960). A rating scale for depression. *Journal of Neurology, Neurosurgery, and Psychiatry*, 23, 56-62.
- Harding, S., & Phillips, D. (1986). *Contrasting values in Western Europe: Unity, diversity and change*. London: Macmillan.
- Haynes, S. N., Richard, D. C. S., & Kubany, E. S. (1995). Content validity in psychological assessment: A functional approach to concepts and methods. *Psychological Assessment*, 7, 238-247.
- Heatherton, T., Kozlowski, L., Frecker, R., & Fagerstrom, K. (1991). The Fagerstrom Test for Nicotine Dependence: A revision of the Fagerstrom Tolerance Questionnaire. *British Journal of Addiction*, 86, 1119-1127.
- Heiby, E. M. (1986). Social versus self-control skills deficits in four cases of depression. *Behavior Therapy*, 17, 158-169.
- Heiby, E. M. (1983a). Assessment of frequency of self-reinforcement. *Journal of Personality and Social Psychology*, 44, 1304-1307.
- Heiby, E. M. (1983b). Toward the prediction of mood change. *Behavior Therapy*, 14, 110-115.
- Heiby, E. M. (1983c). Depression as a function of the interaction of self- and environmentally controlled reinforcement. *Behavior Therapy*, 14, 430-433.
- Heiby, E. M. (1982). A self-reinforcement questionnaire. *Behavior Research and Therapy*, 20, 397-401.

- Heiby, E. M., Campos, P. E., Remick, R. A., & Keller, F. D. (1987). Dexamethasone suppression and self-reinforcement correlates of clinical depression. *Journal of Abnormal Psychology, 96*, 70-72.
- Heiby, E. M., Gafarian, C. T., & McCann, S. C. (1989). Situational and behavioral correlates of compliance to a diabetic regimen. *The Journal of Compliance in Health Care, 4*, 101-116.
- Heiby, E. M., Mezo, P. G., & Kameoka V. A. (in press). Assessment of self-control. In R. Fernandez-Ballesteros (Ed.), *Encyclopedia of Psychological Assessment*. London: Sage.
- Heiby, E. M., Onorato, V. A., & Sato, R. A. (1987). Cross-validation of the self-motivation inventory. *Journal of Sport Psychology, 9*, 394-399.
- Heiby, E. M., Ozaki, M., & Campos, P. E. (1984). The effects of training in self-reinforcement and reward: Implications for depression. *Behavior Therapy, 15*, 544-549.
- Hendrick, S. & Hendrick, C. (1987). Multidimensionality of sexual attitudes. *The Journal of Sex Research, 23*, 502-526.
- Hicks, R. A., Hicks, M. J., & Mansfield, H. (1969). A multi-solution anagram task. *Psychological Reports, 24*, 671-674.
- Holden, E. W., & Wagner, M. K. (1990). Self-regulation and Type A behavior. *Journal of Research in Personality, 24*, 57-70.

- Kanfer, F. H. (1996). Motivation and emotion in behavior therapy. In K. Dobson, S. Keith, & K. D. Craig (Eds.), *Advances in cognitive-behavioral therapy, Vol. 2. Banff international behavioral science series*. Thousand Oaks, CA: Sage.
- Kanfer, F. H. (1977). The many faces of self-control, or behavior modification changes its focus. In R. B. Stuart (Ed.), *Behavioral self-management* (pp. 1-48). New York: Brunner/Mazel.
- Kanfer, F. H. (1970). Self-regulation: Research, issues, and speculations. In C. Neuringer, & J. L. Michael (Eds.), *Behavior modification in clinical psychology* (pp. 178-220). New York: Appleton-Century-Crofts.
- Kanfer, F. H., & Hagerman, S. (1981). The role of self-regulation. In L. P. Rehm (Ed.), *Behavior therapy for depression: Present status and future directions* (pp. 143-179). New York: Academic Press.
- Kanfer, F. H., & Karoly, P. (1972). Self-control: A behavioristic excursion in to lion's den. *Behavior Therapy*, 3, 398-416.
- Kanfer, F. H., & Schefft, B. K. (1988). *Guiding the process of therapeutic change*. Champaign, IL: Research Press.
- Kennett, D. J. & Ackerman, M. (1995). Importance of learned resourcefulness to weight loss and early success during maintenance: Preliminary evidence. *Patient Education & Counseling*, 25, 197-203.

- Knight, R. G., Waal-Manning, H. J., & Spears, G. F. (1983). Some norms and reliability data for the state-trait anxiety inventory and the Zung Self-Rating Depression Scale. *British Journal of Clinical Psychology*, 22, 245-249.
- Kornblith, S. J., Rehm, L. P., O'Hara, M. W., & Lamparski, D. M. (1983). The contribution of self-reinforcement training and behavioral assignments to the efficacy of self-control therapy for depression. *Cognitive Therapy & Research*, 7, 499-528.
- Krantz, D. S., Glass, D. C., & Snyder, M. L. (1974). Helplessness, stress level, and the coronary-prone behavior pattern. *Journal of Experimental Social Psychology*, 10, 284-300.
- Lairson, D. R., Harlow, K., Cobb, J., Harrist, R., Martin, D., Ramby, R., et al. (1992). Screening for patients with alcohol problems: Severity of patients identified by the CAGE. *Journal of Drug Education*, 22, 337-352.
- Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics*, 33, 159-174.
- Lee, H. B. (1990). Reliability, validity, and fakability of the Zung Self-Rating Depression Scale. *Bulletin of the Hong Kong Psychological Society*, 24-25, 5-15.
- Lee, D. J., & DeFrank, R. S. (1988). Interrelationships among self-reported alcohol intake, physiological indices and alcoholism screening measures. *Journal of Studies on Alcohol*, 49, 532-537.

- Leon, G. R., & Rosenthal, B. S. (1984). Prognostic indicators of success or relapse in weight reduction. *International Journal of Eating Disorders*, 3, 15-24.
- Lewinsohn, P. M., Mermelstein, R. M., Alexander, C. & MacPhillamy, D. J. (1983). *The Unpleasant Events Schedule: A scale for the measurement of aversive events*. Unpublished mimeo, University of Oregon.
- Long, J. D., Gaynor, P., Erwin, A., & Williams, R. L. (1994). The relationship of self-management to academic motivation, study efficiency, academic satisfaction, and grade point average among prospective education majors. *Psychology: A Journal of Human Behavior*, 31, 22-30.
- Lubin, B. (1965). Adjective checklists for measurement of depression. *Archives of General Psychiatry*, 12, 57-62.
- MacPhillamy, D. J., & Lewinsohn, P. M. (1976). *Manual for the Pleasant Events Schedule*. Unpublished mimeo, University of Oregon.
- Mauger, P. A., Adkinson, D. R., Zoss, S. K., Firestone, G., & Hook, D. (1980). *Interpersonal Behavior Survey Manual*, Los Angeles, CA: Western Psychological Services.
- Mayfield, D., McLeod, G., & Hall, P. (1974). The CAGE questionnaire: Validation of a new alcoholism screening instrument. *American Journal of Psychiatry*, 131, 1121-1123.

- McKee, K. F. (1996). Differences in self-management behaviors among problem-drinking and nonproblem-drinking college students. *Journal of Alcohol and Drug Education, 42*, 35-42.
- Meichenbaum, D. (1985). *Stress Inoculation Training*. New York: Pergamon Press.
- Meichenbaum, D. (1977). *Cognitive-behavior modification: An integrative approach*. New York: Plenum.
- Meng, X., Rosenthal, R., & Rubin, D. B. (1992). Comparing correlated correlation coefficients. *Psychological Bulletin, 111*, 172-175.
- Moore, R. D., Bone, L. R., Geller, G., Mamon, J. A., Stokes, E. J., & Levine, D. M. (1989). Prevalence, detection, and treatment of alcoholism in hospitalized patients. *Journal of the American Medical Association, 261*, 403-407.
- Myers, I. B., & McCaulley, M. H. (1985). *Manual: A guide to the development and use of the Myers-Briggs Type Indicator*. Palo Alto, CA: Consulting Psychologists Press.
- Namboodiri, N. K. (1972). Experimental designs in which each subject is used repeatedly. *Psychological Bulletin, 77*, 54-64.
- Nixon, C. T., & Frost, A. G. (1990). The study habits and attitudes inventory and its implications for students' success. *Psychological Reports, 66*, 1075-1085.
- O'Hara, M. W., Rehm, L. P., & Campbell, S. B. (1982). Predicting depressive symptomatology: Cognitive-behavioral models and post-partum depression. *Journal of Abnormal Psychology, 91*, 457-461.

- Okun, M. A., Kardash, C. A., Stock, W. A., & Sandler, I. N. (1986). Measuring perceptions of the quality of academic life among college students. *Journal of College Student Personnel, 27*, 447-451.
- Parmar, R. S., & Cernovsky, Z. Z. (1993). Self-reinforcement scores of psychiatric inpatients and normal controls. *Psychological Reports, 72*, 35-38.
- Paulhus, D. L. (1991). Measurement and control of response bias. In J. P. Robinson, P. R. Shaver, & L. S. Wrightsman (Eds.), *Measures of Personality and Social Psychological Attitudes* (pp. 17-60). San Diego, CA: Academic Press.
- Pomerleau, C., Carton, S., Lutzke, M., Flessland, K., & Pomerleau, O. (1994). Reliability of the Fagerstrom Tolerance Questionnaire and the Fagerstrom Test for Nicotine Dependence. *Addictive Behaviors, 19*, 33-39.
- Redden, E. M., Tucker, R. K., & Young, L. (1983). Psychometric properties of the Rosenbaum Schedule for Assessing Self-Control. *The Psychological Record, 33*, 77-86.
- Rehm, L. P. (1984). Self-management therapy for depression. *Advances in Behavior Research and Therapy, 6*, 83-98.
- Rehm, L. P. (1977). A self-control model of depression. *Behavior Therapy, 8*, 787-804.
- Rehm, L. P., Kaslow, N. J., & Rabin, A. S. (1987). Cognitive and behavioral targets in a self-control therapy program for depression. *Journal of Consulting & Clinical Psychology, 55*, 60-67.

- Rehm, L. P., Kornblith, S. J., O'Hara, M. W., Lamparski, D. M., Romano, J. M., & Volkin, J. (1981). An evaluation of major components in a self-control therapy program for depression. *Behavior Modification*, 5, 459-489.
- Rehm, L. P., & Rokke, P. (1988). Self-management therapies. In K. S. Dobson (Ed.), *Handbook of Cognitive-Behavioral Therapies* (pp. 136-166). New York: Guilford Press.
- Robinson, J. P., Shaver, P. R., & Wrightsman, L. S. (1991a). Criteria for scale selection and evaluation. In J. P. Robinson, P. R. Shaver, & L. S. Wrightsman (Eds.), *Measures of personality and social psychological attitudes*. San Diego, CA: Academic Press.
- Rohde, P., Lewinsohn, P. M., Tilson, M., & Seeley, J. R., (1990). Dimensionality of coping and its relation to depression. *Journal of Personality and Social Psychology*, 58, 499-511.
- Rokke, P. D., & Rehm, L. P. (2001). Self-management therapies. In K. S. Dobson (Ed.), *Handbook of cognitive-behavioral therapies* (2nd ed., pp. 173-210). New York, NY: Guilford.
- Rokke, P. D., Tomhave, J. A., & Jovic, Z. (2000). Self-managment therapy and educational group therapy for depressed elders. *Cognitive Therapy & Research*, 24, 99-119.

- Rokke, P. D., Tomhave, J. A. & Jovic, Z. (1999). The role of client choice and target selection in self-management therapy for depression in older adults. *Psychology & Aging, 14*, 155-169.
- Rosenbaum, M. (Ed.) (1990). Learned resourcefulness: On coping skills, self-control, and adaptive behavior. *Springer series on behavior therapy and behavioral medicine, 24*. New York: Springer Publishing Co, Inc.
- Rosenbaum, M. (1989). Self-control under stress: The role of learned resourcefulness. *Advances in Behaviour Research & Therapy, 11*, 249-258.
- Rosenbaum, M. (1980a). A schedule for assessing self-control behaviors: Preliminary findings. *Behavior Therapy, 11*, 109-121.
- Rosenbaum, M. (1983). Self-control behaviors and coping with seasickness. *Cognitive Therapy & Research, 7*, 93-97.
- Roth, D., Bielski, R., Jones, M., Parker, W., & Osborn, G. (1982). A comparison of self-control therapy and combined self-control therapy and antidepressant medication in the treatment of depression. *Behavior Therapy, 13*, 133-144.
- Rude, S. S. (1989). Dimensions of self-control in a sample of depressed women. *Cognitive Therapy and Research, 13*, 363-375.
- Rude, S. S. (1986). Relative benefits of assertion or cognitive self-control treatment for depression as a function of proficiency in each domain. *Journal of Consulting and Clinical Psychology, 54*, 390-394.

- Sakamoto, S., Kijima, N., Tomoda, A., & Kambara, M. (1998). Factor structures of the Zung Self-Rating Depression Scale (SDS) for undergraduates. *Journal of Clinical Psychology, 54*, 477-487.
- Sato, R. A. & Heiby, E. M. (1992). Correlates of depressive symptoms among battered women. *Journal of Family Violence, 7*, 229-245.
- Sattath, S., & Tversky, A. (1977). Additive similarity trees. *Psychometrika, 42*, 319-345.
- Sawilowsky, S. S., & Blair, R. C. (1992). A more realistic look at the robustness and Type II error properties of the t test to departures from population normality. *Psychological Bulletin, 111*, 352-360.
- Schlundt, D. G., & Zimering, R. T. (1988). The Dieter's Inventory of Eating Temptations: A measure of weight control competence. *Addictive Behaviors, 13*, 151-164.
- Selzer, M. L., (1971). The Michigan Alcoholism Screening Test: The quest for a new diagnostic instrument. *American Journal of Psychiatry, 127*, 1653-1658.
- Seybolt, D. C., & Wagner, M. K. (1997). Self-reinforcement, gender-role, and sex of participant in prediction of life satisfaction. *Psychological Reports, 81*, 519-522.
- Shaver, P. R., & Brennan, K. A. (1991). Measures of depression and loneliness. In J. P. Robinson, P. R. Shaver, & L. S. Wrightsman (Eds.), *Measures of Personality and Social Psychological Attitudes* (pp. 195-289). San Diego, CA: Academic Press
- Skinner, B. F. (1953). *Science and human behavior*. Oxford: Macmillan.
- Spanier, G. B. (1976). Measuring dyadic adjustment: New scales for assessing the quality of marriage and similar dyads. *Journal of Marriage & the Family, 38*, 15-28.

- Spielberger, C. O., Gorsuch, R. L., & Lushene, R. E. (1970). *STAI Manual*. Palo Alto, CA: Consulting Psychologists Press.
- Spitzer, R. L., Endicott, J., & Robins, E. (1978). Research diagnostic criteria: Rationale and reliability. *Archives of General Psychiatry*, 35, 773-782.
- Straus, M. A. (1979). Measuring intrafamily conflict and violence: The Conflict Tactics (CT) Scales. *Journal of Marriage & the Family*, 41, 75-88.
- Thoresen, C. E., & Mahoney, M. J. (1974). *Behavioral self-control*. New York: NY: Holt, Rinehart and Winston.
- Thurstone, L. L. (1949). *Thurstone temperament schedule*. Chicago, IL: Science Research Associates.
- Thyer, B. A., & Westhuis, D. (1989). Test-retest reliability of the Clinical Anxiety Scale. *Phobia Practice & Research Journal*, 2, 113-115.
- Turner, R. J., Frankel, B. G., & Deborah, M. (1983). Social support: Conceptualization, measurement, and implications for mental health. *Research in Community & Mental Health*, 3, 67-111.
- Varese, T., Pelowski, S., Riedel, H., & Heiby, E. M. (1998). Assessment of cognitive-behavioral skills and depression among female prison inmates. *European Journal of Psychological Assessment*, 14, 141-145.
- Vogelsang, L. M., Williams, R. L., & Lawler, K. (1994). Lifestyle correlates of Carpal Tunnel Syndrome. *Journal of Occupational Rehabilitation*, 4, 141-152.

- Wagner, M. K., Holden, E. W., & Jannarone, R. J. (1988). Factor structure of the Heiby self-reinforcement questionnaire. *Journal of Clinical Psychology, 44*, 198-202.
- Wallston, K. A., Wallston, B. S., & DeVellis, R. (1978). Development of the Multidimensional Health Locus of Control (MHLC) scales. *Health Education Monographs, 6*, 160-170.
- Walters, G. D. (2000). Behavioral self-control training for problem drinkers: A meta-analysis of randomized control studies. *Behavior Therapy, 31*, 135-149.
- Watson, D., & Clark L. A., (1992). Affects separable and inseparable: On the hierarchical arrangement of the negative affects. *Journal of Personality & Social Psychology, 62*, 489-505.
- Werner, M. J., & Greene, J. W. (1992). Problem drinking among college freshmen. *Adolescent Health, 13*, 487-492.
- Westhuis, D., & Thyer, B. A. (1989). Development and validation of the Clinical Anxiety Scale: A rapid assessment instrument for empirical practice. *Educational & Psychological Measurement, 49*, 153-163.
- Wilkinson, R. B., (1997). Interactions between self and external reinforcement in predicting depressive symptoms. *Behavior Research and Therapy, 35*, 281-289.
- Williams, R. L., & Long J. D. (1991). *Manage your life* (4th ed.). Boston: Houghton Mifflin.

- Williams, R. L., Moore, C. A., Pettibone, T. J., & Thomas, S. P. (1992). Construction and validation of a brief self-report scale of self-management practices. *Journal of Research in Personality, 26*, 216-234.
- Williams, R. L., Verble, J. S., & Price, D. E. (1995). Relationship of self-management to personality types and indices. *Journal of Personality Assessment, 64*, 494-506.
- Zung, W. W. K. (1986). Zung Self-Rating Depression Scale and Depression Status Inventory. In N. Sartorius, & T. A. Ban (Eds.), *Assessment of depression* (pp. 221-231). Berlin: Springer-Verlag.
- Zung, W. W. K. (1965). A Self-Rating Depression Scale. *Archives of General Psychiatry, 12*, 63-70.