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Examination of Self-Handicapping in Exercise: The Design of the Self-Handicapping
Exercise Questionnaire (SHEQ)

by

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Abstract

The study of self-handicapping within exercise settings has largely been ignored in the literature and the current measure of self-handicapping may not be valid outside of an academic context. The present study aimed to determine the nature of handicaps employed across various exercise settings, using this information in the development of a measurement tool, the Self-Handicapping Exercise Questionnaire. Statements provided by participants recruited from structured and unstructured exercise settings revealed that self-handicapping appeared to be prevalent in exercise. These statements were pooled and reviewed by a panel of experts in order to construct the questionnaire, which was then subjected to factor analytic refinement procedures. Theory and confirmatory factor analysis indicated a four-factor model incorporating mental preparedness for exercise, feelings of inadequacy, reliance on injury, and persistence. Results are discussed in terms of the theoretical tenets of self-handicapping, as well as the implications and future directions for study generated by this investigation.

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Dedication

To my fiancée Mary-Ann as without her caring and understanding, and her motivating presence I don't know where I'd be. To my Mom and Dad, and my brother Rob, for all their love and support throughout these transition filled two years. Also, to the Coolens for all of their encouragement.

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Epigraph

The patient selects certain symptoms and develops them until they impress him as real obstacles. Behind his barricade of symptoms the patient feels hidden and secure. To the question, 'What use are you making of your talents?' he answers, 'This thing stops me; I cannot go ahead,' and points to his self-erected barricade.

Alfred Adler, Problems of Neurosis: A Book of Case Histories. p. 13.

Chapter One - Developing the Concept of Self-Handicapping

Introduction

Although there has been a widely held assumption in the psychology literature that individuals are interested in receiving accurate, diagnostic feedback about their capacities (Berglas & Jones, 1978), researchers such as McClelland (1961) proposed the notion that not everyone desires such concrete knowledge of their results. Berglas and Jones agreed with McClelland and incorporated the theory of social comparison (Festinger, 1954), attribution theory (Heider, 1958), theory of achievement (Atkinson, 1957) and the principles of augmentation and discounting as stated by Kelley (1971) to expand the idea of avoidance of diagnostic feedback in the development of the study of self-handicapping.

The concept of self-handicapping as introduced by Berglas and Jones (1978) through their study of maladaptive behaviors such as use of alcohol and other drugs has been studied for close to fifteen years in academic, sport and to some extent, exercise domains. Thus, self-handicapping has been studied in connection with various concepts and behaviors, and has connections to research in a variety of psychological fields.

With the evolution of the research of self-handicapping, the measurement of this concept has been an issue that has received increasing attention (Jones & Rhodewalt, 1982; Martin & Brawley, 1999; Strube, 1986). The original Self-Handicapping Scale (SHS) as designed by Jones and Rhodewalt has been used extensively but has been questioned in recent research.

The chapters that follow provide an overview of the research that has served as the foundation for the study of self-handicapping. Recent evolutions and diversifications in the literature are examined, as are the attempts that have been made to empirically capture or measure the prevalence of this behavior. Presented in the final chapter is the present study, the development of the Self-Handicapping Exercise Questionnaire (SHEQ).

Background

As noted in Higgins (1990), although the work by Berglas and Jones (1978) was a landmark in the study of the phenomenon now known as self-handicapping, it was merely an extension of work firmly established in social psychological theory. Therefore it is prudent to look further back than 1978, and examine the foundations and development of the study of self-handicapping.

The notion of risking defeat to protect oneself from evaluative consequences can be directly linked to work done by Alfred Adler in the mid to late 1920s (Ansbacher & Ansbacher, 1967). However, Adler's research was not widely accepted as experimental psychology was just beginning to develop (Ansbacher & Ansbacher). In which case it is necessary to examine the work put forth by Heider (1958) on attributions, as this is work that has been directly incorporated into the 'modern' study of self-handicaps.

Research by Heider (1958) focused on the dispositional character of can, which was described as the concept of a relatively stable relationship between a person, and the environment in which their actions take place. There are, however temporary factors which can affect a performance outcome such as luck which will result in a positive

performance outcome not being accompanied by a sense of ability by the performer (Heider). The make-up of can, is interpretable as a function of the performer's ability minus the difficulty posed by the environmental factors. In self-handicapping, the handicap is used to increase the environmental demands in order to match the heightened view or perception of ability of which the performer is uncertain. It must be stressed that ability is only a part of the concept of can and is not identical to it (Heider).

The attribution given to a performance outcome can sometimes be misleading. For instance, a failure is often attributed to a difficult task, when in fact there may be motivational factors rather than a lack of sufficient ability which lead to this failure (Heider, 1958). As mentioned above, successes that are attributable to luck are often ascribed to the performer. The performer's successes and failures simply provide the basis for the perception created. The attribution for a success is entirely different if one can do something because it is easy, as compared to if one can do something because they have great ability (Heider). As noted by Heider, in both situations the ability is seen as greater than the environmental factors, however in the first instance this imbalance is attributed to the environment while the other highlights the person. The uncertainty at the base of self-handicapping is revealed in Heider's description of the process of attributions:

Since can tends to be a dispositional concept, when failure is attributed to fatigue, the conclusion is usually not drawn that the person cannot do the task. On the other hand, success, even when understood as due to a transitory positive state in the person, often leads to the conclusion that the person can do the task. (p. 95)

Heider (1958) further explained the process of attributions which may allow the strategy of self-handicapping to be effective. It is noted that the perception that a person is wanting something to happen, and having the ability to make this happen results in the belief that the outcome will be a direct result of the person's actions towards this aim. However, in doing this, can and want are seen as conditions of successful action, when in fact the performer may simply be trying because they feel an obligation to do so (Heider). An individual may wish to get healthy, and may have the drive to achieve this goal but not have the vaguest notion how to realize this aim and therefore are simply trying because it is the "thing to do".

Higgins and Snyder (1990) noted that it is fairly seamless to trace the foundations of self-handicapping to Heider's balance theory. The balance theory hinges on the notion that there are two primary relations involved in any given situation or context. These being unit relations, referring to the perceived connectedness of units or bodies and sentiment relations, referring to subjective appraisals of those units either positively or negatively (Heider, 1958). Maintaining a balanced state requires the unit relations and sentiment relations to fit together without stress (Heider). Higgins and Snyder pointed out that sentiment and unit relations are often parallel in that if a person has positive sentiments about something then they will try and claim ownership. In addition, if the person feels they are indicated as the owner then they tend to approve. One very important point in terms of a connection to self-handicapping is that the opposite is also true with negative appraisals and avoidance of taking ownership.

In order for the balance theory to be truly extrapolated to describe self-handicapping Higgins and Snyder (1990) made two assumptions. The first being that the individual is able to have present and future perspectives lending themselves to the proactive nature of self-handicaps. The second is that individuals have the capacity to evaluate from present and future perspectives, the implications of possible outcomes of a variety of self-handicapping strategies and their effects on their self-theory (Higgins & Snyder). It was felt that the recognition of the role of relationships and one's perception of those relationships contained within the balance theory made it a relevant foundation from which to understand self-handicapping (Higgins & Snyder).

Since work by Heider (1958), a significant contribution to the study of attributional processes has been made by Weiner (1972). Weiner put forth a two by two model under the basic elements of locus of control and stability in an attempt to distinguish between the attributional factors of ability, effort, task difficulty and luck. Controllability has been added to the model in order to determine whether or not the outcome was under the performer's control (Kremer & Scully, 1994). Recent work by Martin (1998) has used this model in examining the use of self-handicaps by athletes and will be discussed in a later chapter.

Understanding the aims of the self-handicapping process required the understanding, and inclusion of the principles of discounting and augmentation as described by Kelley (1971). Kelley noted that under certain circumstances certain individuals will attempt to have poor performances discounted, or attributed to external

sources of error, and successes augmented in the face of external sources of error. These principles are at the foundation of the study of self-handicapping.

Marecek and Mette (1972) also conducted research which subsequently served as part of the foundation for Berglas and Jones (1978) study of self-handicapping. Marecek and Mette studied the relationship between self-esteem and minimizing successes. Results showed that low and high self-esteem individuals did not differ in the amount they minimized success, however individuals with uncertain self-appraisals minimized success to a greater degree than those who had concrete views, low or high, of themselves. Uncertainty about self-esteem may be an indicator that the individual doubts that their negative performances are necessarily a result of stable, personal attributes, and a minimization of success is a suppression of performance rather than reflective of a lack of ability (Marecek & Mette). These findings on minimization of success are reflective of a self-handicapping strategy and speak to the role self-esteem plays in the use of this strategy in evaluative contexts.

In 1975, Berglas and Jones were exploring the use of strategies of externalization (Higgins, 1990) and shortly thereafter coined the term self-handicapping to describe the strategy of claiming or creating obstructions to performance to protect one's own feelings of competence in an evaluative setting (Berglas & Jones, 1978). The similarities between the principles described by Berglas and Jones and those postulated by Adler earlier in the century were noted by Snyder, Higgins, and Stucky (1983) and the research into this self-protection strategy began to flourish.

Defining Self-Handicapping

Berglas and Jones (1978) stated that individuals who self-handicap seek out conditions in which it is difficult to implicate the performer's ability for failures, and look for settings in which only successes can be linked to self-esteem. Although use of certain handicaps may increase the chances of failure, handicappers do not set out to fail, but to insure that any failures can be explained away (Berglas & Jones). It was postulated that self-handicappers do not come from a background of constant failure, but one of ambiguous successes in which the handicapper fears he or she will not be able to repeat past successes (Berglas & Jones). There tends to be an ambiguity about one's competence and the use of self-handicaps helps to maintain this ambiguity by avoiding clear, diagnostic feedback (Berglas & Jones). Berglas and Jones proposed that the strategy of self-handicapping was an effort by the performer to control self-attributions of competence and control. It was also noted, in this early study, that some people would surely be more prone to self-handicap than others.

In terms of a succinct definition, one proposed by Snyder (1990) captures and describes the true nature of self-handicapping:

Self-handicapping is a process of preserving the personal theory of self, wherein the person, experiencing uncertainty about success in an anticipated important performance arena, utilizes seeming impediments in order to (1) decrease the linkage to that impending performance should it be poor (i.e., discounting), and (2) increase the linkage should the performance prove to be good (augmentation).
(p. 119)

As has been previously mentioned, self-handicapping has been studied in conjunction with various behaviors and over a wide array of settings. This has resulted in a extensive list of self-handicapping behaviors. What follows is a list of only some of the handicapping behaviors chronicled in past research: the use of debilitating drugs (Kolditz & Arkin, 1982), the consumption of alcohol (Isleib, Vulchinich, & Tucker, 1988), withholding effort (Harris & Snyder, 1986), setting unattainable goals (Greenberg, 1985), listening to debilitating music (Shepperd & Arkin, 1989a), reporting test anxiety (Harris, Snyder, Higgins, & Schrag, 1986), reporting social-anxiety, depression, illness, traumatic childhood events (Shepperd & Arkin, 1989b), focusing on real or imagined character flaws (Snyder, Smith, Augelli, & Ingram, 1985), bad moods (Baumgardner, Lake, & Arkin, 1985), school commitments (Carron, Prapavessis, & Grove, 1994; Hausenblas & Carron, 1996; Prapavessis & Grove, 1998), injury (Shields & Paskevich, 1999), as well as poor nutrition (Martin, 1998).

With an understanding of what self-handicaps are, accompanied by such an all encompassing list of possible handicapping behaviors, why people begin to use these behaviors, and how they develop are two points of interest in self-handicapping research. The ensuing section will examine these questions and attempt to provide some clarity to the issue of the development of self-handicaps.

Development of Self-Handicaps

Berglas and Jones (1978) hypothesized that the development of self-handicapping as a self-protective strategy was a reaction to non-contingent feedback. That is, certain performers may feel that the outcome of their performance was incongruent with what

they had actually done, and that they lacked the ability to repeat such a performance.

Therefore, self-handicaps could be used to cover-up the possible lack of ability.

In order for the self-handicap to be effective, the surrounding environment must be one in which such a strategy would be accepted. Snyder (1990) noted that although the general perception is that performers are responsible for their actions, there are circumstances, such as injury or illness, where this causal link is blurred or broken in a valid, plausible way. It is because of this notion that self-handicapping can function. Very often, one may use a behavior which embodies self-handicapping for some other reason, and only realize the self-protecting function the behavior serves by accident, and then continue to use it as a self-handicap (Rhodewalt, 1990).

Uncertainty is necessary for self-handicapping to be used as is highlighted in Snyder's (1990) definition. The uncertainty that underlies self-handicapping, often originates from positive feedback or praise (Berglas, 1990). Praise is associated with a good performance completed by a performer who, it is expected, has the capabilities to repeat such a level of performance (Lerner, 1975). It is these expectations inherent in receiving praise which may become a stressor for the individual, especially if the performance was perceived by the performer to be a result of situational variables rather than skill or aptitude (Lazarus, 1981). Employing a self-handicap is an extremely effective way to alleviate the stress caused by the expectations for future performances. The goal of the handicap is to maintain the perception that one can perform well in a given task by delaying or confounding a true test of competence (Snyder). Urdan, Midgley, and Anderman (1998) pointed out that one must be able to distinguish effort and

ability as distinct, hold the belief that others perceptions can be manipulated, and believe that reporting low effort will protect uncertain competence in order to correctly employ self-handicapping. In spite of this it has been shown that self-handicapping has been used by children as early as the fifth and sixth grade (Kimble, Kimble, & Croy, 1998; Urdan et al.).

Chapter Two - Individual Differences

Not all self-handicappers approach this effective strategy in the same way, therefore it is important to distinguish the differences that have been discovered in the use of self-handicapping. In the subsequent sections the differences between claimed and behavioral handicaps will be discussed, as will the two aims of self-handicapping, the possibility of gender differences, the findings on the effects of level of self-esteem and finally acute and dispositional handicaps will be touched upon.

Claimed vs. Behavioral

Self-handicaps are often classified as either behavioral or self-reported/claimed (Snyder, 1990). Behavioral handicaps are observable, obvious, and external and include examples such as intoxication or accentuating an injury. Handicaps, which are self-reported, are frequently difficult to substantiate, as they are internal such as anxiety or claims of other physical or cognitive symptoms. Both have advantages and disadvantages for the handicapper.

Behavioral handicaps can be believable, as they are overt and can not be questioned easily. Behavioral handicaps are often external, such as avoiding the performance setting (Rhodewalt, 1990). However, these facts can also be the cause of some problems for the handicapper. Creating a behavioral handicap may be more deleterious to performance than a claimed handicap, and if the handicap is too obvious it may be “discovered” as the attempt at controlling attributions that it is (Berglas, 1990).

Reported self-handicaps are internal and therefore are more difficult to verify, which makes them somewhat effective in terms of self-protection. This can include

internal self-handicaps such as claims of effort withdrawal (Rhodewalt, 1990). Despite the apparent benefits, using a self-reported handicap requires the handicapper to admit a personal weakness, such as test anxiety, in order to establish a believable handicap.

Self-Presentation vs. Self-Protection

Aside from the methods of self-handicapping, the specific motives of the handicapper can also differ between individuals. The understanding that self-handicapping is employed for the purposes of both augmentation and discounting has been supported by the literature (Feick & Rhodewalt, 1997; Rhodewalt & Hill, 1995; Rhodewalt, Morf, Hazlett, & Fairfield, 1991) and are accepted as the general aims of the self-handicapper. However, the debate over the exact motives, which lead individuals to try and blur the causal link to these ends, remains in dispute.

In Berglas and Jones' (1978) groundbreaking work, self-handicapping was described as a method of self-protection. This inferred a protection of internal characteristics such as self-esteem. Since that publication, other researchers have expanded on the motives, or aims of the self-handicapping strategy. Kolditz and Arkin (1982) wrote that the motive for self-handicapping in a social context was slightly different in that it was used to maintain a positive public image amongst peers; sometimes referred to as image or impression-management. Arkin and Baumgardner (1985) continued work on the motives of self-handicapping, hypothesizing that handicaps may also be used simply to maintain a sense of control. They felt that individuals who feared being out of control of a situation would employ a self-handicapping strategy, however, little research has been uncovered in support of this claim.

Hobden and Pliner (1995) in a study of perfectionists examined the motives for self-handicapping. Characteristics and development of perfectionism have similarities to that of self-handicappers and therefore was seen as a prime population for study (Berglas & Jones, 1978; Hamachek, 1978; Hewitt & Flett, 1991). The findings were interpreted as implicating the need for self-protection as the primary motive for self-handicapping (Hobden & Pliner).

Self-handicapping as an impression management strategy was explored in a study by Crant (1996). Using a sample of office workers, it was found that self-handicapping was, in fact, effective as an impression management technique. It was also revealed that self-handicaps used for impression management were more effective in terms of discounting.

Tice and Baumeister (1984) suggested that the level of a participant's self-esteem played a large part determining the motives of an individual's self-handicapping strategies. Study results indicated that participants with low self-esteem practiced more in a public setting than private, whereas those classified as having high self-esteem practiced less (a self-handicapping strategy) in public than when left alone. Tice and Baumeister took this to reflect a need on the part of those high self-esteem participants to protect a public image, as they were seen as being concerned with impression management.

Strube and Roemmele (1985) also found that the driving force behind the use of self-handicapping strategies is that of self-esteem enhancement, suggesting a concern of avoiding blame from others is of primary importance. Although the need for self-

enhancement or impression management was apparent in findings by Strube and Roemmele, it was suggested that the likelihood of impression management being the only aim in situations of self-knowledge acquisition is remote.

Rhodewalt (1990) declared that there was insufficient evidence to support the self-presentational perspective on self-handicapping, and that most findings point to the use of self-handicaps for self-protection rather than self-enhancement. Perhaps differences in self-presentational styles should be examined to further understand what predisposes one to self-handicap (Rhodewalt, 1990).

It appears from the literature that one of two conclusions can be drawn. First, that the use of a self-handicap is motivated by either self-protection or self-presentation and not both, and that there is simply a need for more empirical evidence to clarify the specific underlying motivation of self-handicapping. However, a more comprehensive interpretation would be that self-handicapping can be motivated by either of these aims depending on the contextual and developmental factors in which the handicap is employed. In this case it study is required to determine these specific contextual factors.

Gender Differences

Questions remain regarding the issue of gender differences in self-handicapping as the research seems equivocal on this point. Some work indicates that there are gender differences (Berglas & Jones, 1978; Harris & Snyder, 1986; Midgley & Urdan, 1995; Urdan et al., 1998) while other researchers have not found any differences (Midgley, Arunkumar, & Urdan, 1996; Shepperd & Arkin, 1989a).

Rhodewalt (1990) argued that a consistent finding in the literature is that men handicap more than women, even though this topic has not been systematically examined. Berglas and Jones (1978), in their formative paper, found that only males chose performance inhibiting drugs when presented with an evaluative context. In a replication of this study using external, acquired handicaps, it was again found that only males handicapped (Rhodewalt & Davison, 1986).

Many researchers (Berglas & Jones, 1978; Josephs, Markus, & Tafarodi, 1992; Rhodewalt, 1990) have suggested that it may be that males and females simply self-handicap differently and in different contextual environments. Rhodewalt (1990) suggested that males appear to self-handicap when desired traits, such as intelligence, for which the individuals have an uncertain self-concept are tested. Such contextual uncertainty does not, however, seem to play as dominant a role in the handicapping by women. However, it has been found that self-handicapping by females is more prominent as a function of dispositional test anxiety which may simply reveal chronic uncertainty (Rhodewalt, 1990). Studies have also shown that females tend not to use behavioral but will employ claimed handicaps if they use any at all (Leary & Shepperd, 1986; Rhodewalt, 1990). Another distinction that has been postulated is that males are threatened in academic situations causing self-handicapping while females are more threatened in social contexts (Josephs et al.).

Dietrich (1995) investigated the notion of gender differences in self-handicapping tendencies over academic and social contexts. Unfortunately conclusive evidence was not found. Although it was found that males self-handicapped more in both the

formulated academic and social settings, and females made decisions in the study which were reflective of a lack of desire to manipulate attributions, these findings could not be interpreted in terms of social or academic contexts and were rendered moot by post hoc explanations. The findings may indicate social skills were not as ego-relevant for females as has previously been indicated. However, it was acknowledged (Dietrich) that the dot-identifying task used may have been associated with being a mathematical task, more academic in nature regardless of the condition manipulations. If this was the case, the results of greater handicapping by males would therefore support the notion that academic tasks may be more highly relevant to males than females but provide no insight into self-handicapping in a social context.

There has yet to be literature which provides a succinct answer to the questions of gender differences in self-handicapping over various contexts. Is it that men are more concerned with protecting an uncertain self-esteem or self-image? Do women simply avoid situations that may threaten these internal characteristics? The answers to these questions remain unclear and require further examination.

High vs. Low Self-Esteem

Another debate within the self-handicapping literature is whether or not self-handicapping is more prevalent when a person has high self-esteem or when a person has low self-esteem. Snyder and Higgins (1988) theorized that having lower self-esteem would result in more frequent uncertainty in achievement situations and therefore lead to a greater propensity to self-handicap. Zuckerman, Kieffer, and Knee (1998) hypothesized that if low self-esteem leads to a greater use of self-handicaps, then this inclination to rely

on the self-handicap may, in turn, lead to decreases in performance, and decreased self-esteem; creating a vicious cycle.

Opposing this view, Rhodewalt (1990) put forth the idea that due to the self-protective nature of self-handicapping, having higher self-esteem would induce more self-handicapping behavior, as there is more at stake. This concept is in support of research by Tice and Baumeister (1984) in which it was found that high-esteem individuals handicapped more for a test by not studying than those with low self-esteem. Later on, Tice (1991) brought a more compromising position to the table, suggesting that self-handicapping is used in different ways for individuals with high and low self-esteem and that the relationship between self-handicapping and this psychological construct is too complex for a clear cut answer.

The findings in a study by Strube and Roemmele (1985) suggested that the distinction between the use of self-handicaps by low and high self-esteem participants was the relative success of the handicaps employed. Continuing, it was hypothesized that successful self-handicappers will have created an environment of higher or positive self-esteem whereas an unsuccessful attempt at self-handicapping will result in lower self-esteem due to the implications involved in failure (Strube & Roemmele). If this is indeed the case, it is this differentiation in success that may create a vicious cycle. Strube and Roemmele indicated that this highlights the “dynamic interplay between the developmental antecedents of self-esteem and of self-handicapping and makes clearer the necessity of investigating the impact of successful and unsuccessful self-handicapping attempts” (p. 990).

Also included in the discussion concerning self-esteem and self-handicapping is the effect of self-esteem stability and its effect on self-handicapping strategies. Newman and Wadas (1997) examined this relationship finding that those participants with unstable self-esteem were the most likely to self-handicap. It was noted that these findings are in line with others (e.g., Kernis, 1993) that indicated that individuals with unstable self-esteem have intense affective reactions to failure and therefore have an increased inclination to use self-handicapping strategies (Newman & Wadas).

The fact that self-esteem is intertwined with self-handicapping makes these conflicting findings a troublesome problem and one that is difficult to readily resolve. Connections to self-esteem have also been implicated as plaguing self-handicapping researchers in terms of the measurement of self-handicapping tendencies, a topic to be discussed later. Although the measurement of these two concepts share 20% variance (Rhodewalt, 1990), there has been an accumulation of evidence to suggest that these two constructs are separate and can be measured as such (Rhodewalt, 1990; Rhodewalt, 1994; Strube & Roemmele, 1985).

Anticipatory vs. Dispositional

Another difference found in investigating the use of self-handicaps focuses on the temporal element of handicaps. If the handicap is presented relatively close to the actual start of the performance the handicap is termed anticipatory. Individuals use anticipatory handicaps when it is perceived that an immediate, upcoming performance may threaten their competence image (Snyder, 1990). However, there are handicaps, which are so enduring that they do not need to be emphasized or highlighted just prior to the event.

These are referred to as incorporated handicaps, which can lead to maladaptive behavior (Snyder).

Incorporated or disposition-based self-handicaps, can include conditions such as chronic shyness, anxiety or obesity, and are viewed as constant, stable handicaps (Berglas & Higgins, 1990). In these instances self-handicappers understand the function of their behavior in self-protection (Rhodewalt, 1990), and have themselves become the handicap (Snyder & Higgins, 1988). Symptom reporting such as this is usually employed for one of three reasons including: (a) providing reasons for possible failures, thus deflecting any negative feedback, (b) avoiding the evaluative situation altogether, and (c) securing tangible rewards that may augment one's sense of self-esteem (Snyder & Smith, 1982). All of these reasons are highly reflective of the motives underlying self-handicapping. The reliance on such characteristics usually manifests itself if threatening situations occur frequently, or if the outcome of an event is viewed as extremely unpleasant. As it is difficult for observers to discount these internalized traits, they are often accepted as being out of the performer's control, and therefore are more acknowledged as a viable reason for a poor performance. This allows the self-handicapper to continually acknowledge responsibility for the outcome while escaping any accountability for a poor performance. Using such a self-handicapping strategy indicates that the individual would rather operate under the label of a chronic handicap than take the chance of facing negative evaluation (Berglas & Higgins).

Some incorporated handicapping strategies are ineffective or lead to more ingrained, problematic behavior and are deemed counter-productive self-handicaps

(Berglas, 1990). Handicaps which clearly interfere with performance usually lead to doubts about the performers competence and questions about their motives for employing such a handicap (Berglas, 1990). Continued attempts to implement such self-handicapping strategies may very well result in decreases in the handicapper's self-esteem and sense of control as well as lead to constant avoidance or underachievement (Berglas, 1990). Results of a study by Smith, Snyder and Perkins (1983) in which the self-handicapping tendencies of hypochondriac individuals were examined provided support for the idea that self-handicapping can result in maladaptive behavior. This chronic behavior may become problematic and require some form of treatment.

Treatment of chronic self-handicaps

As outlined above, self-handicapping can evolve into a maladaptive pattern of behavior which may require treatment (Snyder & Ingram, 1983). Chronic self-handicapping is more reflective of turmoil in the interpersonal environment rather than an adaptive response to a situation (Berglas & Higgins, 1990). In these instances self-handicappers shape interpersonal relationships to facilitate maintenance of their self-image.

Therapy must be conducted in an environment of unconditional positive regard void of evaluation to assure that the client can develop the self-acceptance needed to progress. Millon (1981) described cognitive reorientation as the main element of most handicapping therapy. Chronic self-handicappers endure great pains to make others treat them the way they would like in order to maintain their self-image. Forming relationships based on this pursuit of maintaining self-esteem only perpetuates the

behavior as they often contribute to the suppression of an individual's actual ability while allowing for the continued reliance on a handicap (Stolorow, 1976). This is symptomatic of the distorted perceptions of competencies and performance standards that the self-handicapper holds onto. These are the attitudes that must be reshaped in order to initiate changes in behavior.

Eliminating negative, constraining self-talk through substitution of positive self-statements accompanied by reinforcement by the therapist is an effective approach in altering a handicappers perception of attributions (Meichenbaum, 1977). Berglas (1986) highlighted that the chronic self-handicapper feels only three performance outcomes are acceptable: (a) success, (b) postponement due to external factors, and (c) failure that is attributable only to factors unrelated to their skill or competence. Untangling this distorted view of performance standards is another goal of self-handicapping therapy.

Chapter Three - Handicaps and Other Concepts

Self-Presentation

Behaviors used for self-presentational motives are employed in an attempt to manage impressions to achieve short-term interpersonal objectives or in order to construct long-term identities (Lee, Quigley, Nesler, Corbett, & Tedeschi, 1999). Although self-presentation and impression management have been viewed as separate constructs, the tactics described in the literature are the same for both and therefore can be used interchangeably (Lee et al.).

Self-presentational tactics can be differentiated as tactical, focusing on specific behaviors, or strategic, focused on identities (Lee et al., 1999). Tactics used can be further distinguished or classified as defensive or assertive. Defensive self-presentations arise in the face of an event which jeopardizes a desired identity, and are used to fix any damage to this identity which has occurred. Assertive self-presentational behaviors are proactive and help establish identities (Lee et al.)

Lee et al. (1999) noted that there have been scales developed to measure the possible motivations for impression management such as self-monitoring, social desirability, and public-private consciousness but none that measure the construct of self-presentation. Therefore it was the purpose of the study by Lee et al., to develop a scale that measured the inclination to employ a variety of self-presentational behaviors including 13 tactics. These 13 tactics included excuse, justification, disclaimer, self-handicapping, and apology, categorized as defensive while ingratiation, intimidation,

supplication, entitlement, enhancement, blasting, and exemplification were categorized as assertive.

The scale was initially comprised of 90 items based on a nine point Likert, it was later reduced to 63 items through factor analysis (Lee et al., 1999). In various analyses the internal consistencies of the scale and the two subscales were high ranging from .86 to .94, with the test-retest reliability being .89 (Lee et al.). In testing for gender differences the main effect was found to be significant with higher scores being obtained for men on six tactics, women scoring higher only on apology. Of note, there were no gender differences found for self-handicapping. The overall findings suggested that assertive self-presentation tactics were used more by men than women (Lee et al.).

How does all of this relate to the present investigation on self-handicapping? Lee et al. (1999) included self-handicapping as one of the self-presentation behaviors and subsequently examined the self-presentational tactics scale in relation to self-handicapping as measured using the SHS (Jones & Rhodewalt, 1982). Scores for the SHS correlated more highly with the defensive subscale, and with the self-handicapping items than with items from any of the other 12 tactics (Lee et al.). The self-handicapping items contained in the self-presentation tactics scale included: "Anxiety interferes with my performances"; "I do not prepare well enough for exams because I get too involved in social activities"; "I put obstacles in the way of my own success"; "I get sick when under a lot of pressure to do well", and "Poor health has been responsible for my getting mediocre grades in school." It is obvious that self-handicapping is one behavior from a larger classification of self-presentational tactics.

Self-Defeating Behavior

Self-handicapping has often been confused with being synonymous with the term self-defeating behavior. Although, as will be outlined, there are some similarities, these two concepts are not necessarily interchangeable, and should be researched as such.

Berglas (1989) stated that the diagnosis of self-defeating personality disorder overlaps markedly with the concept of a self-handicapping disorder. In comparing self-handicapping to some concrete examples of self-defeating behavior, namely masochism and procrastination, the overlap mentioned above can clearly be seen.

Both masochists and self-handicappers use their behavior as a method to maintain a fragile self-representation (Kohut, 1971, 1991) which will not stand up to stressful situations (M'Uzan, 1973). Other commonalities between masochism and self-handicapping are the components of self-esteem protection (Stolorow, 1975), and possibility of secondary gain, such as sympathy or discounting generated by such behavior (Fenichel, 1945). In comparing the behavior of self-handicappers to procrastinators, basing self-worth on ability, and avoiding task completion or performances which will test one's ability are characteristics common to both self-limiting strategies (Ferrari, 1994).

In terms of the development of self-handicapping it is similar to both procrastination (Ferrari, 1994) and masochism (Menaker, 1953) in that the behavior may evolve from a self-representation that was confounded during childhood. One final trait that is shared between self-handicapping and masochism is that both behaviors result in

the shaping of interpersonal relationships around the given behavior as a form of reinforcement (Leary, 1957; Lowenstein, 1957).

In general, self-defeating behaviors arise when one's ego is threatened, they have emotional links to distress, involve tradeoffs, and in the end have greater costs than benefits as these actions are detrimental to the project of developing one's concept of self (Baumeister, 1997). Although all of these traits are characteristic of the strategy of self-handicapping Baumeister pointed out that self-handicapping is a form of self-defeating behavior and that they are not synonymous. Self-handicapping behaviors can largely be differentiated from other self-defeating behaviors by the timing of their implementation. Berglas (as cited in Berglas, 1989) pointed out that self-handicapping is employed following a success and in anticipation of a threat to one's self-representation. It is also important to acknowledge that self-handicapping is a proactive coping strategy (Berglas, 1989).

Through modification of the criteria set out for self-defeating personality disorder, Berglas (as cited in Berglas, 1989) outlined a set of diagnostic criteria for what was termed self-handicapping disorder. These guidelines encompassed self-handicapping's connection to self-esteem, event importance, and prior successes as well as characterizing the effects of the disorder as "...complete restriction or incapacitation as a result of some behavior or set of behaviors (e.g., drinking, refusing to sleep, overt self-sabotage) initiated prior to some known anticipated performance requirement" (p. 284). This was an attempt to separate or refine the diagnosis of this behavior from the diagnostic criteria of the overriding self-defeating behavior. Although some researchers have questioned

these findings (Schill, Morales, Beyler, Tatter & Swigert, 1991), this depiction of self-handicapping identified the commonalities with self-defeating behavior but also highlighted the uniqueness of self-handicapping as a subset of this behavior which requires individualized attention both in research and in practice (for a more detailed description see Berglas, 1989).

Self-Serving Attributions

Much research in attributional literature has focused on the self-serving attributional hypothesis. This hypothesis describes the internal attributions made for success and external attributions when performances are poor (Kremer & Scully, 1994). These attributions are motivated by maintaining or enhancing one's self-esteem (LeUnes & Nation, 1991). Undoubtedly there are apparent similarities between the self-serving hypothesis and the use of self-handicaps.

Although this hypothesis seems viable, the evidence attesting to the existence of a self-serving attributional bias is inconclusive (LeUnes & Nation, 1991). There has been support for the presence of a self-serving bias in some studies (Bird & Brame, 1978; Iso-Ahola, 1975, 1977; Roberts, 1975), whereas other studies have shown no indication of use of the self-serving attributional bias (Bukowski & Moore, 1980; Mark, Mutrie, Brooks, & Harris, 1984).

It should be evident that the employment of self-handicapping and use of causal attributions have similarities in that both arise in achievement oriented, evaluative situations, and that both processes are used to explain outcomes in order to protect self-esteem (Carron et al., 1994). However, one should not lose sight of the important

temporal difference between the two, as handicaps are used prior to the event and causal attributions are made after the performance (Carron et al., 1994). This distinction highlights the underlying intent of the use of self-handicaps, and accents the importance of examining and conceptualizing this process in non-academic achievement settings as the separate phenomenon that it is (Martin, 1998).

Sandbagging

As highlighted in a paper by Gibson and Sachau (2000), sandbagging can be described as a self-presentational tactic in which the sandbagger presents with an inability to perform in order to create low audience expectations. This strategy is used to protect the sandbagger from any negative effects of high expectations, one of which may be choking under pressure (Gibson & Sachau). Sandbaggers are also often optimistic that audiences will use these expectations as the benchmark for their performance, thus offering a self-regulatory benefit (Gibson & Sachau). Not only may the evaluator view a subsequent performance in a more positive light due to the low expectations created, but the performance may actually benefit from the lack of pressure created by the low expectations (Carver & Scheier, 1981).

Gibson and Sachau (2000) noted individuals who are uncomfortable in pressure situations or that are high in public self-consciousness are likely to employ sandbagging strategies. These situations could include the realm of sports, academic achievement contexts, and business environments (Gibson & Sachau). Shepperd and Socherman (as cited in Gibson & Sachau) remarked that claiming low levels of ability sends the implication that evaluators should not expect a positive performance, and also sends the

message to any competitors that there is no need to prepare or exert any special effort; this gives the sandbagger a performance edge. Sandbagger's do not want to reveal prior successes to evaluating audience's as these performances may be used as a predictor for performance and in turn undermine the strategy of sandbagging (Gibson & Sachau). Sandbagging is also usually performed when the individual values the opinion or feedback from the audience.

Although sandbagging may help to enhance performance by relieving some performance pressure it may also lead audience's to seek out poor performances or performance flaws, or create an atmosphere in which audience's behave in a way which detracts from the sandbagger's performance (Gibson & Sachau, 2000). Sandbagger's also risk creating a self-fulfilling prophecy, which results in a poor performance. In addition, exceeding such low expectations can result in the perception that the sandbagger is manipulative or dishonest (Gibson & Sachau).

Gibson and Sachau (2000) aimed to create a measure that determined those performers who are more prone to sandbag, and in doing so examine the determinants of sandbagging strategies. Based on previous knowledge and theory of sandbagging, a 25-item scale was used and included in a package of questionnaires comprising measures of self-consciousness, self-esteem and self-handicapping. It was predicted that sandbagging would be positively correlated with self-handicapping (Gibson & Sachau).

Thirteen items were deleted leaving twelve items with an internal consistency of .74. Men scored higher on average on the 12-item scale. In line with past theory, participants who scored higher on the sandbagging scale created significantly lower

performance expectations when no prior performance information was presented to the evaluator as compared to when the audience knew something about their performance ability (Gibson & Sachau, 2000). Analyses indicated that high-sandbagging participants only predicted lower performances than did low sandbaggers in high-pressure conditions, again supporting the underlying theory that sandbagging is often used in an attempt to minimize performance pressure (Gibson & Sachau).

Gibson and Sachau (2000) found that the correlation between sandbagging and self-handicapping was statistically significant, yet there was only 8% total shared variance. Low correlations with the other measures suggested that the sandbagging scale was capturing a separate construct. As is readily apparent, there are obvious similarities between the strategies of sandbagging and self-handicapping. In both instances the performer uses seemingly negative self-presentational tactics in advance of a performance. In addition, the strategies are used to create an expectation of a poor upcoming performance (Gibson & Sachau). However, there are distinct differences, notably, using sandbagging does not include creating an impediment to success as is used by the self-handicapper. Sandbaggers simply offer claims of low ability as an explanation for failure. Self-handicappers aim to manipulate the attributions following a performance, while sandbagging is used specifically to manipulate the expectations of performance, allowing the attributions to evolve on their own (Gibson & Sachau). Perhaps the most important difference between the use of sandbagging and self-handicapping is that sandbagging is often used by individuals who are confident in their ability, unlike the deploying of self-handicaps which are used as a result of uncertain self-

competence. In light of this, sandbagging can be included in the overriding category of self-presentational tactics that are used in evaluative performance settings, which also includes the separate strategy of self-handicapping (Gibson & Sachau).

Anticipatory Excuses

It has been noted that self-handicaps have a connection with self-defeating behavior, in addition to being rooted in attributional processes. In a further attempt to uncover the true nature of self-handicaps the pivotal work in early self-handicapping research by Snyder et al. (1983) is discussed. It was in this work that self-handicaps were looked at in terms of anticipatory excuses rather than referring to the strategies as self-handicaps.

Similar to the working definition of self-handicapping itself, Snyder et al. (1983) described anticipatory excuses as being explanations or actions which arise before a performance that is expected to be poor and are used in order to minimize the causal link to the performer and therefore maintain a positive self-image. It should be noted that an upcoming performance in which it is perceived that the result may be negative can also be interpreted as one in which the performer is uncertain of his/her ability, rather than convinced that the performance will be bad. It is the need to protect the self-image from negative feedback that is the key factor.

One prime example of a strategy used to decrease responsibility that was outlined was that of avoiding a "bad" performance arena (Snyder et al., 1983). If the individual is uncertain about an upcoming performance they may choose to avoid the performance setting all together, and thus escape any criticism from those involved. In terms of the

present investigation, understanding this type of strategy may be key when exploring reasons why individuals stay away from gyms or group exercise classes.

Snyder et al. (1983) highlighted anticipatory excuses that lessen the transformed responsibility to what is perceived to be a sure-fire negative outcome as among the most prevalent strategies. Two techniques or anticipatory excuses given were “nobody could do it,” and “I’ll only do it here”. In using the first excuse, individuals may argue that no one could perform well given their situation. The second anticipatory excuse refers to an individual who claims or convinces him or herself that the negative occurrence or avoidance will only happen on one occasion, although this is usually not the case. This strategy, especially in combination with distinctiveness raising, where the individual assures themselves that they have been good in other ways (Snyder et al., 1983) and therefore can continue to avoid a possible negative performance in this given arena, can often lead to a pattern of avoidance. Snyder et al. (1983) also highlighted the excuse or behavior of withholding effort or not trying. Snyder et al. (1983) pointed out that by not trying people can maintain their positive self-image by rationalizing that, if they had tried they would be able to perform better. This may be the most prevalent anticipatory excuse set, or self-handicap employed, as it is difficult to verify by external observers.

The aim of the preceding review of constructs often thought to be synonymous with self-handicapping was done to shed some light on the similarities and, more importantly differences between these constructs. Self-handicapping may be one form of self-defeating behavior but should not be considered synonymous the term self-defeating behavior. Also, although self-handicaps are self-serving and are used to control

attributions, the difference in the time of implementation, and therefore the intent of self-serving attributions, and self-handicaps is clearly a distinguishing characteristic that sets these two constructs apart. Anticipatory excuses and the reframing processes outlined in Snyder et al. (1983) are the most similar to the behaviors exhibited by self-handicappers. In fact, this work has been incorporated into a great deal of the subsequent self-handicapping literature. Although the term anticipatory excuse may be more easily understood, it refers primarily to claimed or self-reported impediments and therefore should not be used interchangeably with self-handicapping. Rhodewalt (1990) has stated that results using the self-handicapping scale support Snyder et al.'s (1983) notion that anticipatory excuses as an overriding category of excuse making of which self-handicapping is a part. It is obvious that the complexities of the self-handicapping phenomenon allow for connections to be made to various other constructs. However, self-handicapping is a process unique in its motivation, intent, and timing and therefore must be studied as such.

Chapter Four - Self-Handicapping in Academics

Much of the self-handicapping literature has been comprised of studies conducted in academic contexts, or using sample populations drawn from academic settings (Feick & Rhodewalt, 1997; Knee & Zuckerman, 1998; Rhodewalt, 1994; Rhodewalt & Fairfield, 1991; Strube & Roemmele, 1985). The majority of the research that has been conducted on the individual differences in the use of self-handicapping behaviors as reviewed in the above sections has relied on academic samples. The current section aims to provide a deeper understanding of the use of self-handicapping strategies by further examining research that has been conducted in an academic context. Although there are inter-connections between the studies listed below and those cited in previous sections, it was felt that there were enough differences in the following research that it was reasonable to present it in a separate section. Reviewed are some more recent studies exploring (a) the connection between self-handicapping and implicit theories (Rhodewalt, 1994), (b) the use of self-handicaps by students (Urdu et al., 1998), (c) the effect of self-handicaps on affect (Drexler, Ahrens, & Haaga, 1995), (d) the costs and benefits of the use of self-handicaps in a public setting (Rhodewalt, Sanbonmatsu, Tschanz, Feick, & Waller, 1995), and (e) the connection between self-handicapping and maladaptive coping (Zuckerman et al., 1998).

Self-Handicapping and Implicit Theories

Rhodewalt (1994) questioned 80 subjects from an introductory psychology class about their tendency to use self-handicapping behaviors, as well as their implicit theories about the world. Specifically Rhodewalt (1994) examined the connection between self-

handicapping and the endorsement of either incremental views, focusing on self-correction or fixed entity approaches, focused on internal traits. It was the aim of the study to examine the connection between individual differences in self-handicapping and subjects' beliefs about ability attributes and achievement goals.

It was revealed that those who felt positive performance outcomes were attributable to intrinsic, personal factors tended to pursue performance goals when in achievement oriented contexts. It was also reported that the purpose of doing so was to demonstrate high ability as compared to other subjects (Rhodewalt, 1994). On the other hand, those subjects that reported pursuing learning goals in these same situations also tended to believe that their abilities could be improved with effort. Performance goals were seldom endorsed by these subjects when in relation to attributes such as intelligence, athletic ability, or social skills (Rhodewalt, 1994). However, it was noted by Rhodewalt (1994) that subjects preferences could not be defined by one pure theory as their views fluctuated between both incremental and fixed entity.

With respect to conceptions of ability and goal salience, the data collected seemed to fit the notion put forth by Nicholls (1984) in that individuals pass through a sequence of developmental stages affected by feedback, extrinsic contingencies, perceived ability and task difficulty. In light of this, Rhodewalt (1994) stated that the differences found in implicit theories could be interpreted as differences in emphasis.

In relation to self-handicapping, differences in implicit theories and goals were found between those classified as low self-handicappers and those categorized as high self-handicappers. High self-handicappers were more likely to endorse fixed-entity

views, and pursued performance goals as an attempt to receive positive feedback (Rhodewalt, 1994). Those subjects classified as low self-handicappers predominately had incremental views and were more interested in learning goals.

These findings may seem rather counterintuitive in that those who are considered high self-handicappers tended to subscribe to a fixed-entity approach in which there is a focus on internal traits. High self-handicappers may be thought to look for external explanations, and avoid goals based purely on performance. In addition, an individual with an incremental orientation would have less to lose if they encounter negative feedback. However, Rhodewalt (1994) pointed out that those with incremental orientations believe that self-correction may be needed, and can be conducted, whereas fixed-entity theory suggests that there is nothing one can do to improve their performance. When considered in this light, these findings do seem to be reflective of the behavior of high and low self-handicappers. High self-handicappers were seemingly resigned to the fact that there was nothing they could do to improve their performance.

Use of Self-Handicapping by Students

Urduan et al. (1998) questioned whether students use of self-handicaps may be more a function of poor perceptions of academic competence rather than a students actual achievement level in school. From this research question, Urduan at al. looked to examine the intentional use of self-handicapping behaviors by fifth graders, as well as examine the predictors of these behaviors.

Findings indicated that elementary students did, in fact use such behaviors, and certain students were more concerned with maintaining a positive perception of their

ability than with confidentiality of their use of self-handicaps, teacher blame, or even learning the school material (Urdu et al., 1998). In terms of predictors, both achievement level (grades) and self-reported perceptions of academic ability were independent predictors of self-handicapping. Expanding on this, those students with low perceptions of confidence or lower grades were more likely to engage in self-handicapping strategies (Urdu et al.). When applied to a school setting, classrooms in which there is an emphasis on ability goals may increase students perceived need for self-handicapping (Urdu et al.).

It should be noted that the above findings concerning ability or performance goals are in keeping with those projected in the research by Rhodewalt (1984) on implicit theories. This may provide reinforcement for Nicholls' (1984) conclusion that there are developmental stages then individuals pass through with regard to goal salience and self-perceptions about ability.

Self-Handicapping and Affect

How effective is self-handicapping in reducing negative affective responses to evaluative event? One study by Drexler et al. (1995), sparked by literature on depression, examined the effect of self-handicapping on affective reactions to failure. Individuals who attribute failure to stable, internal factors are more likely to experience symptoms similar to depression, a severe form of negative affect (Abramson, Metalsky, & Alloy, 1989). Due to the fact that self-handicapping is a strategy used to provide unstable, situational attributions, it should provide a guard against this negative affect (Drexler et al.).

Participants were given intelligence tests and were led to believe they had done poorly. They were then given the opportunity to handicap by choosing to listen to music that may have been detrimental to performance prior to what they were told was another, upcoming test (Drexler et al., 1995).

As a whole, positive affect decreased and negative affect increased following the test. However, over two-thirds of the non-handicappers had positive affect below the median of the group, while only one-third of those who handicapped had such low positive affect. In short, these results provide evidence that self-handicapping does have a buffering effect on the negative affective response following failure (Drexler et al., 1995). This seems to indicate that self-handicapping is an effective strategy, if at least only in the short-term for self-protection and emotional management.

Costs and Benefits of Self-Handicapping

Much of the literature cited above has examined the benefits, or effectiveness of the use of self-handicaps as a self-protection or self-presentation strategy. Rhodewalt et al. (1995) expanded on the usefulness of self-handicapping by investigating the costs and benefits of employing such a strategy.

It was argued that the employment of a self-handicap creates the expectation for the audience that the performance will not be good. In turn, this may influence the evaluation of this performance so that it is perceived in a less favorable light than had a handicap not be used (Rhodewalt et al., 1995). Evaluating audiences may not attribute the poor performance to the performer, but as was pointed out by Smith and Strube (1991), evaluators do not necessarily care for individuals who self-handicap. In light of

this, Rhodewalt et al. (1995) reasoned that although people are often reluctant to provide negative feedback, the use of a self-handicap may liberate the evaluator from this socially correct mind-set, feeling that negative feedback will be less hurtful as the performer seemingly expected a poor performance. Taken in the context of failure feedback, Rhodewalt et al. (1995) surmised that handicapping not only decreased the chance of success but may also increase the magnitude of any negative feedback following a failure.

Using a sample of 130 males from introductory psychology courses, it was found that in general, performances by self-handicappers were evaluated in a less favorable light, despite being objectively equivalent to those exhibited by non-self-handicappers (Rhodewalt et al., 1995). More specifically, it was uncovered that the use of particular handicaps had more influence on an evaluator's attributions, perception of general character and ability, as well as effecting the content of the failure feedback provided.

Performance feedback provided to participants who employed a self-handicap of low effort was more negative in nature than that provided to participants claiming high anxiety, a medication related impediment, or those who did not self-handicap. Rhodewalt et al. (1995) interpreted this finding as reflective of the control of the self-handicap. If the handicap is seemingly out of the performer's control, such as anxiety or the effects of medication, the evaluator's perceptions tend to be less negative. These results provide evidence that those observing a performance in which a self-handicap was used may not always be willing to provide the self-handicapper with the benefit of the doubt (Rhodewalt et al., 1995).

In summary, the negative evaluative context which is created by the use of self-handicaps may move the evaluator to perceive the handicapper in a more negative light, and may, in fact result in the negative feedback the handicapper was trying to avoid (Rhodewalt et al., 1995). In terms of the findings regarding the different impressions made by the various self-handicaps, Rhodewalt et al. (1995) indicated that understanding the effectiveness of different handicaps is an important issue, which needs to be investigated in future research.

Self-Handicapping and Maladaptive Coping

In the preceding subsections a variety of issues relating to self-handicapping have been discussed, and have illustrated a case for and against the use of self-handicaps. Zuckerman et al. (1998) highlighted that although the reasons for use have been well documented the impact on actual performance has not been clearly shown. Cited as evidence of this is that performance benefits were apparent in work by Rhodewalt and Davison (1986), while decrements in performance were found by Springston and Chafe (1987), and further still, Harris and Snyder (1986) found that the use of self-handicaps had a negligible relationship to performance. Continuing, it was highlighted that self-handicapping may relieve the stress created by the possibility of negative feedback and therefore allow the performer to focus on the task at hand, leading to a better performance (Snyder, 1990). However, Rhodewalt (1990) has noted that there is a substantial correlation between handicapping and underachievement. With this ambiguity as a backdrop, Zuckerman et al. looked to examine the issue of self-handicapping and performance in relation to academic achievement and coping method.

Using participants recruited from introductory psychology classes over two studies, it was found that those participants classified as high self-handicappers, used negative, emotion focused coping strategies such as denial, mental and behavioral disengagement, and rumination (Zuckerman et al., 1998). Low self-handicappers tended to use positive emotion focused strategies including positive reinterpretation, and repairing emotion, indicating that the use of self-handicaps leads to maladaptive coping styles (Zuckerman et al.).

In keeping with findings by other researchers (Rhodewalt, 1984; Urdan et al., 1998), there seemed to be a negative relationship between self-handicapping and academic achievement, or grades obtained (Zuckerman et al., 1998). High self-handicapping was also related to decreases in self-esteem, and increases in the number of visits to the campus health center. In contrast to the findings of Drexler et al. (1995), Zuckerman et al. found that students who were high in self-handicapping also experienced high levels of negative affect. These relationships, between self-handicapping and self-esteem, and between self-handicapping and negative affect appeared to be reciprocal in nature and are a further indication of the relationship between self-handicapping and poor adjustment (Zuckerman et al.). This interconnected relationship may be evidence that these constructs reinforce one another and, over time lead to a dangerous, vicious cycle.

Zuckerman et al. (1998) concluded that self-handicappers do not perform well academically and that the use of self-handicaps is reflective of maladaptive, emotion-

focused coping. It was also stated that the use of such coping mechanisms is done so in lieu of dealing with situations effectively (Zuckerman et al.)

Chapter 5 -Self-Handicapping in Non-Academic Achievement Settings

Sport

Berglas and Jones (1978) stated in their original work that “self-handicappers are legion in the sports world” (p. 201). This intuitively makes complete sense as the evaluative nature, perception of great importance, as well as the possibility of personal uncertainty, all of which are elements linked to self-handicapping are inherent in the sporting environment (Carron et al., 1994). Sport should therefore be an area rich in the study of self-handicapping. However, despite what seems to be obvious criteria to merit research, it was noted by Hausenblas and Carron (1996) that there exists only a small amount of past literature on the topic of self-handicapping in sport and that research in this area has only recently started to expand.

Phenomenology

The majority of work conducted on self-handicapping in sport has relied on an aggregate of athletes from different sports perhaps enabling the researchers to claim more generalizable results. Athletes in the self-handicapping literature have come from sports that include the following: rowing, rugby, water polo (Carron et al., 1994; Hausenblas & Carron, 1996), golf (Prapavessis & Grove, 1994; Rhodewalt, Saltzman, & Wittmer, 1984) cricket (Carron et al., 1994), swimming (Rhodewalt et al., 1984), rifle shooting (Prapavessis & Grove, 1994), basketball, volleyball, swimming, synchronized swimming, track and field, soccer, and wrestling (Hausenblas & Carron).

One of the earliest works in sport was comprised of two, subsequent studies conducted by Rhodewalt et al. (1984) that examined the self-handicapping strategies used

by varsity swimmers and professional golfers. In both studies those participants classified as low self-handicappers increased their practice effort prior to major competitions while high self-handicappers did not. Unexpectedly, high self-handicappers in the swimming sample used high schoolwork load as a handicap less frequently than low self-handicappers. High self-handicapping swimmers also had fewer complaints of physical disability whereas high self-handicappers in the golfing sample reported being in poorer physical condition than did low self-handicappers.

Results from both studies revealed that low self-handicappers rated the conditions for competition prior to a major event as more favorable than those athletes classified as high self-handicappers (Rhodewalt et al., 1984). It was speculated that this finding appeared due to the fact that low self-handicappers perceived conditions prior to 'unimportant' competitions as less favorable than did high self-handicappers.

Rhodewalt et al. (1984) concluded that withholding effort in practice, or not increasing practice effort may be an easier strategy to implement than attempting to create another physical impediment. Personal control of the self-handicap was cited as a point of major importance when investigating the self-handicaps used by athletes (Rhodewalt et al., 1984).

In terms of handicaps uncovered in more recent research in sport contexts, work by Carron et al. (1994) revealed a long list of impediments perceived by the athletes which included, in order of prevalence: injuries, work commitments, school commitments, sport problems such as poor training, family/personal problems, debilitating influence of alcohol, illness due to colds, travel commitments, late to

practice, and coaching considerations. Hausenblas and Carron (1996) found that females reported the following handicaps most often: sport problems (canceled practice), school commitment, physical state/illness, family/friend problems, work commitment, personal, injury, and social goings-on (partying). Males in the study reported school commitment, sport problems, work commitment, injury, physical state, personal, family/friend problems, and social activities as being most prevalent. Prapavessis and Grove (1994) found that the most common directly related impediments reported were practice problems and poor weather, while the predominant indirect handicaps listed were work and study commitments, social activities, and relationship problems. As can be seen, many handicapping strategies were reported but it is not enough simply to identify perceived barriers. It is the understanding of the processes of these barriers which provide the greatest information.

Martin (1998) conducted an in-depth investigation into the phenomenology of the self-handicaps used by athletes and how handicaps were perceived. Three quarters of the athletes in the sample admitted to using self-handicaps in the past, but qualified this by indicating that although they were often tempted to use handicaps (26.5% of the time) they only used them about 13% of the time. However athletes perceived other competitors as using handicaps almost half the time (Martin).

It was noted that claimed self-handicaps were more prevalent ($\bar{M} = 4.7$) than behavioral handicaps ($\bar{M} = 3.1$). Martin (1998) organized the self-handicapping claims into the following four, first order themes: (a) health related claims, (b) claims regarding training disruptions, (c) claims related to the competitive event, and (d) claims regarding

psychological factors. The claims identified most frequently included: family problems, school work, chores, insufficient practice or coaching, training facilities, poor competition conditions, injury, illness, fatigue, psychological symptoms (Martin). Self-handicapping behaviors included: practice behaviors, health factors, inappropriate pre-competition behavior, inadequate event preparation and were categorized in the following three, first order themes (a) training related behavior, (b) behavior affecting physical functions, and (c) competitive event related behaviors (Martin).

Martin (1998) also investigated the contexts under which self-handicapping occurred, the orientation, either self-protection or self-enhancement of the athletes, and the causal dimensions of the handicaps used by athletes. To summarize, it was found that the majority of participants felt an athlete would employ a self-handicap when they were concerned with failure, significant others were watching, and when they were expected to succeed. Just over a third of the self-handicapping athletes reported having a self-protection orientation (36%) while only 15% were reported self-enhancers. With regards to the causal dimensions of self-handicaps, athletes rated preferred handicaps as being unstable, under moderate personal control and low external control, and having an internal locus of causality (Martin). Behavioral handicaps were rated as being under greater personal control than claimed self-handicaps. These findings suggest that athletes who self-handicap understand that they can control the perceived severity of their handicap and therefore control the impression made on others (Martin).

The low incidences of self-handicapping may very well have been a function of how the athletes perceived self-handicappers. Self-handicapping was viewed as highly

unacceptable, especially handicapping behaviors which may be more likely to actually damage performance. Negative emotions were frequently associated with self-handicapping, particularly when the handicapping was seen as being employed for self-protection (Martin, 1998). A sampling of some of the most frequently endorsed adjectives associated with self-handicapping included low self-esteem, immature, and self-conscious.

The above findings suggest that despite the identification of numerous handicaps reported by athletes that self-handicapping is not a very common practice among athletes (Martin, 1998). It should also be noted that athletes seem to self-handicap only under certain contextual demands (Martin).

Self-Esteem

Also incorporated into the research of self-handicapping in sport is the examination of self-esteem. One study, by Prapavessis and Grove (1998) examined the mediating effects of overall self-esteem on the relationship between the tendency to self-handicap and the number of perceived impediments. Resultant findings provided evidence of a negative mediating effect of self-esteem. These findings lend support to the position put forth by Snyder and Higgins (1988) suggesting those individuals with low self-esteem are more prone to handicap.

Martin (1998) also examined the relationship between self-handicapping and self-esteem, however both general and physical self-esteem were included in an attempt to have a more sport relevant measure of self-esteem. The findings of the study also support the hypothesis of Snyder and Higgins (1988) in that athletes with both low general and

those with low physical self-esteem expressed a greater temptation and probability to use self-handicaps. However, it was found that among athletes who employed handicaps, those with low self-esteem did so predominantly for self-protection, whereas those with higher self-esteem did so for self-enhancement reasons or augmentation (Martin). It was noted by Martin that low self-esteem scores for both general and physical measures were rather neutral so low self-esteem should be considered a relative term in this instance.

Cohesion and Team Climate

Team cohesion has been a variable thought to moderate the relationship between athletes' tendency to self-handicap and the actual number of perceived impediments (Carron et al., 1994; Hausenblas & Carron, 1996). In the early work by Rhodewalt et al. (1984), it was suspected that team cohesion might have complicated the interpretation of the results obtained from team sport athletes. In light of their findings concerning lack of practice effort, Rhodewalt et al. (1984) suggested that overt self-handicapping strategies may bring about punishment from teammates and this possibility of team reaction should be considered when studying self-handicaps in team sport contexts.

Individuals in highly cohesive teams have been shown to feel greater responsibility for the team (Sagi, Olmstead, & Atelesek, 1955) and to live up to group expectations (Schachter, 1951). These two social pressures alone would seem to lead to an increase in self-handicapping behavior in order to alleviate the burden of responsibility for a possible poor performance (Carron, 1988; Shaw, 1981). However, it has also been demonstrated that high team cohesion can be linked to a heightened sense of security (Peptitone & Reichling, 1955), decreases in overall anxiety (Julian, Bishop, & Fiedler,

1966), greater support from team members (Yalom, 1975), and more shared responsibility (Brawley, Carron, & Widmeyer, 1987) which may result in a better ability to endure the negative impact of any failure (Brawley, Carron, & Widmeyer, 1988). These findings paint a picture of an environment in which the individual is less vulnerable and therefore would have less of a need to self-handicap. Even though the past literature seems to present formidable arguments on both sides of the cohesion debate, research by Carron et al. (1994) and Hausenblas and Carron (1996) found similar results. In both studies it was found that athletes who were categorized as high in the tendency to self-handicap exhibited a need to self-handicap more when team cohesion was high, either through a greater number of reported impediments, rating the team cohesion as low (Carron et al., 1994) or through more intense feelings of being impeded (Hausenblas & Carron). These findings suggest that being a part of a highly cohesive team may exacerbate a self-handicapper's need to employ this self-limiting strategy.

Slightly branching away from strict team cohesion, Ryska, Yin, and Boyd (1999) examined the relationship between self-handicapping, goal orientation and team motivational climate among youth soccer players. Effort reduction and excuse making handicaps were associated with low task oriented goals, low perceived ability, and a team climate that focused on high performance.

Athletes involved in a team that overemphasized personal competence and a comparison with others were more prone to employ self-handicaps for self-protection (Ryska et al., 1999). These findings suggested that self-handicapping tendencies of young athletes is more a function of the motivational aspect of the team environment than

an athlete's personal disposition (Ryska et al.). Ryska et al. indicated that if an athlete perceives self-worth as being defined by comparison with others then the use of self-handicaps may be a logical method of self-protection in instances of low ability or poor performances. These findings mirror those found by Urdan et al. (1998) in an academic setting concerning the effects of the 'learning environment' on self-handicapping behaviors in youth.

Exercise

One important area in which the amount of self-handicapping research remains negligible is that of exercise. Conducting research along this avenue is a logical pursuit as exercise situations have all the characteristics inherent in an environment that fosters self-handicapping behaviors. In light of the public nature of exercise classes and local fitness facilities, coupled with the importance of being healthy in today's society the area of exercise has both the evaluative nature and the event importance that have been cited as necessary to induce handicaps (Berglas & Jones, 1978). The final component, uncertainty on the behalf of the performer also seems quite apparent within the exercise domain. This is highlighted in work by Dishman (1988) which revealed that 80% of adults exercise less than once a week and of those that begin an exercise routine, 50% will drop out in the first six months. Exercise psychology seems like a field with ample opportunity for self-handicapping research. The study into self-handicapping in exercise may lead to revelations concerning barriers to exercise not only for the general public but for those who are battling obesity or who are in some form of rehabilitation.

Phenomenology

There have been few studies relating self-handicapping to an exercise domain. Preliminary evidence was found by Baumeister, Kahn and Tice (1990) indicating that some obese people use their weight as a handicap during a weight loss program. In a follow-up study, Schill, Beyler, Wehr, Swigert, and Tatter (1991) found that others accept the use of such a handicap by obese individuals as a viable reason to underachieve.

Using a 12-minute run fitness test as the exercise context, Martin (1998) examined the self-handicapping tendencies of first year Kinesiology students, and how self-esteem effected the use of these strategies. As the test was conducted in front of other classmates, a public domain, the participants were reluctant to endorse questions indicating a self-presentational orientation. It was thought that this may be reflective of a social desirability bias, or that the items were just not meaningful to the participants (Martin). Scores on self-esteem, both general and physical were, for the most part, at or above the median of possible values. It was found that participants who reported low self-esteem were more likely to use claimed self-handicaps, and were more likely to experience greater disruptions in performance. Results also showed that general self-esteem strongly predicted reliance on claimed self-handicaps (Martin). Using measures of self-efficacy (both running and self-efficacy expectancy), claimed self-handicapping seemed to increase along with a decrease in self-efficacy.

The results of this study indicated that how people feel about themselves and the situation they are in helps to provide a broader understanding of their self-handicapping tendencies (Martin, 1998). In light of these findings, Martin recommended that further

investigation into the relationship between self-handicapping and self-esteem be conducted. However it was noted that domain-specific measures of self-esteem should be used.

Shields and Paskevich (1999) conducted an exploratory yet comprehensive look into the phenomenology of self-handicapping in exercise as well as the measurement of self-handicapping in this context. A series of questionnaires assessing self-handicaps including the self-handicapping scale were administered to the participants of various structured exercise classes. Although participants felt the exercise classes were personally important, on average not many impediments to performance were reported. However, there were nine categories of impediments that arose from the responses given. Examples of responses included impediments ranging from “alarm not going off”, “car broke down”, “wedding preparations”, to “lack of motivation”. The most predominant categories were fatigue (25%), work (15%) and injury (12%). These findings were similar to those found within the sport research (Carron et al., 1994; Hausenblas & Carron, 1996; Martin, 1998; Prapavessis & Grove, 1998).

Chapter Six - Measurement of Self-Handicaps: The SHS

Development

Capturing the psychological constructs in some quantifiable way is an important issue for researchers as it allows for comparisons of individual differences. It also lends itself to a deeper understanding in terms of the use of the behavior and, in turn the applicability of this knowledge for use in behavior modification programs or future research.

It is reported that the first efforts at creating a measurement tool for self-handicapping were conducted by Jones and some of his students in the late 1970's (Rhodewalt, 1990). The earliest scale consisted of 20-items, had moderately high internal consistency (Cronbach's α , $r = .78$) as well as test-retest reliability ($r = .74$) (Rhodewalt, 1984). However, the tool was moderately correlated with low self-esteem ($r = .3$ to $.5$) which gave rise to psychometric problems (Rhodewalt, 1990). Through modifications to the scale this correlation was reduced and Jones and Rhodewalt (1982) produced the Self-Handicapping Scale (SHS).

The SHS included 25-items each measuring respondents agreement on a 6-point Likert type scale, aimed at examining the propensity of using such behaviors as illness, lack of effort, procrastination, and emotional upset within an evaluative context (Rhodewalt, 1990). Other items were specifically designed to target achievement concerns. The 25-item SHS has been used predominately in an academic context (Feick & Rhodewalt, 1997; Knee & Zuckerman, 1998; Rhodewalt, 1994; Rhodewalt & Fairfield, 1991; Strube & Roemmele, 1985) but has also been employed in the realm of sports

(Rhodewalt et al., 1984). Arkin and Baumgardner (1985) described the SHS as a measure of chronic excuse making, capturing both excuses that are substantive and those that are claimed. Tests of the internal validity and reliability have shown acceptable internal consistency (α , r (503) = .79), as well as reliability measures ranging from .74 (Rhodewalt, 1984) to .94 (Knee & Zuckerman, 1998). Rhodewalt (1990) reported that research findings indicated that those scoring high on SHS are more likely to claim a handicap thus illustrating the scale's utility.

Although the original 25-item SHS was a step forward in the study of self-handicapping and is still used in the literature, it has since been refined down to a 14-item version which is more widely used. Rhodewalt (1984) used principal component factor analysis to examine the factor structure of the 25-item SHS. Seven factors were extracted based on Eigen values greater than one, which accounted for 52.3% of the item variability. However, Rhodewalt (1984) reported that use of the Scree test revealed only two major factors. Subsequently two components were extracted. Component one was termed proclivity for excuse making (a claimed self-handicap) and was comprised of nine items which accounted for 17.4% of the variance (Rhodewalt, 1984). The second component was deemed lack of effort or motivation (a behavioral self-handicap), which accounted for 10.9% of the variance but included only five items. The internal reliability of this shortened version (α , r = 0.79) was similar to the original version, as was the correlation with self-esteem ($r_{\text{short}} = -.41$; $r_{\text{long}} = -.43$) (Rhodewalt, 1984).

Rhodewalt (1984) suggested that the emergence of excuse making as the largest factor perhaps lends support to the notion put forth by Snyder et al. (1983) that self-

handicapping falls within a broader spectrum of anticipatory excuse making. In this sense the SHS may actually be a measure of propensity to employ general self-protective strategies which includes not only self-handicapping but also excuses, disclaimers and rationalizations (Hewitt & Stokes, 1975). In spite of this acknowledgment, Rhodewalt (1984) suggested that the 14-item version of the SHS be used to measure self-handicapping behaviors.

Revisions to the SHS have also been made by Strube (1986) in an attempt to find a more parsimonious scale. Strube examined the preliminary, 20-item version of the SHS, finding an internal consistency of .62, indicating a need for further analysis. Using factor analysis Strube extracted items that loaded greater than .3 resulting in a scale containing only ten items, some slightly reworded, but all of which are included in Rhodewalt's (1984) 14-item version. The scale was tested for internal consistency and showed moderate values of .66 and .70 (Strube). Strube controlled for self-esteem in the validation process, revealing that the SHS was not simply a measure of self-esteem. However the correlation between the two constructs remained high ($r = -.5$). Strube's version of the SHS has been used in current research (Deppe & Harackiewicz, 1996) despite the fact that Rhodewalt (1990) has pointed out that the 14-item version formed through the factor analyses of the original 25-item SHS items captures a wider variety of self-handicaps, and is comprised of items which have been reworded in an attempt to decrease the correlation with low self-esteem.

More recently there have been additional attempts at creating a measurement tool to assess self-handicapping. Midgley and Urdan (1995) and Midgely et al. (1996)

designed a scale based on a 5-point Likert system to measure self-handicapping tendencies among elementary and junior high aged children. The internal consistency of this scale was acceptable at .84. Alternatively, Zuckerman et al. (1998) factor analyzed the original, 25-item SHS in order to construct a separate 14-item scale with certain, original items reversed so that a higher rating always indicated a greater tendency to self-handicap. It was reported that the loadings ranged from 0.34 to 0.71, the Cronbach's alpha was .76, and that only one item differed from the scale developed by Rhodewalt (1984). However, Zuckerman et al., found only one overriding construct rather than the two indicated in Rhodewalt's (1984) findings. In yet another measurement of self-handicapping Martin (1998) also used her own version of a scale for self-handicapping for a recent study in a sport-related context.

Intuitively there seems to be a problem with the SHS. The theory behind self-handicapping indicates that it is driven by a need to self-protect or manage impressions, both of which should repress an open admission of the use of such a strategy (Rhodewalt, 1990). It is contested that respondents may be aware of their tendency to self-handicap and either employ them automatically in the threatening context, or the respondent admits to the use of handicaps but is not aware of the function they serve (Rhodewalt, 1990). Some persons may admit to the use of self-handicaps on a questionnaire but feel that doing so will not jeopardize the confidentiality and effectiveness of their self-handicapping strategies when actually employed (Rhodewalt, 1990). One final explanation is that it may be that the SHS is not sensitive enough to detect the more discrete or self-deceptive self-handicapper (Rhodewalt, 1990).

The SHS in Non-Academic Achievement Settings

Some of the most relevant and interesting findings with respect to the 14-item SHS have surfaced in the self-handicapping research in non-academic achievement contexts, namely sport and exercise. Much of this research has found problems with the scale and posed serious questions about its validity and reliability outside of an academic context (Carron et al., 1994; Hausenblas & Carron, 1996; Prapavessis & Grove, 1994; Martin & Brawley, 1999; Prapavessis & Grove, 1998; Shields & Paskevich, 1999).

In sport, Hausenblas and Carron (1996), Prapavessis and Grove (1998) as well as Martin and Brawley (1999) have all tested the internal consistency of the SHS, finding similar results. The internal consistency of the reduced effort factor was unacceptably low with Cronbach's alphas ranging from .36 to .58 leading to an elimination of this data from subsequent analysis (Hausenblas & Carron; Prapavessis & Grove, 1998; Martin & Brawley). The internal consistency of the entire scale was tested in an exercise setting by Shields and Paskevich (1999) and was found to be adequate ($\alpha = .80$) and in keeping with previous findings using academic samples (Knee & Zuckerman, 1998; Rhodewalt, 1984). However, when the alphas were calculated for each subscale only the internal consistency for the excuse making subscale was satisfactory ($\alpha = .78$). The internal consistency of the effort subscale was barely adequate ($\alpha = .61$), a finding which mirrors that of the research in sport (Hausenblas & Carron; Martin & Brawley; Prapavessis & Grove, 1998). Ryska et al. (1999) noted that the competitive nature of sport may increase the ambiguity in the verbal excuse-behavioral handicap relationship contained in a self-reported scale, and therefore hinder the reliable assessment of handicaps such as effort withdrawal in a sport

setting. This has been cited as a possible explanation for the lack of internal consistency of the SHS in sport (Ryska et al.).

In examining the factor structure of the SHS, Martin and Brawley (1999) found that despite rewording certain items in an attempt to increase their relevance to a sample of athletes, the factor structure was unstable and as previously indicated, the internal consistency of the reduced effort subscale was exceedingly low (Martin & Brawley). The fit of the model was also tested using the Chi squared statistic. It was apparent that the scale did not fit the data drawn from samples of athletes as the Chi-squared statistic was significant ranging from 123 to 214 ($p < .001$).

The factor structure has also been investigated in an exercise context (Shields & Paskevich, 1999). Although initial factor analysis showed four factors, examination of the Scree plot indicated the presence of only two factors. The two-factor solution was forced through resulting in the two factors accounting for 29.6% of variance; 24.4% and 5.2% for factor one and factor two respectively. However, examination of the factor loadings, revealed that only five items sufficiently loaded on the excuse factor and one item loaded on the effort factor based on the loading criteria set out by Rhodewalt (1984). The Chi square statistic was calculated as a basic measure of fit. Results indicated that the two factor model proposed by Rhodewalt (1984) did not fit the exercise data ($\chi^2 = 86; p = .030$).

In terms of the handicaps assessed by the self-handicapping scale, it has been shown that only a small percentage of respondents in non-academic achievement settings are classified as high-self-handicappers according to the two, underlying factors. Martin

and Brawley (1999) found that only 6.5% of the athletes in their sample were in the top third of possible values for the excuse making subscale, and only 7% for the effort making subscale. These findings have been supported by research conducted in exercise revealing that only 1% of participants were in the top third in excuse making and only 6% for effort withdrawal as measured through the SHS (Shields & Paskevich, 1999). It has also been noted that many participants responses fell within a restricted range, below the middle of the scale indicating that the participants did not view the qualities captured in the items as reflective of their personal traits, or relevant within a sport or exercise context (Martin & Brawley; Shields & Paskevich).

Martin and Brawley (1999) indicated that some of the items such as “I tend to put things off to the last minute” may not be applicable in a sport context, and therefore these items were reworded in order to increase their relevance. As illustrated in the previous chapter, research into self-handicapping in non-academic achievement contexts has revealed the use of many predominant handicaps. None of the items on the SHS specifically address these handicaps which may be at the root of the finding as outlined above (Martin & Brawley).

It has been noted by Martin and Brawley (1999) that the evolution of the self-handicapping scale has been primarily a statistical one based on factor analyses, and improvement of statistical indices. The original SHS was a 20-item version, which was later modified to form the 25-item version (Jones & Rhodewalt, 1982). The 20-item version was also analyzed by Strube (1986) leading to the creation of a more parsimonious 10-item version. As has been fully described above, Rhodewalt (1984)

later modified the 25-item version using factor analyses in order to arrive at the most frequently used 14-item version of the self-handicapping scale. In light of this quest for a questionnaire with a strong statistical fit, the end result may have been a tool not based on theory, and which may be too specific to the populations it was created from. This may have limited or completely negated its usefulness in non-academic achievement settings. It should be noted that Rhodewalt (1990) acknowledged that the satisfactory validity displayed by the SHS was limited to intellectual achievement and focused on claimed self-handicaps. This makes the question of why the SHS has been used in sport all the more relevant.

In light of recent research findings (Hausenblas & Carron, 1996; Martin & Brawley, 1999; Prapavessis & Grove, 1998; Shields & Paskevich, 1999) it would seem that the clear-cut validity of the SHS outside of the academic realm in which it was created is at best, questionable. Even though the theory from which self-handicapping arose suggests that self-handicapping could be prevalent within sport and exercise contexts, it seems that there is a need for the development of a new, possibly context specific measurement tool to assess the tendency to self-handicap outside of academics (Hausenblas & Carron; Martin & Brawley; Shields & Paskevich).

Chapter Seven - Present Investigation

Foundation

As has been clearly demonstrated by the above research, the results of self-handicapping research outside of academics have been plagued by problems of inaccurate measurement. In order to continue with progressive research into self-handicapping in exercise, a return to the theoretical foundations needs to be addressed in order to form a conceptual model of the construct from which to work.

Self-esteem is indelibly intertwined with the use of self-handicaps (Jones & Rhodewalt, 1982) and therefore must be included in this discussion. Both rejection of success (Aronson & Carlsmith, 1962) and a drive for successes (Marecek & Mette, 1972) have been shown to be functions of low self-esteem. However, the factor which greatly influences which avenue is pursued seems to be determined by the psychological state of certainty of self-appraisal (Marecek & Mette) rather than level of self-appraisal. In light of the fact that self-handicapping occurs in contexts which are related to esteem, the employment of these strategies may be influenced by one's self-efficacy in these domains (Martin, 1998). It is with this notion that self-efficacy and exercise is examined.

Poag-DuCharme and Brawley (1993) have noted that self-efficacy has been shown to predict exercise behaviors as well as exercise intentions. Despite these findings they caution that a better understanding of the uniqueness of the exercise process is required before any true in-roads can be made in the study and design of interventions for exercise. Individuals' current exercise behavior is largely a function of cognitive factors, exercise experience and history (Poag-DuCharme & Brawley), and may not be consistent or

permanent (McAuley & Courneya, 1993). There has been little literature focusing on how self-efficacy may differentially effect participation in structured versus unstructured exercise (Poag-DuCharme & Brawley).

Although studies have shown a link between exercise self-efficacy and perceived barriers to exercise (Godin & Gionet, 1991), the measurement of efficacy to overcome these barriers in exercise may be confounded by the fact that many individuals may not have encountered exercise barriers in the past (Poag-DuCharme & Brawley, 1993). Without the experience to generate such efficacy, individuals may underestimate their efficacy for overcoming such barriers. In discussing such barriers one has to include motivational capabilities, and cognitive resources, in addition to environmental barriers (Poag-DuCharme & Brawley).

Poag-DuCharme and Brawley (1993) hypothesized that the measurements of specific appraisals of efficacy are required to truly assess the behavior of individuals in structured and unstructured exercise environments. Barrier self-efficacy, scheduling self-efficacy and in-class self-efficacy were all assessed. Intention to exercise as well as actual exercise attendance was assessed at the start and midpoint of both structured and unstructured exercise programs for both beginner and experienced exercisers.

Although all measurements of self-efficacy contributed to the prediction of exercise intentions in both beginner, unstructured and experienced, structured exercise programs two findings were especially interesting. In both instances scheduling self-efficacy was the best predictor in both cases suggesting that this may be a significant barrier which needs to be examined in the study of self-handicapping in exercise. Also of

interest was that in-class efficacy was the best predictor early on in structured exercise classes. This highlights the possible effect of uncertainty about self-image in relation to these exercise behaviors. These findings also serve to emphasize the importance of considering the multiple types of efficacy that interact during the complex behaviors that lead a person to or away from exercise (Poag-DuCharme & Brawley, 1993).

Scheduling self-efficacy was also found to be a significant predictor at the midpoint of the program for both conditions in predicting actual exercise attendance (Poag-DuCharme & Brawley, 1993). The researchers concluded that several forms of efficacy, including barrier, scheduling and in-class efficacy are all factors which need to be studied in order to fully understand intention to exercise and actual exercise behavior. Poag-DuCharme and Brawley also stated that any instruments used to assess exercise intentions, or behaviors need to reflect the multiple facets involved in this phenomenon.

As has been noted in detail in the discussion above, there have been problems found with the validity and relevance of the current SHS when used in non-academic achievement contexts (Hausenblas & Carron, 1996; Martin & Brawley, 1999; Shields & Paskevich, 1999). In addition, recent work (Martin & Brawley) indicated the large possibility that self-handicapping is context specific and needs to be measured as such. This notion is in support of earlier work in exercise by Poag-DuCharme and Brawley (1993) in which it was noted that measurement of skills or strategies must be specific and relevant to the behavior under investigation.

In a review of the limitations of some of the relevant self-handicapping studies, it was found that only 3 of 31 studies were relevant to exercise, and only half the

participants of one of these studies were involved in unstructured exercise. Only 3 of 35 sample populations had average ages greater than 24, and in the exercise studies reviewed, the samples consisted of a large majority of females (Baumeister et al., 1990; Shields & Paskevich, 1999) indicating very limited generalizability.

Purpose

In light of the recent findings, and suggestions concerning the self-handicapping, and in addition to the theoretical base supporting the hypothesis that self-handicapping may be prevalent in exercise settings, it is the purpose of this study to create a measurement scale which will effectively and reliably assesses the tendency to self-handicap in an exercise context. In the development of this instrument it is also the aim of the researcher to obtain a greater understanding of the nature of self-handicapping strategies employed in exercise.

Significance

Establishing a regular exercise routine requires numerous considerations such as scheduling, mental readiness, access, method, and effort level, all of which may be affected by varying degrees of self-efficacy. Exploration of self-handicaps in exercise may help to reveal the barriers or techniques individuals use to compensate for the uncertainty of their self-efficacy related to these various exercise behaviors which may be at the root of the high attrition rates. Expanding the study of handicaps in exercise and the measurement of exercisers' tendency to employ such strategies may assist in practical program design and implementation in order to affect change in people's attitudes with the aim of increasing exercise participation, decreasing attrition and maximizing the

benefits obtained from participation in exercise and healthy living. As seen in the study of elite sport, self-handicapping can be used by advanced exercisers. However, study in this area may be especially important and effective in the earlier stages of adopting an exercise program during which individual's may be more likely to be self-defeating and unsure of their abilities.

Methodology

In designing a scale relevant to exercisers all aspects of self-handicapping must be considered. Both claims and behavioral handicapping strategies must be represented, as should both the motives of self-protection and self-presentation. The items included must not only reflect the handicapping strategies highlighted in previous research in non-academic settings (Martin, 1998; Shields & Paskevich, 1999) but they must also be relevant to individuals at different stages in their exercise behavior (Martin; Poag-DuCharme & Brawley, 1993). The recent findings about relevant handicapping strategies must be combined with the underlying theoretical tenets (Heider, 1958; Kelley 1971; Snyder et al., 1983) in order to produce salient items, which are effective in capturing self-handicapping.

In developing the SHEQ, contact was made with the program directors, instructors and weight room staff of all the targeted fitness facilities. The procedure used, similar to that used by Carron, Widmeyer and Brawley (1985), as described below, was outlined to all involved. Participation by all involved was completely voluntary.

Phase One

The first step in the designing of the SHEQ was operationally defining the construct. Although the theoretical tenets of self-handicapping may suggest important characteristics of self-handicaps, using participants as active agents was essential in the representation and operationalization of the constructs in an exercise setting.

Subjects

In a process similar to that conducted by Carron et al. (1985) responses were drawn from four sources, three of which involved participants as active agents. In order to provide a wide spectrum or perspective, participants were recruited from unstructured exercise areas ($N = 26$), and structured exercise classes ($N = 23$). In addition, archived data concerning self-presentation and self-handicapping in exercise was obtained from an introductory mind science class in the faculty of Kinesiology at the University of Calgary ($N = 147$). These three exercise related settings were targeted in an attempt to insure a wide range of responses. Relevant literature served as the fourth source of responses and was reviewed for barriers found in an exercise context.

Instruments

An open ended questionnaire comparable to that used in previous research (Hausenblas & Carron, 1996; Shields & Paskevich, 1999) was used to assess the nature of impediments and handicaps encountered, and used by those involved in exercise (see Appendix A). Demographic information and a brief exercise history were also obtained in order to determine the exact makeup of the sample.

Again, methodology in line with past research (Carron et al., 1985) and incorporating the suggestions of Martin (1998) was used. The wording of the questions reflected different foci in a further attempt to obtain the widest possible range of perceived impediments. One third of the respondents completed questions with a self-focused perspective (i.e., "...do you...."), another third was asked to focus on others (i.e., "...do you feel others..."), and the final third responded in terms of one's temptation to use handicaps (i.e., "...have you been tempted...."). It was thought that wording the questionnaire in terms of temptations alleviated some of the social pressures of having to admit to using self-handicaps (Martin).

Procedure

Participants were recruited from each setting and were asked to fill out the questionnaire. Each participant was instructed to take as much or as little time and space as was needed. The participants were then thanked for their participation, and any questions regarding the study were answered.

All of the responses were left in the participants' own wording, and were entered into an Excel 5.0 spreadsheet program. Each handicap entered was accompanied by the matching participants' demographic and exercise history information. This aided the researcher in determining any trends in relation to age, gender, exercise settings, or exercise experience. Using SPSS 10.0 gender differences were tested using a T-test while the possibility of differences across setting or instruction focus was tested using one-way ANOVAs (of 3 levels). The responses were then assessed for commonalities. Common responses were then collapsed to form a pool of responses.

Phase Two

Step two in the development of the scale was the formation of the instrument through item development and content validation. In this step theory was combined with the raw responses of participants in order to represent the concept of self-handicapping. The purpose of this phase was to form an initial pool of items to be included on the SHEQ, and to establish some measure of content validity through an expert review of the material.

Procedure

Analyses of the common responses were conducted to identify themes and sort them into clusters based on commonalties and previous knowledge of self-handicapping. The items remaining in the pool of handicaps were assessed for locus of handicap, type of handicap, whether the handicap addressed psychological, physical, scheduling, or accessibility handicaps, as well as whether the handicap lent itself to the problem of avoidance of the performance arena, or lack of effort within that arena.

Three expert reviewers specializing in the field and a graduate student (the author) then discussed the responses, commonalties and item development to insure they made conceptual sense and would tap into both claims and behaviors of both self-protection and self-presentational motives of various aspects of exercise behavior. Redundant or ambiguous responses were then eliminated and the remaining items were included based on a 75% consensus of the reviewers. Items were written based on criteria set out in Kline (1986). The preliminary instructions that would serve as the foundation for the

questionnaire were also reviewed, and modified through a consensus of the reviewers.

This consensus served as preliminary content validation of the included items.

Phase Three

As a third step, the paired down list of items was administered to a new sample. The purpose of this phase was to assess validity, factor structure, and fit of the model, and to serve as a basis for further refinement through certain item analytic procedures. Exploratory analyses were also conducted in order to examine gender differences, differences in participants' responses recruited from the two settings, age differences, and any correlation between SHEQ scores and the average exercise sessions per week.

Subjects

Male ($N = 89$) and female ($N = 87$) participants were recruited from both structured ($N = 83$) and unstructured ($N = 93$) exercise settings in order to maximize the diversity of the sample.

Instruments

The initial version of the SHEQ as agreed upon by the reviewers was administered (see Appendix B). The questionnaire items were assessed using a five point Likert-type scale anchored by 1 (Never) and 5 (Very frequently; all of the time)

Procedure

Participants from structured exercise settings were approached by the author for voluntary participation with the permission of the facility director, and the instructor of the class in question. Numerous classes were targeted including: high/low impact aerobics, power pacing cycling classes, Tae-Bo combat aerobics, step fit aerobics, muscle

works aerobics and toning, and boxer's workout classes. These classes ran on different days, and at different times during the day. In unstructured exercise settings participants were recruited by the author, and by the weight room staff through weight room orientations, program designs and simple face to face approaches.

Descriptive statistics and an exploratory factor analysis were conducted using the program SPSS 6.1 for windows. The possibility of gender differences, and differences in responses from participants from the two settings were tested through T-tests. A one-way ANOVA using age categories (of 3 levels) and Tukey's post hoc testing were used to examine differences across ages. Differences in scores on each subscale across age groups were investigated using a 2-way ANOVA. Using a Pearson product moment correlation, the correlation between exercise sessions and total SHEQ scores was examined.

Varimax rotation and Maximum likelihood extraction were used in exploratory factor analysis. Based on the Scree plot, the theoretical underpinnings of the items, and factor loadings greater than 0.55, the scale was revised. Confirmatory factor analysis was then conducted using LISREL in order to determine the fit of the model to the data.

Based on factor loadings, mean item responses, and the validity and reliability statistics, as well as following the criteria for psychometric test development outlined in Kline (1986), the scale was further refined through deletion, addition, and rewording of items. In order to develop the SHEQ as an easily administered research tool, it was the aim of the researchers to obtain a scale comprised of 15 to 25 total items.

Phase Four

Phase four involved the testing of the latent constructs apparent in phase three, and testing the final version of the SHEQ for validity and goodness of fit. In addition to the testing of the scale, total responses, item responses, as well as possible gender differences, differences in settings, age differences, and correlation to adherence were also investigated.

Subjects.

Participants were once again drawn from structured ($N = 62$) and unstructured exercise ($N = 130$) settings. The same method of recruitment as was used in phase three was employed.

Instruments

The revised collection of items remaining from phase three served as the questionnaire administered to participants (see Appendix C). Items were again assessed using the same five-point Likert scale.

Procedure

As stated above, the same recruitment procedure as was employed in phase three was followed. Targeted classes included: high/low impact aerobics, power pacing cycling classes, Tae-Bo combat aerobics, pace and shape cycling and toning classes, yoga, gentle fit low impact aerobics, and muscle works aerobics and toning classes. These classes ran on various times over a span of four days. In unstructured exercise settings, participants were recruited by the author through face to face approaches.

Descriptive statistics were conducted using the program SPSS 10.0 for windows. Using T-tests the possibility of differences in SHEQ scores across gender, and settings were tested. Age differences were tested using a one-way ANOVA (of 3 levels) followed by Tukey post-hoc tests. Continuing with the protocol followed in phase three, a Pearson product moment correlation was used to assess the correlation between exercise sessions and total SHEQ scores.

Based on the model resulting from analyses in phase three, the LISREL program was used to conduct confirmatory factor analyses using Varimax rotation and Maximum likelihood extraction. In addition to the descriptive statistics outlined above, the factor structure, goodness of fit, and path diagram of the SHEQ were examined. Results were then interpreted in terms of the theoretical tenets of self-handicapping in exercise.

Results and Discussion

Phase One

The sample of 196 participants from the various exercise related settings produced a list of 767 raw statements, an average of 3.92 handicaps listed per participant. The top five handicaps listed included: fatigue, lack of motivation, lack of time, injury, and other priorities which made up 10.3%, 9.4%, 8.6%, 7.7% and 5.1% of the total responses, respectively. These findings are in keeping with the most prevalent handicaps found by Shields and Paskevich (1999), and were indicative of those uncovered in other exercise behavior literature (see Brawley, Martin, & Gyurcsik, 1998). Martin, Paskevich, and Brawley (1995) also found lack of time and fatigue to be two of the most frequently reported barriers to exercise. The sample was fairly young ($M = 24.18$), was currently

active ($\underline{M} = 4.24$ sessions/week), and was comprised of exercisers from a variety of exercise backgrounds and preferences.

The demographic breakdown and an initial descriptive analysis of the data across all the exercise settings revealed little notable difference between the participants from each setting (see Table 1). As was expected those participants completing the questionnaires with an others-relevant focus ($\underline{N} = 65$; $\underline{M} = 4.52$; $\underline{SD} = 2.26$) listed more handicaps than those completing the self ($\underline{N} = 67$; $\underline{M} = 3.49$; $\underline{SD} = 1.93$) or temptation focused ($\underline{N} = 63$; $\underline{M} = 3.79$; $\underline{SD} = 2.24$) questionnaires. Tukey's post hoc test following a significant one-way ANOVA using foci (of 3 levels) ($F_{(2, 192)} = 4.00$; $p = .020$) confirmed that the difference between self and other foci was statistically significant ($p = .016$). This lends support to the notion that assessing self-handicaps using a focus that is not directly self-relevant may indeed alleviate some of the social response bias attached to admitting handicap use.

The overall sample was made up of 129 females and 67 males from structured ($\underline{N} = 26$) and unstructured ($\underline{N} = 23$) exercise settings as well as from the Kinesiology class ($\underline{N} = 147$). There were no significant differences ($t_{(194)} = -1.38$; $p = .170$) between the number of handicaps reported by males ($\underline{M} = 3.63$; $\underline{SD} = 2.04$) or females ($\underline{M} = 4.08$; $\underline{SD} = 2.23$) nor between those participants recruited from the classroom ($\underline{M} = 3.91$; $\underline{SD} = 2.07$), structured exercise ($\underline{M} = 4.19$; $\underline{SD} = 2.95$) or unstructured exercise ($\underline{M} = 3.69$; $\underline{SD} = 1.87$) settings ($F_{(2, 193)} = 0.32$; $p = .723$) with respect to mean number of handicaps reported. It is also interesting to note that there are few differences in the most prevalent handicap listed across gender and setting.

Table 1
Descriptive Statistics for Phase I and Breakdown of Handicaps Reported Across Settings

	Age	Handicaps / Person				Top Reported Handicaps		Exercise Involvement				
		Total	Self	Tem.	Other			Times / Wk	Ind. Sport	Team Sport	P.A.	Multi.
	M	M	M	M	M	Item	%	M	N	N	N	N
Total	24.18	3.93	3.60	3.87	4.51	Fatigue	10.3	4.24	25	27	91	53
Gender												
Male	25.12	3.61	3.35	3.20	4.11	Injury	10.0	4.33	9	14	24	20
Female	24.66	4.09	3.63	3.93	4.95	Fatigue	10.9	4.19	16	13	66	34
Setting												
Class	21.80	3.92	3.68	3.69	4.43	Motiv- ation	11.0	4.22	25	26	52	44
Struct.	36.43	3.65	3.40	3.17	3.86	Fatigue	8.0	4.02	0	0	28	5
Unstruc.	31.50	4.19	2.43	4.00	5.33	Injury	8.0	5.54	0	1	21	4

Note: Temptation focus (Tem.); Individual Sport (Ind.); Physical activity (P.A.); Multiple exercise modes (Multi.); Structured exercise classes (Struct.); Unstructured exercise settings (Unstruc.).

Similar statements were pooled and the nature or overriding handicap of each statement was determined. From the large database of raw statements a list of 49 general handicapping strategies and behaviors was obtained. From this list, the top 30 handicaps (see Appendix D), those accounting for 1.0% or greater of the total responses were then used to develop the items for the questionnaire. The handicaps were reflective of strategies that were claimed ($N = 20$), and behavioral ($N = 3$), as well as those strategies that could be classified as either claimed or behavioral depending on the context of use ($N = 7$). These handicaps had internal ($N = 19$) or external ($N = 11$) locus of control and captured strategies that could be categorized as either psychological ($N = 13$), physical ($N = 8$), having to do with scheduling ($N = 5$), or having to do with accessibility ($N = 4$). It was determined that any handicaps making up less than 1.0% of the total responses were not reflective of those that may be frequently used by the population at large.

Phase Two

Three items were designed for each of the top 30 handicaps resulting in a 90-item pool. The expert review process resulted in the reduction of this number by 40%, leaving 54 items; some of these being worded slightly differently from their original format. These items were then put into questionnaire form. In a design similar to past measures of self-handicapping (Jones & Rhodewalt, 1982; Strube, 1986) and in keeping with recommendations concerning psychometric scale development as set out in Kline (1986), a five point Likert-type scale was used. Upon recommendations by the expert review panel, and following suggestions highlighted in Brawley et al. (1998), the scale was anchored by Never (value = 1) and Very frequently; all of the time (value = 5).

Contained within the 54-item questionnaire (Appendix B), the distribution of handicaps being assessed were as follows: fatigue, lack of knowledge, lack of motivation, lack of time, injury, self-talk, nutrition, withdrawal of effort, illness, other perceptions, work, fear, money, equipment, lack of focus, social, weather, lack of support, stress, lack of dedication, lack of enjoyment, lack of success, and lack of confidence were all represented on the questionnaire by two items. Whereas prioritizing, excuses, ability level, alcohol, and overtraining were represented by only one item each, while access to facilities was captured by three items.

In attempting to capture self-handicapping, it was essential that the preliminary instructions focused the participants' attention onto the temporal aspect of the use of self-handicaps in order to obtain meaningful, interpretable responses. The intent underlying self-handicapping had to be emphasized.

Acknowledging the strong ties between self-handicaps, external attributions, and excuses, care was taken not to design items that simply accounted for the excuses exercisers made after the fact. As highlighted in discussions throughout the review process, self-handicapping requires a true motivation and some sense of efficacy, albeit uncertain, to perform or conduct the behavior in question, regular exercise. As outlined and can be seen in Appendix B, the preliminary instructions given to the participant accentuated the aspect of intent and timing of self-handicaps, and also provided an example to clarify and focus the participants' attention. This instruction protocol was reviewed by a small focus group of impartial and objective individuals and was deemed easily understandable and straightforward.

Problems that have been associated with the measurement of barriers to exercise have included the lack of assessment of frequency or severity of the effect of the given obstruction (Brawley et al., 1998). In an attempt to minimize this concern, the instructions and the Likert-type scale used on the scale spoke to the frequency of temptation to use any of the self-handicapping strategies represented in each statement. It should be noted here, that the term self-handicap was not used, nor was a completely self-directed focus in order to avoid major problems with social response bias among the participants that may be associated with admitting to the use of handicapping behaviors. Instead the decision was made to word the instructions in terms of temptation to use self-handicapping strategies. In accordance with further recommendations outlined in Brawley et al. (1998), the severity of the handicaps used were indirectly tapped through a measurement of adherence to physical activity (average exercise sessions per week). This measure was also given a time frame (previous two months) in order to derive a more succinct and current view of the participants' exercise behavior.

Following a protocol that relied on the expert knowledge of some of the leading researchers in the area of self-handicapping outside of academics provided a sound foundation in the development of a theoretically relevant questionnaire. The process of item review, and scale development requiring a 75% consensus by the reviewers assured a degree of content validity.

Phase Three

Descriptives

The descriptive statistics for phase three are presented in Table 2. The mean total score was well below the median of 135 ($M = 88.21$). The sample was homogeneous as the number of males ($N = 89$) and females ($N = 87$) in the sample was similar, as was the split between the two exercise settings: structured ($N = 83$) and unstructured ($N = 93$). The average age of the sample was almost 36 years old ($M = 35.68$). The mean number of exercise sessions per week was 4.36.

In terms of gender differences, again, the sample was fairly uniform. The average age of females was 33.06, and the males' average age was 38.21. Both females and males averaged over four exercise sessions per week over the last two months. There was no significant difference between females ($N = 87$; $M = 104.04$; $SD = 19.70$) and males ($N = 89$; $M = 98.43$; $SD = 22.10$) on their total SHEQ score across the 54-item questionnaire ($t_{(174)} = -1.16$; $p = .246$).

Participants recruited from structured exercise settings averaged just under four exercise sessions per week ($M = 3.98$), and averaged 35.44 years of age. The sample drawn from structured exercise classes was comprised of 27 males and 56 females and had a mean total SHEQ score of 102.65 ($SD = 19.93$). Those participants obtained from unstructured exercise areas exercised, on average 4.69 times per week, and had a mean age of 35.9 years. There were 62 males and 31 females in the sample from the unstructured exercise setting. The mean total SHEQ score for these participants was

98.10 ($SD = 21.74$), which was not significantly different from those found in the structured exercise setting ($t_{(174)} = -1.44$; $p = .151$).

In an attempt to see any age differences that may have been present within the sample, exploratory descriptive analyses were conducted on three age groups. The sample was divided into those participants less than or equal to 25 years of age, those between the ages of 26 and 40, and finally those participants that were 41 years of age or older. These divisions were chosen in order to reflect possible changes in lifestyle occurring around these divisions which may affect exercise behavior. Those participants below the age of 25 may be more likely to be students with lower income, and fewer job or time commitments. Participants in the middle age bracket would be more likely to be full-time employees with growing families, while the participants in the oldest age bracket would be more likely to be in secure jobs, with fewer small children. Although it is acknowledged that these divisions may be somewhat arbitrary it was done purely for exploratory purposes.

As indicated in Table 2, the average exercise sessions for each age group was between four and five per week. Although there was a slightly higher percentage of males in the oldest age category, the split for the other two categories was fairly equal. It should be noted that seven participants abstained from indicating their age. In light of a lack of gender differences as stated above, any differences found here were attributed to age, not gender. Similarly, the breakdown of those participants in each age group drawn from structured and unstructured exercise settings was almost equivalent. Upon preliminary examination of the mean total SHEQ scores across the age categories there

Table 2
Descriptive Statistics for Phase III Data

	Exercise Sessions		Total SHEQ		Highest Item Score		Highest Non-Positive Item Score		Lowest Item Score	
	M	SD	M	SD	M	SD	M	SD	M	SD
Total	4.36	1.80	88.22	38.03	3.43	1.11	2.72	1.26	1.19	0.55
Gender										
Male	4.21	1.50	98.43	21.98	3.49	1.10	2.72	1.28	1.20	0.58
Female	4.50	2.04	104.0	20.18	3.34	0.97	2.80	1.32	1.14	0.40
Setting										
Struct.	3.98	1.28	102.6	19.81	3.32	1.06	2.76	1.27	1.22	0.60
Unstruc.	4.69	2.10	98.10	21.62	3.61	1.09	2.69	1.26	1.16	0.49
Age										
≤ 25	4.61	2.57	107.6	18.75	3.58	1.23	2.97	1.22	1.24	0.49
26 – 40	4.27	1.57	100.1	21.23	3.40	1.05	2.91	1.19	1.14	0.38
≥ 41	4.41	1.50	94.53	19.66	3.47	1.23	2.37	0.97	1.12	0.38

Note: Structured exercise classes (Struct.); Unstructured exercise areas (Unstruc.).

appeared to be a trend that reported handicap frequency decreased with age. The mean total score for those participants under 26 years of age was 107.64 ($N = 33$; $SD = 19.03$), while the mean score for those between the ages of 26 and 40 was 100.11, and those participants older than 40 years of age had a mean SHEQ score of 94.53 ($N = 51$; $SD = 19.92$). In order to determine if there were any significant differences a one-way ANOVA was performed between the age groups on the total SHEQ scores. This analysis revealed that there were significant main effect among the ages in total SHEQ score ($F_{(2,166)} = 4.11$; $p = .018$). Using Tukey's post hoc tests it was determined that there was a significant difference ($p = .012$) in total SHEQ score between the youngest age grouping ($M = 107.64$) and the oldest age category ($M = 94.53$). However no statistically significant difference was found between either the youngest or the oldest age group when compared with the middle age category.

Precursory examination of the average exercise session per week of the participants, a basic measure of adherence to regular physical activity, indicated that the sample was fairly active ($M = 4.36$). This held true across all the aforementioned divisions of the sample. However, the number of exercise sessions reported by the participants ranged from 2 to 12 per week. Due to the wide range of exercise sessions per week, whether or not there was a correlation between the average exercise sessions, a measure of adherence, and total SHEQ score, indicating the frequency of use of handicaps was of interest. The Pearson correlation was significant ($p < .01$), however the correlation was fairly small ($r = -.312$). This indicates that although there is a significant correlation between more frequent exercise and the reporting of less frequent

handicapping, the variance accounted for is less than 10% ($r^2 = .097$). Despite the small correlation, these findings are encouraging in terms of the utility of the SHEQ as an instrument used for identifying those people who may be creating barriers to more frequent exercise.

In light of the significant correlation between SHEQ score and average exercise sessions per week, the sample was divided into three groups of exercise behavior. This categorization included those exercising 0 to 2 times per week, participants exercising 3 to 5 times per week, and those averaging more than five exercise sessions weekly. Not surprisingly a one-way ANOVA (of 3 levels) indicated that there was a significant difference between the average SHEQ scores across the groups ($F = 11.78_{(2,165)}$; $p < .001$). Tukey's post hoc tests revealed that participants in the group averaging the fewest exercise sessions ($N = 19$; $M = 112.89$; $SD = 17.64$) per week handicapped significantly more frequently ($p = .039$) than did those in the middle exercise category ($N = 112$; $M = 101.51$; $SD = 19.45$) and those in the most active category ($N = 37$; $M = 88.43$; $SD = 17.49$; $p < .001$). It was also found that those participants exercising 3 to 5 times per week handicapped significantly more than those averaging more than 5 exercise sessions per week ($p = .001$).

Inspection of the mean item responses, as well as the total responses indicated that the responses were in a truncated range at the low end of the scale. The mean total score was below the median ($M = 88.215$), with all scores ranging between 55 and 185. Only one participant scored in the top third of possible responses providing evidence that participants could not be classified as frequent users of handicaps. Of interest was the

fact that only positively worded items, numbers 29 and 36 (i.e., those reverse scored) exceeded the item median of “occasionally” (value = 3). It may be thought that this is reflective of a certain degree of confusion or misinterpretation by the participants in responding to these items. With extremely low responses to the other items, it would be thought that these items would also have lower values, thus indicating a lower tendency to employ self-handicaps. However, as the items are reverse scored, higher results indicate that the participants do not frequently say or do these positive statements. Possible confusion over responses to the reverse scored items is further evidenced by the fact that 5 of the 10 missing responses were for positively worded items. The overriding finding was that the most frequently claimed statement ($\bar{M} = 2.72$) across all divisions (see Table 2) was “I would get more benefits from exercise if I ate a more balanced diet” (item 47). In addition, the item “I could get better results from exercise if I could afford the expensive equipment” (item 14) was clearly the least endorsed statement ($\bar{M} = 1.19$) across all divisions.

Factor Analyses

In order to determine the underlying constructs of the handicapping tendencies of exercisers as measured through the SHEQ an exploratory factor analysis was conducted. Kline (as cited in Kline, 1986) found that although some researchers uphold that a 10:1 participant to item ratio is necessary for a satisfactory factor analysis, that the loadings found with a 3:1 ratio were virtually identical to those found using the recommended 10:1 ratio. Kline (1986) also indicated that approximately 200 participants are needed in performing factor analysis, with a minimum of 100 being required. Based on these

findings it was determined that the sample size obtained ($N = 176$) was sufficient for a proper factor analysis. Missing data can often be a problem in conducting factor analyses, however only 10 of a possible 9396 responses or 0.1% of the data was unaccounted for.

Exploratory factor analysis using Principal component extraction and Varimax rotation was performed. Based on Eigen values greater than one, 16 factors were extracted that accounted for 68.34% of the total variance (see Table E3). However, examination of the Scree plot indicated the presence of only 4 factors. The first factor accounted for 21.4% of the total variance while the second, third and fourth factors accounted for 6.0%, 5.4% and 4.0% of the total variance, respectively.

In light of these findings the four-factor solution was forced in order to determine which items loaded on these four factors. From this, scale refinement could proceed. Based on the theoretical clarity and interpretability of the factors, the need to avoid the inclusion of items with complex loading, and following the recommendations set out by Comrey and Lee (as cited in Tabachnick & Fidell, 1996), only items loading greater than 0.55 on one factor were considered. Loadings of this size may seem high, however loadings of 0.45 were considered fair, and the traditional loading cut-off of 0.32 was considered poor. This high standard also assured only pertinent items were included on the final questionnaire.

Items loading on the first factor included 3, 22, 23, 24, 25, 26, 32, 42, 45 and 49 (see Table E4). These items captured handicaps such as time pressures, accessibility, self-talk, motivation and stress. Overall this factor can be viewed as tapping making exercise a priority, or mental preparedness to undertake regular physical activity. The

second factor was made up of items 7, 8, 18, 19, 20, 31, and 48, all items which speak to impression management due to a feeling of inadequacy in exercise. Factor three was only comprised of items 9, 38 and 44. These items concerned reliance on injury as a handicap for not exercising regularly or to one's full potential. The final factor, factor four was comprised of items 30, 36, and 46, all reverse scored items. This factor can be termed a measurement of persistence or effort withdrawal. Overall the four factors contain 23 items which, as hoped, form a less cumbersome measurement tool than the original 54-item version. One point that may be brought up is the absence of any items on the new scale for assessing fatigue, the most frequently reported handicap from phase one. Also eliminated is the highest rated item in the initial analysis of the phase three data concerning a balanced diet. Although this is somewhat of a concern, it is felt that the effects of fatigue underlie many of the handicaps in the realm of motivation, self-talk and time management, all of which are well represented in the items making up the first factor. In addition, a poor diet may be considered more of a rationalization or an excuse rather than a true handicap, and therefore the item capturing this did not group well under any handicap factors.

In light of the extraction of four subscales from the original 54 item questionnaire, the age differences between the youngest and the oldest groups were revisited in order to examine on which subscale, if any, these groups differed. Using a MANOVA and Tukey's post hoc testing it was revealed that although the two groups differed on the mean score for each scale, the only statistically significant difference was found for Factor one ($p = .028$).

Using LISREL a confirmatory factor analysis with Varimax rotation and Maximum likelihood extraction was conducted on the correlation matrix (Appendix F) in order to test the fit of the four-factor solution to the data. Both oblique and orthogonal rotations were performed in order to investigate the possibility of the correlation of the underlying constructs. The correlations were minimal therefore the solution generated with the Varimax rotation was used (see Table G5).

Five measures of fit were looked at including: the root mean square residual (RMR, values less than .10), the goodness of fit (GFI, values greater than .90) and the adjusted goodness-of-fit (AGFI, values greater than .80) as recommended by Cole (as cited in Osman, Barrios, Aukes, Osman, & Markway, 1993). Martin and Brawley (1999) indicated that both Root-mean-square error of approximation (RMSEA, values less than .05 indicate a good fit, values less than .08 indicate a fair fit) and comparative index of fit (CFI, values greater than .90) are additional fit indices which are appropriate for use in examining confirmatory factor analyses with relatively smaller samples. The RMR = 0.06, the AGFI = 0.81, and the CFI = 0.91 all exceeded the given criteria. The GFI = 0.84 was close to the criterion of 0.90 and did indicate a fairly good fit as did the RMSEA = 0.06. Taken together, these indices provide evidence that the four-factor model can be described as a good fit to the data.

Internal consistency of the entire scale, along with each subscale was examined using the Cronbach's alpha statistic. The overall scale showed high internal consistency ($\alpha = .87$) as did factor one ($\alpha = .90$) and factor two ($\alpha = .85$). Factor three showed

adequate to moderate internal consistency ($\alpha = .77$) while the fourth factor was satisfactory ($\alpha = .66$) when the fact that it contained only three items is considered.

All of the estimates of the factor loadings produced in the CFA were above 0.45 and all were statistically significant (see Table G6). In addition, none of the modification indices evidenced a need for changes to the model. This is yet another indication that the model, as illustrated in Figure H1, is a strong one which requires little changing.

In light of these findings in support of this pared down version of the SHEQ coupled with the strong theoretical breadth of the items included, further data analysis was performed on the new version to insure its validity. However, prior to proceeding with the fourth phase of the project further refinements to the SHEQ based on observation of, and feedback from, the participants in phase three were necessary. The minor change included adding the response scale on each page. This change was to alleviate confusion and to increase the ease of administration, especially in field studies.

Phase Four

Based on the findings from phase three, a confirmatory factor analysis using Varimax rotation and Principal component extraction was performed on the correlation matrix (Appendix I) to further test the four-factor model. In addition to the factor analyses performed on the overall data set, gender differences, differences in responses from participants in both settings, as well age differences were explored.

Descriptives

The descriptive statistics for Phase four are presented in Table 7. Missing data was not an issue as there was less than 1% of the possible responses on the scale that

were not completed. The sample was comprised of 194 participants, 59% of who were female, and 41% were male. Approximately two thirds of the subjects were recruited from unstructured exercise settings, whereas the remaining third completed the questionnaires in structured exercise classes. The mean age of the group was calculated to be 33.21 years with a wide range of 61 years. Overall, the average exercise sessions per week reported were 3.95 over the last two months.

Mean scores were calculated for the entire SHEQ score ($\underline{M} = 47.82$), for factor one, or the mental preparedness factor ($\underline{M} = 23.29$), factor two, the cognitive factor ($\underline{M} = 12.13$), the third factor dealing with injury ($\underline{M} = 4.60$), and the fourth factor addressing persistence ($\underline{M} = 7.80$). Obtaining a score of 115 on the SHEQ indicates the highest amount of handicapping with the break down to factors being possible scores of 50, 35, 15, and 15 for all of the factors respectively. This scoring distribution takes into account that lower responses on the reversely scored items would end up with a higher calculated score. As is evidenced by the results, every measure was below the median with the exception of the final factor score, which barely exceeded the median of 7.50. The average score on factor three was extremely low indicating a very low level of reliance or very infrequent reporting of using injury as a handicap in exercise.

Again, as in phase three, gender differences on total SHEQ score, this time on the revised questionnaire, were explored. Females average a total SHEQ score of 48.84 ($\underline{N} = 114$; $\underline{SD} = 12.94$), just slightly higher than the average score calculated for males ($\underline{N} = 79$; $\underline{M} = 46.54$; $\underline{SD} = 10.89$). In keeping with the findings of phase three there was no significant difference in total SHEQ scores across gender ($t_{(191)} = -1.29$; $p = .198$).

Table 7

Descriptive Statistics for Phase IV

	Exercise/Wk		Total SHEQ		Factor 1		Factor 2		Factor 3		Factor 4	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Total	3.95	1.81	47.82	12.18	23.29	7.58	12.13	4.85	4.60	2.21	7.80	2.59
Gender												
Male	4.09	1.84	46.54	10.89	23.15	6.95	11.16	4.00	4.51	1.76	7.72	2.68
Female	3.86	1.78	48.84	12.94	23.45	7.96	12.84	5.22	4.67	2.47	7.88	2.52
Setting												
Struct.	3.57	1.37	49.39	13.58	23.98	7.98	13.02	5.53	4.58	2.20	7.81	2.57
Unstru.	4.13	1.96	47.11	11.37	22.93	7.31	11.75	4.42	4.62	2.22	7.82	2.60
Age												
≤25	4.36	2.35	48.92	11.62	24.00	7.42	12.63	4.54	4.52	2.52	7.77	2.74
26 – 40	3.96	1.64	47.92	12.10	23.46	7.72	11.87	4.91	4.70	1.77	7.90	2.57
≥41	3.45	1.04	46.84	13.21	22.36	7.55	12.20	5.02	4.60	2.43	7.68	2.44

Note: Structured exercise classes (Struct.); Unstructured exercise areas (Unstru.).

Any possible difference in SHEQ scores that may have appeared across the two settings was also examined. Once again there was no statistically significant difference ($t_{(190)} = -1.21$; $p = 0.228$) in the SHEQ scores given by those participants recruited from

unstructured exercise settings ($N = 130$; $M = 47.11$; $SD = 11.37$), and those participating in structured exercise classes ($N = 62$; $M = 49.38$; $SD = 13.68$).

Following the protocol for investigating age differences as described in phase three, participants were grouped into one of three age categories: less than 26 years of age, 26 through 40, or 41 years of age and older. Similar to the findings in phase three, the largest number of participants were placed in the middle category ($N = 79$). The youngest category contained 62 participants, while the oldest numbered 50. Three participants failed to provide their age. When examined using an ANOVA, results contrary to those in phase three were found as there was no statistically significant main effect between any of the age groups ($F_{(2,188)} = 0.399$; $p = 0.671$). Of interest is that although there is no statistically significant difference between any of the age groups on total SHEQ score, there was evidence indicating a decreasing trend in SHEQ scores with age. In addition, there was a similar trend relating to average number of exercise sessions per week.

Using the measure of adherence included in the set of questions, indicating the average number of exercise sessions per week over the last two months, the correlation between exercise adherence and total SHEQ score was examined. The findings from phase three were repeated in that there was a statistically significant ($p < .001$) yet weak negative correlation ($r = -.291$) between exercise sessions and SHEQ score. Once again this finding is encouraging indicating that approximately 9% of the variance in exercise sessions is accounted for by SHEQ score.

As in phase three, a one-way ANOVA (of 3 levels) was used to test for possible differences in SHEQ score across activity level. There was a significant difference between the average SHEQ scores across the groups ($F = 10.46_{(2,184)}$; $p < .001$). The results obtained in phase three were replicated in that Tukey's post hoc tests revealed that participants in the group averaging 0 to 2 exercise sessions per week ($N = 29$; $M = 56.28$; $SD = 12.25$) handicapped significantly more frequently ($p < .001$) than did those in the middle exercise category ($N = 132$; $M = 47.27$; $SD = 11.72$). In addition the group exercising the least also handicapped significantly more frequently ($p < .001$) than those in the most active category ($N = 26$; $M = 42.46$; $SD = 10.78$). However there was no significant difference between the handicapping frequency of the middle and most active group ($p = .0134$).

Subsequently the difference in the scores on each factor across activity group was examined. It was found that the least active participants and those averaging 3 to 5 exercise sessions per week differed significantly on factor one ($p < .001$), factor two ($p = .049$) and on factor four ($p = .014$). The group averaging the fewest exercise sessions also differed significantly in the scores obtained on factors one ($p < .001$), factor two ($p = .019$) and factor four ($p = .001$) when compared to the most active group. There were no other significant differences across the factors when taking the groups of varying activity levels into account.

In keeping with analyses of the scores reported on the SHEQ it should be noted that the scores were truncated at the lower end of the scale with only 7% ($N = 14$) of the participants obtaining scores in the top third of possible scores. In addition, none of the

mean item scores reached the scale median of three. Again it was found that the item with the highest average score was one which was reverse scored indicating possible confusion on the part of the participants as a lower response results in a higher calculated score which in turn indicates a higher degree of handicapping. Confusion is cited, as these responses do not seem to be in keeping with the response trend on the other items. Nonetheless, item 22 received the highest average score ($\bar{M} = 2.93$). This item, “when it comes to regular exercise I am very persistent” if receiving a higher calculated score indicates that participants rarely claim this. Disregarding the possible confusion that may have arisen in light of the reversely scored items, the highest average item response ($\bar{M} = 2.63$) for a non-reversely scored item was calculated for item 18. This item captures time constraints and prioritizing and is worded as follows, “It’s hard to exercise when my schedule is so full.” Item number 5 had the lowest calculated mean response at 1.48. This item speaks to impression management “I am injury prone which makes maintaining a regular exercise routine difficult.” However, all responses were between 1.48 and 2.92, a small range indicative of reports of infrequent, never (value = 1) to occasionally (value = 3), handicapping in exercise settings. It should also be noted that the most frequently cited handicaps, and the least frequently reported handicaps were relatively stable across all divisions of the sample.

Factor Analysis

Confirmatory factor analysis was conducted using the LISREL computer program to test the fit of the model to the data as well as examine the factor structure of the model. Again the correlations between the factors were small enough to warrant Varimax

rotation (see Table J8). Varimax rotation and Maximum likelihood extraction were used to test the model resulting in factor loadings that were all statistically significant ($p < .05$) (see Table J9). However, the loading of item 1 can only be considered adequate at 0.38, and the loading estimates of the items making up the fourth factor were not sufficient. Based on the above analysis, the path model of the underlying constructs and latent variables of the SHEQ was modified resulting in the model illustrated in Figure K2.

As in phase three, five measures of fit were examined to assess the model. Four of the fit indices used ($\text{RMR} = .08$; $\text{GFI} = .79$; $\text{AGFI} = .74$; $\text{CFI} = .86$) all indicated a fair, or satisfactory fit to the data. The fifth measure of fit, the Root mean square error of approximation indicated only a mediocre fit ($\text{RMSEA} = .09$). In addition Cronbach's alphas were once again calculated as a measure of the internal consistency of each of the subscales, as well as the entire SHEQ scale. In keeping with the results found in phase three the internal consistency of the overall scale and the first three factors was strong ($\alpha_{\text{SHEQ}} = .88$; $\alpha_{\text{F1}} = .89$; $\alpha_{\text{F2}} = .89$; $\alpha_{\text{F3}} = .84$). However, the Cronbach's alpha calculated for the fourth factor was weak ($\alpha = .48$) perhaps indicating the need for removal, or refinement of the items on this factor.

In light of these results regarding the internal consistency of the fourth factor additional analyses were performed to examine the possibility of differences between the samples used in phase three and phase four. In addition, the fourth factor was dropped in a confirmatory factor analysis in order to test the effect the elimination of this factor would have on the fit of the model to the phase four data.

The phase three and phase four samples did not differ in age ($p = .062$), however there were statistically significant differences at the .05 level in average exercise sessions per week ($p = .037$) and total SHEQ score ($p < .001$) based on the final, 23-item version. The participants in phase four, on average, exercised less and reported more frequent handicapping. This being said the difference in exercise sessions disappears when a Bonferonni correction is taken into account over the multiple t-tests performed as a p-value of .0167 is required for significance. Another point that needs to be considered is that both samples averaged a total SHEQ score less than the median of possible responses and were only 4.5 points different.

When the fourth factor was dropped from the model there was little change in the fit. All of the loadings were significant, as they were in the four factor model, with the only low loading (loading = 0.37) for item one on factor one. Elimination of the supposed weak link in the model did not change any of the fit indices to a great degree (RMSEA = .10; RMR = .08; GFI = .79; AGFI = .74; CFI = .87). This provides some indication that the fourth factor, if reworded may be included as part of the model as elimination of it does not improve the fit and theoretically important items would be lost.

General Discussion

The current thesis research project developed from a number of studies (Hausenblas & Carron, 1996; Martin & Brawley, 1999; Shields & Paskevich, 1999) which revealed the inadequacies of the SHS as developed by Jones and Rhodewalt (1982) when used outside of an academic context. In light of the high exercise attrition rates as reported by Dishman (1988) which seem to persist into today, it was felt that the need to

explore self-handicapping as a relevant psychological barrier to regular exercise deserved attention. It was also the view of the author that capturing this self-limiting strategy in some quantifiable way would enhance the understanding of it in exercise contexts and lend itself to improved exercise prescriptions and behavior change. From these needs, and working from a theoretical basis, the SHEQ could evolve through the natural progression of development.

Self-handicapping literature grounded in attribution theory provided a base from which to work. Combining the responses of participants from exercise, and exercise related settings with the theoretical background of four researchers in the field, set the groundwork for the items that would make up the SHEQ. Item analytic procedures were used in order to arrive at a 23 item instrument which is (a) easily administered, (b) content valid, (c) formed from self-handicapping theory, (d) captures self-handicapping across a variety of demographic and contextual divisions, and (e) strong in preliminary psychometric testing.

Phase one of the development of the SHEQ aimed to operationally define the construct of self-handicapping in exercise and provided some interesting results. In accordance with what was expected, there were a number of handicaps reported by each participant supporting the notion that self-handicapping is a process used in exercise settings. Common responses reflective of handicaps in exercise as provided by the participants were in keeping with those found in past research in non-academic achievement settings (Carron et al., 1994; Hausenblas & Carron, 1996; Martin, 1998; Shields & Paskevich, 1999) and included fatigue, lack of motivation, lack of time, and

injuries. Of note, there did appear to be the presence of a social response bias when reporting handicaps which was also in line with previous research (Martin) and should be considered in future study of self-handicapping in exercise.

Responses captured both claimed and behavioral self-handicaps, handicaps that had internal and external locus of control, and were suggestive of serving both self-protection and impression management functions. These findings were encouraging in that the responses gathered were within the conceptual model of self-handicapping found in past research. The construct of self-handicapping as defined within an exercise setting seemed relevant to various forms of self-efficacy such as scheduling efficacy, physical efficacy, efficacy for psychological preparedness, as well as efficacy to access exercise related settings. These findings are in support of research by Poag-DuCharme and Brawley (1993) which indicated the need to examine multiple forms of self-efficacy when looking at exercise behaviors. In addition, the list of handicaps provided could be interpreted as contributing factors to the problems of avoidance of exercise, and that of effort withdrawal once an exercise program had been initiated. Examples included avoidance of exercise due to seeming lack of time, or using the handicap of reliance on an injury to provide explanation for a half hearted attempt at regular exercise. These handicaps are similar to the anticipatory excuses outline by Snyder et al. (1983).

Expert review was used in the second phase of developing the instrument to insure some degree of content validity, as well as theoretical soundness. In approaching the quantifiable measurement of self-handicapping, it's complex connections to other psychological constructs and strategies had to be taken into account. The wording of the

preliminary instructions provided were crucial in capturing the elements of intent and timing that accompany the process of self-handicapping. These also served to focus the attention of the participant on self-handicapping strategies rather than self-serving attributions and excuses or rationalizations after the fact. Handicaps were assessed in terms of the temptation to use these strategies as opposed to a self-directed question. This was done in order to alleviate some of the possible social pressure accompanying the acknowledgment of personal use of self-handicaps which was apparent in phase one, and which has been noted in previous self-handicapping research (Martin, 1998; Rhodewalt, 1990; Rhodewalt et al., 1995).

Problems in exercise barrier research highlighted by Brawley et al. (1998) included the absence of a measure of use. Therefore items were rated based on the participants' frequency of use rather than on some measure of agreement or accordance. Using such a scale provided us with a measure, which not only fulfilled these requirements but also increased the chance of identifying anticipatory handicappers as well as those that may be chronic employers of self-handicaps as is the case with the SHS.

Also included in the introductory explanations and demographic questions was an item addressing the number of exercise sessions per week over the last two months. This basic measure of adherence to a regime of regular exercise was an attempt at further satisfying the concerns regarding previous measurements of psychological barriers to exercise put forth by Brawley et al. (1998)

The 54-items included in the initial version of the SHEQ accounted for a broad range of handicaps, which were both claimed and behavioral. Following recommendations set out in Kline (1986), double the number of items desired for the final version were included prior to the refinement process.

During the final two phases of the development process the SHEQ took shape as an administerable instrument through factor analyses and tests of validity. Even though factor analytic procedures were used in the paring down of the items for the final version of the questionnaire, these items retained theoretical relevance thus addressing concerns put forth by Martin (1998) regarding the reliance on statistics in the evolution of the SHS.

Analysis in phase three revealed the presence of four factors among the variables, a model which held up adequately upon further examination and testing in phase four. The first factor accounted for lack of motivation, perceived lack of time, and claimed fatigue as handicaps. Overall this factor was interpreted as mental preparedness as it encompassed motivation, scheduling and stress, all of which spoke to fatigue or lack of energy for proper exercise sessions. These variables are ones which need to be taken into account when planning and preparing to undertake a routine of regular physical activity. If an individual is not mentally prepared to make time for exercise as a priority or be able to motivate him or herself it is unlikely the adherence to the routine would be high.

The second factor was not quite so complex as all items were reflective of uncertainty and impression management. These items tapped handicaps such as fear of others' perceptions, lack of knowledge, and an overriding lack of confidence. This factor could be termed one measuring feelings of inadequacy and is reflective of the personal

importance of performing well in an exercise setting, as well as highlighting the perceived evaluative nature of the context of physical exercise. Self-efficacy and body-image issues may need to be addressed if an individual scores extremely high on the items contained within factor two.

Factor three was also made up of items with a single focus as all of the items retained in the final version inquired about the use of injuries as handicaps. Listening to one's body may be an important aspect of injury rehabilitation and exercise progression. However, reliance on an injury as a possible reason for effort withdrawal or avoidance of regular exercise may actually impede an individual's progress more so than the actual injury.

The fourth and final factor included all positively worded items, ones that were reverse scored but all of which captured a level of persistence with exercise. This could also be interpreted as accessing effort withdrawal in a back-door fashion as low ratings of persistence may indicate frequent withdrawal of effort.

The 23-items remaining over these four factors included 12 of the top 15 handicaps reported in phase one. In addition, the factors contained items which were relevant to the scheduling, barrier, and in-exercise efficacy which were reported as important in the study of exercise behavior by Poag-DuCharme and Brawley (1993).

It should be noted that although the items included on the initial and refined versions of the SHEQ through phases three and four mirrored the handicapping strategies highlighted in Snyder et al. (1983), the SHEQ scores over both phases were truncated toward the lower end. Only one person could be classified as a frequent handicapper

when the initial version was used, and only 14 people were in the top third of possible responses when the refined version of the SHEQ was administered. This indicates that the participants used handicaps infrequently. In our attempt to recruit participants to whom exercise was important, which is a required element of self-handicapping, it could be that the participants in the study were actually highly motivated which lent itself to the infrequent use of handicaps across the samples.

Over both phases, the only items that had means above the median value on the scale were the positively worded items. When taken in conjunction with the other responses which indicated low self-handicapping, these responses were at odds with the general trend and therefore required closer examination. Some confusion on the part of the participants may be at the root of these response patterns on the reversely scored items. It could be that effort withdrawal was truly captured by the positively worded items on persistence, however, the possibility of confusion combined with the low alpha values calculated for the fourth factor gives rise to questions about whether this factor should be retained. It is the feeling of the author that simple rewording of the items, thus making them more compatible with the preliminary instructions would be a big step in improving the internal consistency of the fourth factor and the comprehension of the individual items. This recommendation is of course made following the results of the additional CFA conducted without the fourth factor, which seemed equivocal to those computed with all four factors included.

Gender differences were not found which is in line with the inconclusive results in self-handicapping research. These findings are in support of work done by Midgley et al.

(1996), as well as earlier research by Shepperd and Arkin (1989a), which found no gender differences in self-handicapping patterns. There was a non-significant trend for female participants to report a higher frequency of self-handicapping which is contrary to results reported by Rhodewalt (1990). This could actually be in support of the postulation that, due to the social nature of exercise settings, females are more prone to handicap in these situations (Josephs et al., 1992).

As recommended by Poag-DuCharme and Brawley (1993), both structured and unstructured exercise settings were included and any possible differences in handicapping among the participants from each setting were investigated. It should be noted that there was a tendency for the participants recruited from structured exercise settings to handicap slightly more than those in unstructured areas. Even though this trend was not statistically significant this could be an indicator that cohesion may play a role in the frequency of use of handicaps as reflected in findings by Hausenblas and Carron (1996) and is a research pursuit worth examining. Cases could be made as to why more frequent handicapping could be found in either of the exercise settings when social pressures, time, or motivation are looked at, yet this turned out not to be the situation.

The average age in the present study was much higher than most of the past research studies in self-handicapping as they relied on, for the most part, university students. Although students were included as part of the sample in phase one, thus reducing the mean age, the average age of the exercise participants in phase one was comparable to that found in phases three and four. The broad range of ages contained within the samples across all phases should be highlighted as it provides strength in terms

of the generalizability of the results. Differences in the self-handicapping tendencies between participants below 25 years of age and those 41 years and older were found in phase three. The two groups differed on the mental preparedness factor only. However, these results were not replicated in the final phase as no age differences were found. This finding needs to be examined more fully before any concrete interpretations should be made.

Implications

Both significant correlations between the measure of adherence and the total SHEQ scores as well as differences in handicapping frequency across activity level were found in both phase three and phase four of the study. Even though the correlations were relatively small, accounting for approximately 9% of total variability, they were significant and in the negative direction. However, it should be emphasized that the sample used was comprised of individuals actively participating in exercise at local fitness facilities and who handicapped relatively infrequently. It is hypothesized that future study of individuals who may have stopped exercising, or do not frequently exercise may very well result in a higher correlation between regular exercise sessions and the frequency of use of handicaps. It should also be noted that when extrapolated to the general population addressing self-handicapping in 9% of the population may have a large impact on attrition rates.

The above finding provides preliminary evidence of the utility of the SHEQ as an instrument to be used in assessing the use of handicaps that limit an individual's exercise successes. Factor scores can also be examined in order to determine the nature of

handicaps being used. Even more specifically, item responses can be assessed if individual items are outliers in terms of high frequency of use.

Knowledge about the self-handicapping tendencies or patterns of an individual having trouble initiating or maintaining a regular exercise routine may assist in the development of programs aimed at behavioral modification regarding exercise barriers specific to that person as recommended by Wing (2000). It must be remembered that self-handicappers do not set out to fail, and that the performance being evaluated is important to the handicapper (Berglas & Jones, 1978). Exercisers who use handicaps may demonstrate behavior in line with the foundations of Heider's (1958) balance theory, claiming ownership of successes but avoiding ownership of failures (Higgins & Snyder, 1990). Exercise professionals need to recognize this type of behavior and use of self-handicaps, and incorporate this knowledge into behavior modification based on recommendations as set out by Meichenbaum (1977).

Although all of the handicaps measured using the SHEQ are self-reported or claimed due to the vary nature of the instrument it is the behaviors resulting from these handicaps which are of great importance. It could be postulated that behaviors such as avoidance of exercise settings or effort withdrawal are what is contributing to the relatively sedentary population, and are of great importance in behavior modification.

Limitations

Brawley et al. (1998) have identified: (a) the diversity of barriers selected, (b) variations in methods, (c) inconsistency in the conceptualization of barriers, and (d) variations in demographics as problems in exercise barrier research which make

compiling evidence or cross study comparisons difficult. Although little barrier research in exercise has encompassed self-handicapping, steps were taken to follow procedures laid out in past self-handicapping research in non-academic settings in order to increase the possibility of cross study comparisons. Also, the samples used were made up of a wide demographic in terms of age, gender, and exercise adherence, in an attempt to maximize the generalizability. This being said, there were some limiting factors in the interpretation of the results of this study.

The samples were drawn from two fitness centers in Calgary of which the majority of members were middle to upper class, Caucasians. This narrows the scope of the results in terms of the applicability across social, cultural and socio-economic backgrounds. It should also be noted that as participation was completely voluntary that there may have been a bias created in the results caused by the nature of individuals agreeing to participate, as opposed to those who refused. Were those who refused simply not interested, or would their responses differ from the majority of responses? This is an unanswerable question. Even though steps were taken to recruit participants throughout the course of numerous days, from morning until night, factors such as weather, time of year, and possible diurnal variations in exercise behavior were not taken into account. Measurement of the self-handicapping tendencies of each participant included only one administration of the SHEQ and therefore did not address concerns that perceived barriers to exercise are very often transient and fluctuate over a given time period (Brawley et al., 1998; Mannell & Zuzanek, 1991). However, a time frame was given for the basic

measure of adherence, which may have helped to cue the participants to focus on the relatively recent past.

As with all self-report measures of behavior it can not be concretely determined whether the participants actually employ the impediments listed, or whether they are merely reporting them. Without direct observation over a prolonged period of time there is no way to entirely eliminate this problem.

One final limitation that must be taken into consideration when reviewing, interpreting or expanding on the results of this study is that, as stated by Carron et al. (1985), a single study based on factor analyses can not be considered sufficient validation of a scale. Gorsuch (as cited in Carron et al., 1985) highlighted this point:

It must be stressed that interpretation of factors are post hoc unless a hypothesis testing procedure is used. In any post hoc situation, no interpretation is regarded as final but only as a lead for further research. (p. 188)

It is on that note that the limitations of this study must be acknowledged and used as direction for future research and refinement of the measurement of self-handicaps in exercise.

Future Directions

As indicated in work by Gibbons, Eggleston, and Benthin (1997) on smoking, it is unclear as to how cognitive adjustments in the approach to behavioral practices effect the overall success of these individuals. The ability to self-handicap may allow a person the leeway to abandon their pursuit of an active lifestyle. However, self-handicapping may in fact preserve the individual's self-esteem thus allowing them to carry on in hopes of

future success without the handicap. Brawley et al. (1998) stressed the importance of understanding the social-cognitive processes that relate to the perceived and generated barriers to exercise relied on by individuals rather than simply identifying them. In support of the recommendations made by Brawley et al. (1998), it is suggested that the constructive narrative approach to categorizing of barriers as developed by Meichenbaum and Fong (as cited in Brawley et al., 1998) be used to further uncover the cognitive sequences underlying the use of such strategies as self-handicapping.

In future studies focusing on the measurement of self-handicaps in exercise, additional factors to the ones investigated in the current study should be examined. Not only should the frequency of handicapping be measured and the participants exercise regime taken under consideration, but the strength of the handicap, as suggested by Brawley et al. (1998) should be assessed. In this way the degree to which regular exercise, or the benefits derived from exercise are affected by the reliance on handicaps can be better determined. Also, as self-handicapping is a process found to be highly related to self-esteem, a context specific measure of self-esteem level and self-esteem stability should be included as part of the questionnaire package. Self-esteem can then be correlated to the measure of self-handicapping. This step is one that needs to be taken in the development of the SHEQ in future studies. One avenue of interest in exercise self-handicapping literature would be the examination of group cohesion within structured exercise classes along with self-handicapping tendencies. Again, there may be some correlation between perceived group cohesion and frequency or effect of handicaps

similar to that found in studies in the realm of sport (Carron et al., 1994; Hausenblas & Carron, 1996).

Arising from the development of the SHEQ, an attempt at minimizing the apparent presence of a social response bias associated with the reporting of self-handicapping should be taken. The possibility of age differences in the patterns of exercise self-handicapping is yet another topic to be explored. Although no repeated evidence was brought to the surface during the development of the SHEQ, results did suggest that this issue deserves further investigation.

In terms of the advancement or evolution of the SHEQ, in addition to what has already been mentioned, there is a need for continued validation and assessment of reliability. Subsequent studies should examine the test-retest reliability over repeated measures on the same participants. Also, convergent and divergent reliability should be investigated. Whether or not the SHEQ has any predictive validity in terms of exercise behavior would be one area of research that would be of interest. The correlation of SHEQ scores to other relevant measures should also be checked. Instruments assessing constructs such as self-esteem, physical self-esteem, feelings of inadequacy, public self-consciousness, and social anxiety may all be of interest. Further samples worthy of study using the SHEQ are those of varying socio-economic and cultural background, as well as those individuals who own a fitness club membership or home fitness equipment but rarely use it. Study in these areas will help to expand the breadth of knowledge about the use of self-handicaps in relation to regular exercise. It is hoped that the development and further refinement of the SHEQ will allow researchers to quantifiably capture the

handicaps used in exercise settings, and in that way contributes to the subsequent growth of the study of self-handicapping in exercise.

Summary

It is unfortunate that self-handicapping research in non-academic achievement settings has been slowed as researchers continue to use the SHS (Ryska et al., 1999) despite numerous studies refuting its validity outside of academics. The SHEQ is in some ways very similar to instruments that precede it, including the various versions of the SHS. An attempt was made to build upon these scales but to insure the validity of the tool, and all its items to the context of structured and unstructured exercise. In the construction of the SHEQ a concerted effort was made to improve the measurement instrument by: (a) using the participants as active agents in operationally defining the construct (b) including a measure of adherence (c) addressing concerns regarding the measurement of frequency of use, (d) attempting to reduce the social response bias by including temptation focused instructions, and (e) assuring generalizability of results across age, gender, settings, and exercise participation.

It is acknowledged that the validity and reliability of the SHEQ require additional analyses by other researchers as well as by the author. However, it is felt that the present study was a valid attempt at addressing the concerns regarding the investigation of exercise adherence as highlighted by Brawley et al. (1998),

Given the active psychological involvement of participants in making sense of their own nonadherence, efforts must be made to understand the psychology of

perceived barriers if we expect to make advances toward facilitating greater involvement in physical activity. (p. 348)

In summary, although further development and refinement of the SHEQ is necessary, it serves as another building block in the examination of the psychology of perceived barriers to exercise initiation and adherence.

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Appendix A

Phase I Questionnaire

Check the setting in which you are filling out this questionnaire

☐ Structured Exercise Class ☐ Unstructured Exercise Setting ☐ Kinesiology Class

Age: _____ Gender: ☐ Male ☐ Female

Preferred physical activity: _____

Average exercise sessions per week: _____

How long have you been exercising regularly (i.e. 3 times per week): ____ Yrs ____ Mnths

Handicapping can be thought of as having a reason going into an activity that explains why you might do poorly and will make a good performance more impressive. (Ex. If you are unsure about whether or not you are fit enough to keep up with a friend during a run you may tell your friend that you are really tired. If you don't keep up it is understandable and if you do keep up, your friend will think you're in great shape.)

What methods, if any have you used to handicap your performance in your exercise program, which may have impeded you from attaining maximum benefits, and performing up to your ability? **(List as many as you feel apply).**

What methods, if any have you been tempted to use to handicap your performance in your exercise program which may have impeded you from attaining maximum benefits, and performing up to your ability? **(List as many as you feel apply).**

What methods, if any do feel others use to handicap their performance in their exercise program which may have impeded them from attaining maximum benefits, and performing up to their ability? **(List as many as you feel apply).**

Note. Only one of the three questions listed was included on any given questionnaire.

Appendix B

Initial 54-Item Version of the SHEQAge: _____ Male ☐ Female ☐

Average Exercise Sessions per Week over the last two months: _____

In which setting are you filling out this questionnaire?

☐ Unstructured (running, weight room, cardio machines etc.) ☐ Structured exercise class

Sometimes, people who exercise find it difficult to stick to an exercise program or to work out as hard as they would like to. In order to “save face” in front of others or to avoid feeling bad about themselves for their exercise shortcomings, people who exercise may come up with “reasons” for not exercising regularly or intensely **EVEN BEFORE THEY EXERCISE**. Thus, if the person who exercises doesn’t live up to expectations, he or she can blame their poor attendance or taking it easy on something else. But, if he or she succeeds, then he or she may be perceived as being extremely committed or fit because he or she succeeded despite a possible hindrance.

For example: A person who exercises may not be sure that she is fit enough to keep up with a friend during a run. In order to avoid embarrassing herself, she may tell her friend that she’s really tired. That way, if she can’t keep up, she has already given a reason before she started, and her friend won’t think she’s lazy and out of shape and can’t keep up. On the other hand, if she can keep up, the friend will think she’s in great shape because she kept up despite being tired.

Sometimes you may be tempted to give reasons for why you might fail to live up to your own exercise expectations. We would like to know if you are ever tempted to say or do things that might explain away any of your own exercise shortcomings. Please indicate **the extent to which you have been tempted** to say or do the following **things BEFORE YOU EXERCISE** in order to provide reasons for your exercise shortcomings. There are no right or wrong answers so please give your initial response. Although some of the questions may seem repetitive please answer **ALL** questions as your responses are important.

- 1 = Never
- 2 = Once or twice
- 3 = Occasionally
- 4 = Often
- 5 = Very frequently; all of the time

Use the above scale to indicate how often you have been tempted to or have actually thought, said, or done the following things before you exercise in order to have a reason available for your exercise shortcomings...

1. ___ Exercise is boring if you don't have a 'workout' partner.
2. ___ Facilities are so busy that I can't exercise effectively.
3. ___ Getting to the gym is a hassle.
4. ___ I'm often so tired from my previous workouts that I can't give 100%.
5. ___ I've never been taught how to do specific exercises properly.
6. ___ I always seem to have so much on my mind that I find it hard to concentrate on my exercise routine.
7. ___ I always think others will be better at an activity than me.
8. ___ I am afraid of making a mistake when I am exercising.
9. ___ I am injury prone which makes maintaining a regular exercise routine difficult.
10. ___ I can't exercise because fitness facilities' memberships are expensive.
11. ___ I can't exercise if I don't get to use the machines in a fitness facility.
12. ___ I can't exercise the day after I drink alcohol.
13. ___ I can only give 100% in my exercise sessions if I have someone to workout with.
14. ___ I could get better results from exercise if I could afford the expensive equipment.
15. ___ I could start a regular exercise routine if the weather would cooperate..
16. ___ I don't give 100% effort if I don't enjoy the activity.
17. ___ I don't like to exercise without the proper footwear.
18. ___ I don't want to look foolish in front of others at the fitness centre.
19. ___ I don't feel confident about my abilities inside a fitness facility.
20. ___ I feel limited by my exercise capabilities.
21. ___ I figure, as long as I am running around doing errands, I don't need to exercise.
22. ___ I find it hard to fit exercise into my schedule because I would rather go out with friends.
23. ___ I find it hard to get motivated to exercise regularly.
24. ___ I find there's not enough time in the day to fit in regular exercise.
25. ___ I have a hard time talking myself into exercising.
26. ___ I have to be in the right frame of mind to exercise.
27. ___ I know I could reach my exercise goals if I tried harder.
28. ___ I need to see immediate results in order to be encouraged to continue.
29. ___ I never allow being sick to disrupt my exercise routine.
30. ___ When it comes to regular exercise I am very persistent.
31. ___ When it comes to exercise I don't feel like I know what I'm doing.
32. ___ When I'm stressed I like to go home and relax rather than exercise.
33. ___ When I'm not motivated I can't seem to give a 100% effort in my exercise.
34. ___ When I'm in the fitness facility I am easily distracted from my workout.
35. ___ The weather governs my activity level.
36. ___ Sometimes I will continue an exercise I dislike just because it is good for me.
37. ___ Sometimes I am too stressed out to exercise.
38. ___ Sometimes I am afraid I will injure myself while exercising.

- 39. ___ People who use newer equipment get better results.
- 40. ___ It doesn't matter how much exercise I do because I have a poor diet.
- 41. ___ It's hard to muster the energy to give a maximum effort during my exercise sessions.
- 42. ___ It's hard to exercise when my schedule is so full.
- 43. ___ It's difficult to get a proper workout in at the fitness center when all my friends are around to talk to.
- 44. ___ If I didn't have so many nagging injuries I would be able to give my best effort in my exercise sessions.
- 45. ___ If I didn't have so much (school/job)work to do I might have some energy left for exercising.
- 46. ___ If at first I don't succeed in an exercise routine, I try, try again.
- 47. ___ I would get more benefits from exercise if I ate a more balanced diet.
- 48. ___ I worry about what others think of me when I am exercising.
- 49. ___ I work long hours which makes it hard for me to find time to exercise.
- 50. ___ I won't commit to an exercise routine unless I see results quickly.
- 51. ___ I try to save energy so I'm not drained after completing all of my exercises.
- 52. ___ I stop exercising as soon as I feel the hint of the flu so I can fight the illness.
- 53. ___ I sometimes feel too tired to exercise.
- 54. ___ I often have to rush through my exercise sessions.

Appendix C

Final 23-Item Version of the SHEQ

Average Exercise Sessions per Week over the last two months: _____

In which setting are you filling out this questionnaire (Check one)?

☐ Unstructured (weight room, cardio machines etc..) ☐ Structured exercise class

Consider this example situation: A person who exercises may not be sure that she is fit enough to keep up with a friend during a run. In order to avoid embarrassing herself, she may tell her friend that she's really tired. That way, if she can't keep up, she has already given a reason before she started, and her friend won't think she's lazy and out of shape and can't keep up. On the other hand, if she can keep up, the friend will think she's in great shape because she kept up despite being tired.

Sometimes you may be tempted to give reasons for why you might fail to live up to your own exercise expectations just like is outline in the above example. We would like to know if you are ever tempted to say or do things that might explain away any of your own exercise shortcomings. Please indicate **the extent to which you have been tempted** to say or do the following **things BEFORE YOU EXERCISE** in order to provide reasons for your exercise shortcomings. There are no right or wrong answers so please give your initial response. Although some of the questions may seem repetitive please answer **ALL** questions as your responses are important.

- 1 = Never
- 2 = Once or twice
- 3 = Occasionally
- 4 = Often
- 5 = Very frequently; all of the time

Use the above scale to indicate how often you have been tempted to or have actually thought, said, or done the following things before you exercise in order to have a reason available for your exercise shortcomings...

1. ____ I find it hard to fit exercise into my schedule because I would rather go out with friends.
2. ____ I feel limited by my exercise capabilities.
3. ____ I don't feel confident about my abilities inside a fitness facility.
4. ____ I don't want to look foolish in front of others at the fitness center.
5. ____ I am injury prone which makes maintaining a regular exercise routine difficult.
6. ____ I am afraid of making a mistake when I am exercising.
7. ____ I always think others will be better at an activity than me.
8. ____ Getting to the gym is a hassle.
9. ____ I find it hard to get motivated to exercise regularly.

10. ___ I find there's not enough time in the day to fit in regular exercise.
11. ___ I have a hard time talking myself into exercising.
12. ___ If I didn't have so many nagging injuries I would be able to give my best effort in my exercise sessions.
13. ___ If I didn't have so much (school/job)work to do I might have some energy left for exercising.
14. ___ If at first I don't succeed in an exercise routine, I try, try again.
15. ___ I worry about what others think of me when I am exercising.
16. ___ I work long hours which makes it hard for me to find time to exercise.
17. ___ I have to be in the right frame of mind to exercise.
18. ___ It's hard to exercise when my schedule is so full.
19. ___ Sometimes I am afraid I will injure myself while exercising.
20. ___ When it comes to exercise I don't feel like I know what I'm doing.
21. ___ When I'm stressed I like to go home and relax rather than exercise.
22. ___ Sometimes I will continue an exercise I dislike just because it is good for me.
23. ___ When it comes to regular exercise I am very persistent.

Appendix D

Locus of Control, Type, Categorization, Underlying Motive, and Problem Contributed to of the Top 30 Handicaps Found in Phase I

Handicaps			Locus		Type		Category				Motive		Problem	
Item	N	%	E.	I.	Cl.	B.	Sc.	Ps.	P.	A.	SP	IM	A.	W.
Fatigue	79	10.3		X	X	X			X		X	X	X	X
Lack of motivation	72	9.4		X	X			X			X		X	X
Lack of time	66	8.6	X		X		X				X		X	
Injury	59	7.7		X	X	X			X		X	X	X	X
Priority	39	5.1		X		X	X				X	X	X	
Lack of confidence	33	4.3		X	X			X			X		X	X
Self-talk	33	4.3		X	X			X			X		X	X
Withdraw effort	30	3.9		X	X	X			X		X	X		X
Nutrition	27	3.5	X			X			X		X			X
Illness	21	2.7		X	X	X			X		X	X	X	X
Fear	19	2.5		X	X			X			X		X	X
Work	19	2.5	X		X		X				X		X	
Others' perception	17	2.2		X	X			X			X		X	X
Excuses	16	2.1		X	X			X			X		X	X
Lack of knowledge	16	2.1		X	X	X		X			X	X	X	X
Lack of focus	15	2.0		X	X			X			X			X
School work	13	1.7	X		X		X				X		X	
Lack of dedication	12	1.6		X	X			X			X		X	X

Item	N	%	E.	I.	Cl.	B.	Sc.	Ps.	P.	A.	SP	IM	A.	W.
Lack of enjoyment	12	1.6		X	X			X			X	X	X	X
Social	12	1.6	X		X		X				X		X	
Weather	12	1.6	X		X					X	X	X	X	
Ability level	11	1.4		X	X	X			X		X	X	X	X
Alcohol	11	1.4	X		X	X			X		X	X	X	X
Equipment	11	1.4	X		X					X	X		X	
Lack of support	11	1.4	X		X			X			X	X	X	X
Money	11	1.4	X		X					X	X		X	
Facilities	11	1.4	X		X					X	X		X	
Lack of success	8	1.0		X	X			X			X		X	X
Overtrain	8	1.0		X		X			X		X	X		X
Stress	8	1.0		X	X			X			X		X	X

Note. The percentages listed are indicative of the percentage of total handicaps reported. Problem reported is reflective of which aspect of a sedentary lifestyle the handicap primarily contributes to. Abbreviations are as follows: External (E.); Internal (I.); Claim (Cl.); Behavior (B.); Scheduling (Sc.); Psychological (Ps.); Physical (P.); Access (Ac.); Self-Protection (SP); Impression Management (IM); Avoidance (A.); Effort Withdrawal (W.).

Appendix E

Table 3
Eigenvalues and Percentage of Variance Accounted for by All Factors in EFA conducted on Phase III Data

Factor	Eigenvalue	% Variance	Cumulative %
1	11.53	21.3	21.3
2	3.223	6.0	27.3
3	2.930	5.4	32.7
4	2.146	4.0	36.7
5	2.078	3.8	40.6
6	1.893	3.5	44.1
7	1.755	3.2	47.3
8	1.607	3.0	50.3
9	1.501	2.8	53.1
10	1.423	2.6	55.7
11	1.343	2.5	58.2
12	1.229	2.3	60.5
13	1.199	2.2	62.7
14	1.161	2.2	64.8
15	1.105	2.0	66.9
16	1.021	1.9	68.8
17	0.980	1.8	70.6
18	0.932	1.7	72.3
19	0.911	1.7	74.0
20	0.871	1.6	75.6
21	0.851	1.6	77.2
22	0.824	1.5	78.7
23	0.760	1.4	80.1
24	0.692	1.3	81.4
25	0.670	1.2	82.6
26	0.644	1.2	83.8
27	0.597	1.1	84.9

Table 4
Factor Loadings > 0.55 for EFA Conducted on Phase III Data

Item	Factor 1	Factor 2	Factor 3	Factor 4
3	0.55			
22	0.65			
23	0.73			
24	0.81			
25	0.70			
26	0.64			
32	0.64			
42	0.81			
45	0.75			
49	0.60			
7		0.70		
8		0.73		
18		0.74		
19		0.75		
20		0.58		
31		0.63		
48		0.65		
9			0.57	
38			0.59	
44			0.69	
30				0.68
36				0.60
46				0.71

Appendix F

Absolute Values for Correlation Matrix for CFA in Phase III

Item	3	22	23	24	25	26	32	42	45	49	7	8
3	1.00											
22	0.18	1.00										
23	0.44	0.49	1.00									
24	0.48	0.49	0.70	1.00								
25	0.39	0.38	0.68	0.63	1.00							
26	0.33	0.39	0.54	0.48	0.58	1.00						
32	0.24	0.41	0.44	0.48	0.48	0.37	1.00					
42	0.43	0.50	0.58	0.75	0.56	0.50	0.49	1.00				
45	0.40	0.52	0.59	0.62	0.56	0.48	0.42	0.66	1.00			
49	0.39	0.34	0.42	0.57	0.39	0.27	0.30	0.59	0.66	1.00		
7	0.02	0.08	0.19	0.18	0.19	0.08	0.10	0.13	0.15	0.13	1.00	
8	0.14	0.02	0.07	0.10	0.24	0.15	0.09	0.05	0.15	0.15	0.54	1.00
18	0.25	0.20	0.22	0.33	0.31	0.26	0.16	0.27	0.22	0.18	0.41	0.51
19	0.30	0.25	0.33	0.42	0.39	0.22	0.29	0.28	0.36	0.25	0.47	0.56
20	0.16	0.28	0.29	0.31	0.33	0.21	0.30	0.20	0.16	0.14	0.34	0.40
31	0.22	0.17	0.22	0.32	0.33	0.16	0.15	0.16	0.16	0.17	0.41	0.41
48	0.13	0.11	0.22	0.23	0.29	0.25	0.21	0.21	0.26	0.19	0.42	0.43
9	0.11	0.09	0.12	0.20	0.25	0.21	0.09	0.21	0.18	0.19	0.10	0.28
38	0.03	0.03	0.06	0.09	0.07	0.10	0.11	0.12	0.04	0.07	0.16	0.19
44	0.04	0.09	0.08	0.05	0.10	0.19	0.01	0.13	0.12	0.08	0.14	0.13
46	0.11	0.11	0.31	0.21	0.27	0.20	0.22	0.21	0.17	0.08	0.02	0.02
30	0.10	0.18	0.31	0.23	0.34	0.30	0.20	0.16	0.31	0.07	0.01	0.19
36	0.16	0.04	0.14	0.12	0.14	0.08	0.10	0.15	0.13	0.14	0.02	0.03

Item	18	19	20	31	48	9	38	44	46	30	36
18	1.00										
19	0.67	1.00									
20	0.46	0.45	1.00								
31	0.50	0.54	0.41	1.00							
48	0.53	0.47	0.33	0.38	1.00						
9	0.15	0.13	0.10	0.11	0.14	1.00					
38	0.10	0.09	0.05	0.14	0.24	0.56	1.00				
44	0.01	0.01	0.03	0.07	0.09	0.62	0.42	1.00			
46	0.02	0.06	0.03	0.09	0.01	0.01	0.01	0.02	1.00		
30	0.11	0.17	0.17	0.08	0.15	0.11	0.04	0.03	0.50	1.00	
36	0.01	0.08	0.02	0.11	0.02	0.04	0.02	0.05	0.36	0.32	1.00

Appendix G

Table 5

Factor Correlation Estimates, Standard Errors and t-statistics after Varimax Rotation for CFA conducted on Phase III Data

	F 1			F 2			F 3			F 4
	Est.	SE	T	Est.	SE	T	Est.	SE	T	Est.
F 1	1.000									
F 2	0.446	0.069	6.451	1.000						
F 3	0.242	0.079	3.036	0.215	0.083	2.604	1.000			
F 4	0.408	0.082	4.958	0.146	0.095	1.534	0.068	0.096	0.706	1.000

Table 6

Loading Estimates, Standard Error of Estimates, and t-statistics for CFA Conducted on Phase III Data

Item	Factor 1			Factor 2			Factor 3			Factor 4		
	Est.	SE	T	Est.	SE	T	Est.	SE	T	Est.	SE	T
3	0.52	0.07	7.28									
22	0.59	0.07	8.27									
23	0.79	0.06	12.3									
24	0.86	0.06	13.9									
25	0.75	0.07	11.5									
26	0.62	0.07	8.91									
32	0.57	0.07	8.03									
42	0.82	0.06	12.9									
45	0.78	0.06	12.0									
49	0.64	0.07	9.17									
7				0.60	0.07	8.32						
8				0.68	0.07	9.69						
18				0.79	0.07	11.9						
19				0.82	0.06	12.6						
20				0.57	0.07	7.84						
31				0.65	0.07	9.07						
48				0.62	0.07	8.62						
9							0.93	0.08	12.0			
38							0.60	0.08	7.89			
44							0.67	0.08	8.72			
46										0.72	0.09	8.06
30										0.70	0.09	7.88
36										0.47	0.08	5.52

Note. T-values > 2 indicate statistical significance at the 0.05 level.

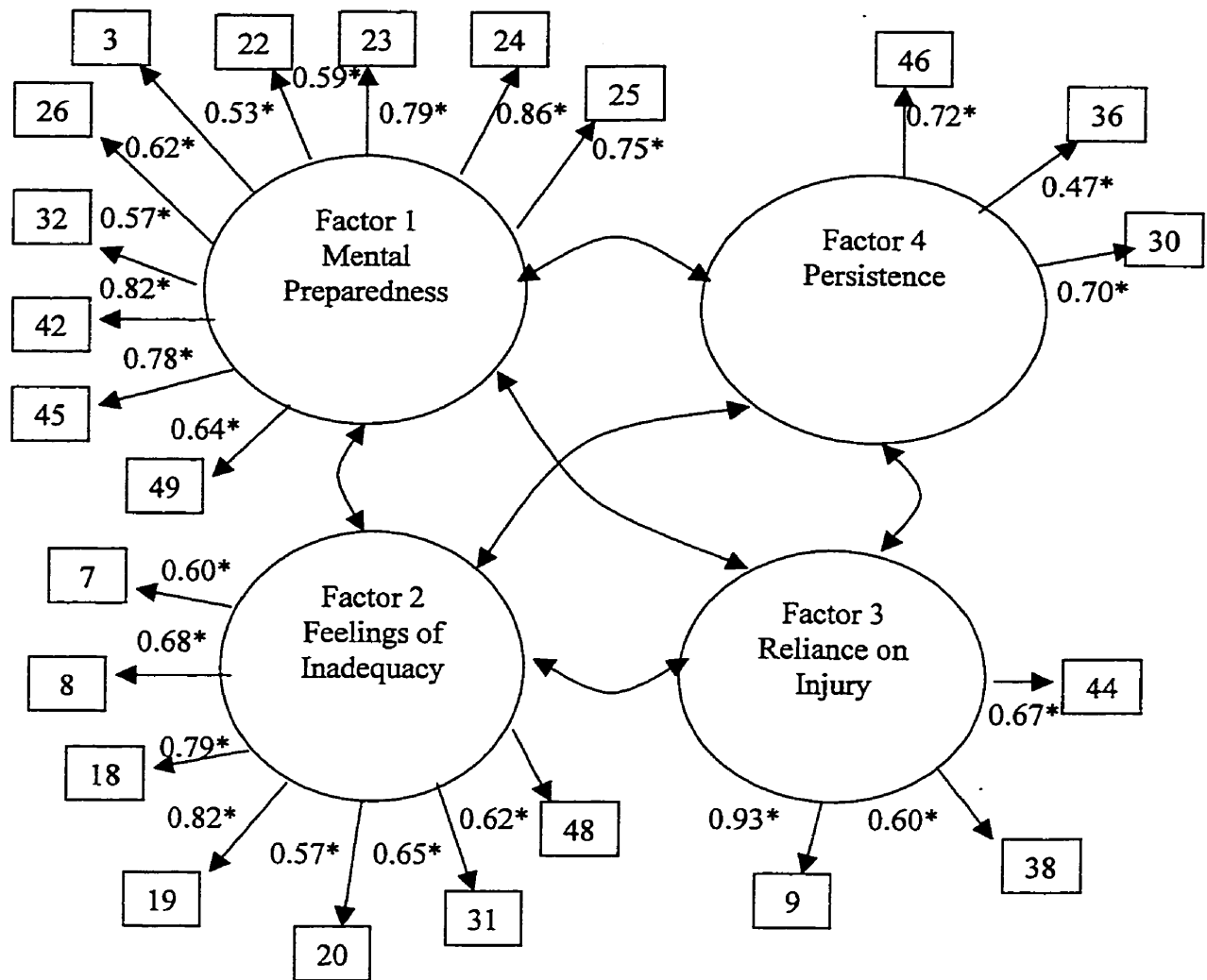


Figure 1. Path Diagram of Four Factor Model from Phase III Data.

The distribution of handicaps captured by each item is as follows: 22, 24, 42, and 49 refer to a lack of time; 7, 8, 18, 48 refer to others' perceptions; 9, 38, 44 refer to injuries; 30, 36, 46 refer to effort level; 19, 20 refer to ability level; 25, 26 refer to self-talk; 3 refers to access; 23 refers to lack of motivation; 45 refers to fatigue; 31 refers to lack of knowledge; 32 refers to stress.

* $p < 0.05$ (RMR = 0.06; GFI = 0.84; AGFI = 0.81; CFI = 0.91; RMSEA = 0.06).

Appendix I

Absolute Values for Correlation Matrix for CFA in Phase IV

Item	1	8	9	10	11	13	16	17	18	21	2	3
1	1.00											
8	0.23	1.00										
9	0.41	0.36	1.00									
10	0.22	0.37	0.60	1.00								
11	0.32	0.42	0.70	0.59	1.00							
13	0.38	0.36	0.52	0.66	0.55	1.00						
16	0.21	0.30	0.42	0.68	0.45	0.69	1.00					
17	0.31	0.28	0.48	0.37	0.42	0.39	0.22	1.00				
18	0.24	0.32	0.55	0.78	0.55	0.72	0.73	0.44	1.00			
21	0.39	0.25	0.53	0.33	0.52	0.45	0.32	0.37	0.37	1.00		
2	0.15	0.23	0.25	0.21	0.37	0.27	0.18	0.18	0.19	0.35	1.00	
3	0.10	0.33	0.32	0.22	0.44	0.29	0.21	0.15	0.18	0.37	0.62	1.00
4	0.08	0.29	0.33	0.22	0.40	0.27	0.12	0.26	0.18	0.34	0.49	0.68
6	0.04	0.21	0.32	0.23	0.32	0.22	0.15	0.28	0.20	0.36	0.46	0.58
7	0.09	0.19	0.24	0.13	0.27	0.20	0.12	0.23	0.14	0.33	0.59	0.44
15	0.08	0.32	0.30	0.18	0.37	0.25	0.11	0.25	0.16	0.38	0.45	0.56
20	0.11	0.21	0.32	0.29	0.30	0.29	0.22	0.22	0.21	0.24	0.48	0.53
5	0.01	0.19	0.22	0.10	0.23	0.17	0.11	0.02	0.03	0.15	0.30	0.25
12	0.02	0.24	0.18	0.09	0.18	0.22	0.10	0.05	0.04	0.19	0.30	0.18
19	0.11	0.11	0.22	0.10	0.26	0.19	0.09	0.15	0.08	0.27	0.34	0.26
14	0.05	0.00	0.08	0.10	0.16	0.04	0.07	0.03	0.01	0.14	0.11	0.05
22	0.16	0.01	0.03	0.05	0.08	0.06	0.05	0.04	0.05	0.05	0.05	0.10
23	0.28	0.22	0.42	0.29	0.43	0.30	0.25	0.19	0.26	0.29	0.12	0.23

Item	4	6	7	15	20	5	12	19	14	22	23
4	1.00										
6	0.65	1.00									
7	0.47	0.41	1.00								
15	0.70	0.61	0.45	1.00							
20	0.50	0.51	0.46	0.54	1.00						
5	0.14	0.11	0.14	0.16	0.13	1.00					
12	0.10	0.04	0.10	0.17	0.12	0.76	1.00				
19	0.18	0.21	0.22	0.24	0.22	0.58	0.59	1.00			
14	0.02	0.13	0.11	0.01	0.01	0.06	0.01	0.04	1.00		
22	0.05	0.11	0.12	0.08	0.17	0.08	0.04	0.05	0.25	1.00	
23	0.14	0.04	0.07	0.06	0.17	0.00	0.01	0.08	0.20	0.26	1.00

Appendix J

Table 8

Factor Correlation Estimates, Standard Errors and t-statistics for data from Phase IV

	F 1			F 2			F 3			F 4
	Est.	SE	T	Est.	SE	T	Est.	SE	T	Est.
F 1	1.000									
F 2	0.431	0.066	6.532	1.000						
F 3	0.211	0.077	2.737	0.269	0.076	3.541	1.000			
F 4	0.382	0.120	3.179	0.159	0.081	1.957	0.026	0.072	0.360	1.000

Table 9

Loading Estimates, Standard Error of Estimates, t-statistics, for CFA Conducted on Phase IV Data

Item	Factor 1			Factor 2			Factor 3			Factor 4		
	Est.	SE	T	Est.	SE	T	Est.	SE	T	Est.	SE	T
1	0.38	0.07	5.34									
8	0.46	0.07	6.54									
9	0.73	0.06	11.6									
10	0.83	0.06	13.9									
11	0.74	0.06	11.8									
13	0.81	0.06	13.4									
16	0.74	0.06	11.7									
17	0.51	0.07	7.31									
18	0.84	0.06	14.1									
21	0.55	0.07	7.93									
2				0.68	0.07	10.4						
3				0.79	0.06	12.8						
4				0.83	0.06	13.6						
6				0.75	0.06	11.7						
7				0.61	0.07	8.95						
15				0.77	0.06	12.3						
20				0.67	0.07	10.1						
5							0.87	0.06	13.7			
12							0.87	0.06	13.8			
19							0.68	0.07	10.2			
14										0.18	0.08	2.16
22										0.24	0.09	2.56
23										1.08	0.29	3.70

Note. T-values > 2 indicates statistical significance at the 0.05 level.

Appendix K

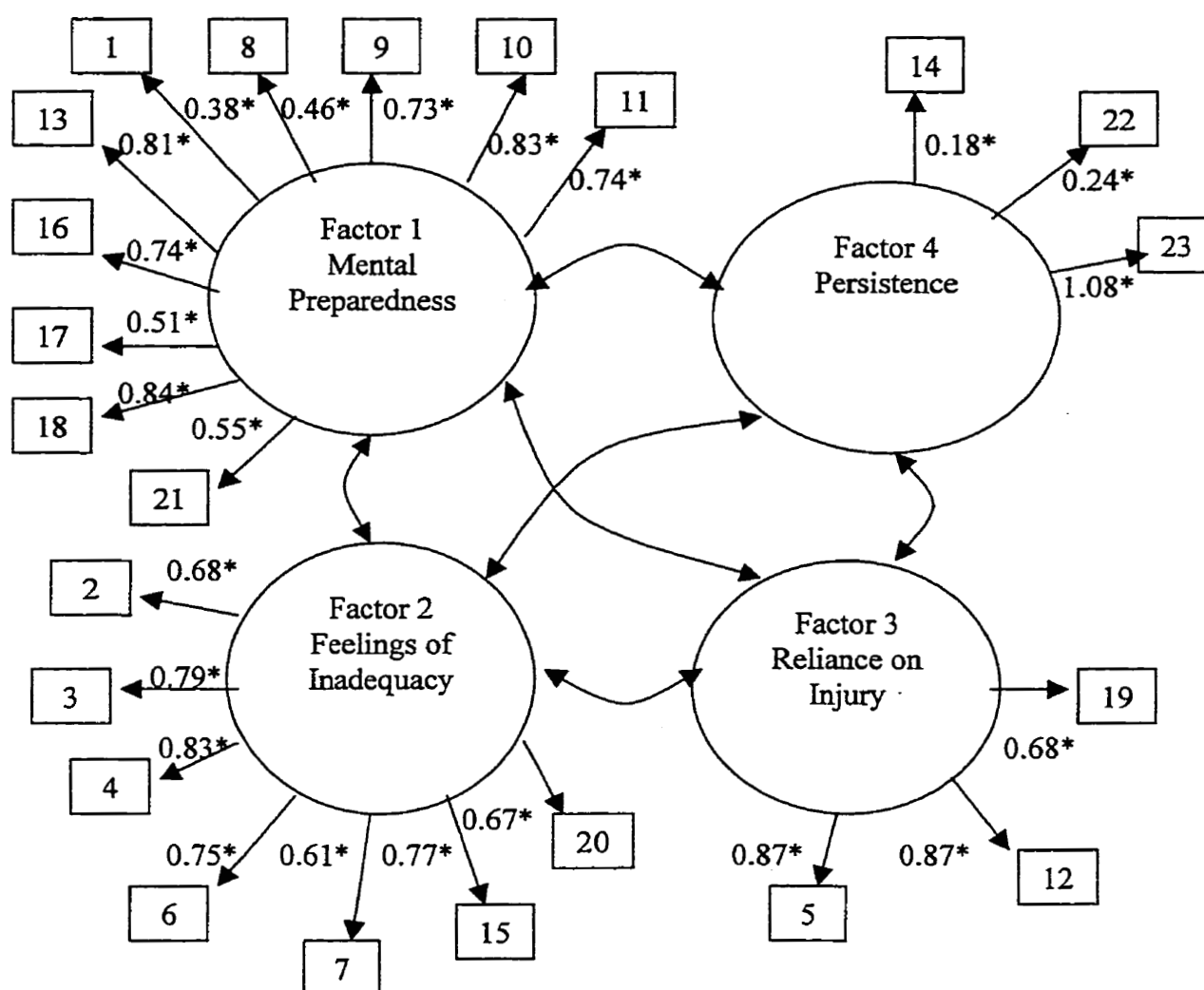


Figure 2. Reproduction of Path Diagram of Four Factor Model from Phase IV Data.

The distribution of handicaps captured by each item is as follows: 1, 10, 16, and 18 refer to a lack of time; 4, 6, 7, 15 refer to others' perceptions; 5, 12, 19 refer to injuries; 14, 22, 23 refer to effort level; 2, 3 refer to ability level; 11, 7 refer to self-talk; 8 refers to access; 9 refers to lack of motivation; 13 refers to fatigue; 20 refers to lack of knowledge; 21 refers to stress.

* $p < 0.05$. (RMR = 0.08; GFI = 0.79; AGFI = 0.74; CFI = 0.86; RMSEA = 0.09).