Self-Presentational Concern as an Antecedent of Athletic Injury

Vista Beasley
SELF-PRESENTATIONAL CONCERN AS AN ANTECEDENT OF ATHLETIC INJURY

By

VISTA BEASLEY

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The members of the supervisory committee were:

Robert Eklund
Professor Directing Thesis

Gershon Tenenbaum
Committee Member

Alysia Roehrig
Committee Member

The Graduate School has verified and approved the above-named committee members, and certifies that the thesis has been approved in accordance with university requirements.
To John, Clara and Rosalie McDonald, the kindest of strangers.
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ABSTRACT

This study was an initial investigation of the relationship between self-presentational concern and chronic injury. An experiment with two manipulations was conducted to determine how situational self-presentational concerns affected expressions of toughness that may be linked to health-damaging behaviors that cause chronic injury. Covariates of self-presentational concerns and mental toughness were measured and determined to be equivalent across groups so that effects could be attributed to the manipulations. For a manipulation of situational self-presentational concerns, collegiate middle-distance and distance runners assigned to experimental groups read a passage. The passage was based on the components of a self-presentation model, impression motivation and impression construction. It indicated the need for runners to score high on toughness questionnaires to be evaluated favorably by coaches and governing bodies of the sport in order to achieve goals. All participants completed two questionnaires pertaining to mental toughness and tough attitude toward training through pain and injury. Expressions of mental toughness related to confidence and control were higher for participants exposed to heightened levels of situational self-presentational concerns than participants lacking the exposure. For a second manipulation, participants in one of the experimental groups were additionally exposed to a prototype describing the performance of the most successful runners on the mental toughness questionnaire. Expression of mental toughness of these participants did not differ significantly from other participants, failing to provide evidence of the prototype-matching process. Participants’ expression of tough attitude toward training through pain and injury did not differ in relation to exposure to either manipulation. The results support the integration of self-presentational concerns related to mental toughness as a psychological antecedent in a model linking stressful, athletic situations and chronic injury.
CHAPTER ONE

REVIEW OF LITERATURE

In the 1990s, social psychologist Mark Leary proposed that self-presentational concerns could affect athletes. Self-presentation, also called impression management, involves a constellation of processes through which people attempt to monitor and control how they are perceived by others. In sport, athletes may attempt to monitor and control the perceptions of their coaches and others who are important to their sport careers. Thus, researchers in the field of sport psychology explore self-presentation in the sport context (Leary, 1992; Martin Ginis, Lindwall, & Prapavessis, 2007).

Leary (1996) has argued that maladaptive behavior can result when people become too concerned with how others perceive them. Self-presentation provides the basis for those concerns. Martin Ginis and Leary (2004) extended this notion, showing the potential for self-presentational concerns related to sport and physical activity to result in health-damaging behaviors. They suggested that sport culture emphasizes images of toughness; athletes who train and compete while in pain or injured epitomize some of these desired images of toughness. The attempt to convey this tough image may result in injury or more severe injury.

The psychological antecedents of injury can be studied in the sport of competitive running because “sooner or later every runner is injured” (Galloway, 1984, p. 199). An examination of the physical causes of injury reveals (a) intrinsic factors, which are physical features, such as biomechanical abnormalities, and (b) extrinsic factors, which include poor technique, improper equipment, and training errors (Wilder & Sethi, 2004). Training errors include inappropriate volume (frequency/duration) and intensity (Benson, 1994; Glover & Schuder, 1988; Wilder & Sethi, 2004). Wilder and Sethi (2004) asserted that the majority of
injuries reported in running injury clinics are related to overuse. Some runners may detect pain indicating injury onset, and then control the escalation of injury severity by decreasing volume and intensity of training; others may detect the pain but continue training, converting acute injury into overuse injury (Benson, 1994; Benson, 2003; Ekenman, Hassmen, Koivula, Rolf, & Fellander-Tsai, 2001; Glover & Schuder, 1988; Stephan, Deroche, Brewer, Caudroit, & Le Scanff, 2009; Wilder & Sethi, 2004). The behavior of runners who engage in inappropriate volume/intensity of training, or continue to train despite injury-onset pain, could be deemed health-damaging behavior (Martin-Ginis & Leary, 2004).

What causes runners to engage in these types of health-damaging behaviors? The psychological antecedents of injury are rarely addressed in many running-specific texts used by coaches and runners (Benson, 1994; Benson, 2003; Benson & Connolly, 2011; Fitzgerald, 2009; Galloway, 1984; Glover & Schuder, 1988; Guthrie, 2003); coaches and athletes themselves may not be aware of the psychological causes of the health-damaging behaviors. Understanding the psychological factors causing health-damaging behaviors of runners may assist in injury prevention (Petrie & Hamson-Utley, 2011; Williams & Andersen, 2007). One potential cause of runners’ health-damaging behaviors is self-presentation (Leary, 1996; Martin Ginis & Leary, 2004). If runners want to be perceived as mentally tough, for example, they might engage in behaviors such as training through pain and/or at higher volumes/intensities than is recommended for injury prevention (Benson, 2003; Pike, 2005).

This study can help sport psychology practitioners assess the need to develop interventions aimed at the potential underlying cause, self-presentational concerns, of the health-damaging behaviors. If coaches and others who are important to an athlete’s career are sources of self-presentational concerns, interventions may aim to reduce self-presentational concerns
and/or provide the resources and support an athlete can use to cope with self-presentational concerns (Martin Ginis & Leary, 2004).

The purpose of this manuscript, then, is to initiate a line of study to determine if self-presentation is a psychological component involved in health-damaging behaviors that result in chronic injury for athletes. In the following sections, I review a stress-injury model developed by Andersen and Williams (1988) and a self-presentation model developed by Leary and Kowalski (1990), demonstrating support for integration of self-presentational concerns into the stress-injury model.

1.1 Running Injuries and Psychological Antecedents

A number of psychological antecedents may influence athletes’ susceptibility to injury. A model developed by Andersen and Williams (1988) provides a conceptual basis for the current investigation (Petrie & Hamson-Utley, 2011; Petrie & Perna, 2004; Williams & Andersen, 2007). This model is displayed in Figure 1. In this model, a potentially athletic stressful situation arises (e.g., a runner may be evaluated for selection to a varsity team by a coach, or be required to run a certain time fast enough to qualify for a national competition). Variables that may moderate and mediate the effect of these situations on an athlete are outlined in the model. These variables may then influence the likelihood of the athlete to become injured. I contend that self-presentation can be integrated into the stress-injury model as shown by italicized items in Figure 1.

1.1.1 Moderating Variables in Stress-Injury Model

The three moderating, psychological variables identified in Anderson and Williams’ (1988) model of athletic injury are *personality, history of stressors, and coping resources*. Researchers have studied personality as a moderating variable by considering numerous traits including locus
of control, Type A, and competitive trait anxiety (Delaney, Fields, & Hinkle, 1990; Maddison & Prapavessis, 2005; Petrie & Hamson-Utley, 2011; Williams & Andersen, 2007). Little research has been done on chronic injury, but Type A personality trait, for example, has been found to be predictive of stress fractures in runners (Ekenman et al., 2001). As self-presentation is considered to have both dispositional (trait) and situational (state) aspects (Gammage & Gabriel, 2009; Leary, 1996; Leary & Kowalski, 1990; Martin, Leary, & O’Brien, 2001; Martin Ginis et al., 2007), dispositional self-presentational concerns may be considered a “personality” variable within the stress-injury model.

The second moderating variable in the stress-injury model, history of stressors, encompasses life event stress, daily hassles, and previous injury (Dunn, Smith, & Smoll, 2001; Ekenman et al., 2001; Stephan et al., 2009; Williams & Andersen, 2007). The third moderating variable in the stress-injury model is coping resources (i.e., coping behaviors and social support). Insufficient coping resources have been associated with higher injury occurrence (Andersen & Williams, 1988; Williams & Andersen, 2007). One element of coping behavior could be termed effort resolve (Maddison & Prapavessis, 2005). Athletes may cope with stressful athletic situations, such as impending team selection trials, by resolving to work more (i.e., increased volume) or try harder (i.e., increased intensity). Maddison and Prapavessis (2005) deduced that inappropriate levels of effort (e.g., trying too hard) were at fault when this coping behavior was associated with increased likelihood of injury. As will be shown, effort resolve can be induced by self-presentational concerns (Worthingham & Messick, 1983). Health-damaging behavior, then, could stem from this effort resolve.

In the model, a caring coach and/or family members are examples of social support that may buffer athletes’ injury susceptibility; a lack of social support was predictive in many studies of injury occurrence (Petrie & Hamson-Utley, 2011; Williams & Andersen, 2007). The stress-injury model accounts for presence, low amounts, or absence of social support, but not for potential negative effects of available social support. As an example, in measuring coping resources, Maddison and Prapavessis (2005) used the Social Support Questionnaire to assess the amount of social support available, but the scale ranged from not all helpful (1) to very helpful (5); thus the potential for deleterious effects was not accounted for in construct measurement. Excessive expectations from a coach or family members could be a psychological factor associated with maladaptive overtraining behaviors (Greenleaf, Gould, & Dieffenbach, 2001;
Meeusen et al., 2006). Therefore, rather than studying only a lack of social support as a psychological variable influencing injury, the nature of the social support must be studied as well, particularly if the athlete is concerned with how the coach perceives the athlete, which is self-presentational concern (Udry, Gould, Bridges, & Tuffey, 1997).

1.1.2 Mediating Variables in Stress-Injury Model

Personality, history of stressors, and coping resources are the three variables that moderate an athlete’s susceptibility to injury, but the athlete’s stress response to the stressful athletic situation is the actual mediator of the stressful situation-injury relationship. The stress response includes cognitive appraisals and physiological reactions/attentional changes (Andersen & Williams, 1988; Petrie & Hamson-Utley, 2011; Williams & Andersen, 2007). Runners attempting to be selected for a team (the stressful situation) may feel pain during training; the runners’ cognitive appraisal determines whether the runner classifies it as the type of pain that accompanies intensified overtraining periods needed to increase performance or as pain heralding injury (Benson, 2003; Galloway, 1984; Meeussen et al., 2006).

Studies related to the physiological reaction component of the stress-injury model have mostly focused on reactions such as visual field of narrowing that appear most relevant to acute injuries (Petrie & Hamson-Utley, 2011; Williams & Andersen, 2007). For example, high negative life stress may reduce an athlete’s attentional capacity; less attention to visual cues (e.g., a ball headed towards a player’s head, a pothole or tree root on a running trail) may result in injury. A physiological reaction related to runners may be muscle tension; higher self-attention increases runners’ ability to detect muscle tension, which may cause them to execute relaxation techniques (behavioral changes), which may result in less injury risk (Martin, Craib, & Mitchell, 1995; Petrie & Perna, 2004).
In appraising research that occurred after their introduction of the stress-injury model, Williams and Anderson (2007) concluded that the model did not sufficiently account for chronic injury. To account for chronic injury, two additional stress response mediators have been recommended: *behavioral changes* (e.g., sleep patterns, self-care routines such as stretching), and *length/intensity of athletes’ physical training* (Petrie & Hamson-Utley, 2011; Petrie & Perna, 2004). These mediators apply to distance running (Benson, 1994; Benson, 2003; Benson & Connolly, 2011; Fitzgerald, 2009; Galloway, 1984; Glover & Schuder, 1988; Guthrie, 2003). Though these are physical behaviors, it would be considered a psychosocial factor when a runner does not engage appropriately in these physical behaviors (e.g., stretching, training volume/intensity), knowing it may have a health-damaging effect.

### 1.2 Self-presentational Concerns Related to Health-damaging Behaviors

In the above section, self-presentation was argued to play a potential role as a psychological antecedent in the stress-injury model. In this section, self-presentational concerns are discussed in relation to behavior per Leary and Kowalski’s (1990) model. Most studies of self-presentation in the sport and exercise context revolved around concerns related to physical appearance, such as Social Physique Anxiety (Cruz, 2011), performance related to choking under pressure (Howle, 2012; Martin Ginis et al., 2007; McGowan, Prapavessis, & Wesch, 2008; Mesagno, Harvey, & Janelle, 2011; Mesagno, Harvey, & Janelle, 2012; Wilson & Eklund, 1998), and some types of health-damaging behaviors such as eating disorders, steroid use, and excessive exercise (Martin Ginis & Leary, 2004; Miller, 2008). Research needs to more fully assess concerns related to the desire to be perceived as competent and other types of health-damaging behaviors related to this desire (Halbert, 1997; Macro, Viveiros, & Cipriano, 2009; Martin Ginis & Leary, 2004; Martin Ginis et al., 2007; Miller, 2008).
Currently, there is no agreed-upon theoretical basis for behavior based on self-presentation, but the construct of self-presentation has its origins in impression management theory (Leary, 1992; Leary, 1996; Martin Ginis et al., 2007; Tetlock & Manstead, 1985). This theory indicates that people or organizations attempt to control what is perceived by others. A sub-component of impression management is self-presentation, which addresses how one presents one’s “self”—rather than an entity—to others (Leary, 1996; Leary & Kowlaski, 1990). Self-presentation is comprised of processes which people use to manage how others perceive them (Leary, 1996). A model constructed by Leary and Kowalski (1990) has been used to study self-presentation in the sport and exercise context. According to the model, two processes are involved: *impression motivation* and *impression construction*. Both of these are reviewed below, with an emphasis on their links to health-damaging behaviors and injury.

**1.2.1 Impression Motivation and Injury**

Impression motivation refers to what reason or situation generates concern with how one is perceived. The higher the motivation, the more likely one is to change behavior. The model identifies conditions (situational determinants) which may increase a person’s desire to control how others perceive them. One of the situational determinants is the “goal-relevance of impressions”, that is, how one is perceived is relevant to a desired outcome. Obtaining the goal is affected by dependency and publicity. If an athlete’s goal, e.g., selection to varsity team, depends on a coach’s perception of the athlete, the athlete will be more likely to change behavior when the behavior is to be observed by the coach (Leary, 1996; Martin Ginis et al., 2007).

A second situational determinant related to impression motivation is “value of desired goals”. If, as Leary and Kowalski (1990) espouse, the value of the goal increases as the availability of the goal decreases, then 20 runners on a collegiate team competing for 7 varsity...
berths may have more willingness to display an image in alignment with the coach’s preferences than if 7 runners were assured the 7 slots.

In my experience with competitive collegiate running, a goal of some cross-country runners is to be selected by the target—the coach—to compete at higher-status meets such as varsity competitions and those requiring extended travel. Though the selection may initially be based on faster times and higher placement at previous competitions, some team members can appear equal over the course of a season. Therefore, the coach may have to make a selection based on other factors, usually favoring those who “tried harder” in training over those whose success appears to stem from natural ability (Wann et al., 2002). In this situation, runners may be motivated to exert themselves inappropriately in order to make a favorable impression via exhibitions of effort, mental toughness, and tolerance of pain (Callow, Hardy, Roberts, Rogers, & Woodman, 2011; Hardy, Hall, & Prestholdt, 1986; Leary, 1992; Leary, 1996; Leary & Kowalski, 1990; Rejeski & Lowe, 1980; Tenenbaum et al., 2005; Wortingham & Messick, 1983).

1.2.2 Impression Construction and Injury

When impression motivation levels are heightened, a person may engage in the second process, impression construction, which is the attempt to create the desired perception. This can involve choosing an image, e.g. toughness, to convey, and choosing the behaviors, e.g., training despite knee pain, to convey the desired image. A situational determinant related to sports is “desired and undesired identity images” (Leary, 1996; Leary & Kowalski, 1990; Martin Ginis et al., 2007). “An injured athlete who takes him- or herself out of play is often labeled as a ‘wimp’” (Martin Ginis & Leary, 2004, p. 65). In this vein, an injured runner may continue running rather than incur the undesired label.
Another situational determinant that factors into impression construction is “role constraints,” which involves group norms and prototypes. Roles involve a prototype-matching process in which people try to project an image with the same characteristics as those who are successfully affiliated with that role (Leary, 1996; Leary & Kowalski, 1990). The prototype-matching process and its effect on behavior have not been specifically studied in the sport context, to my knowledge, but the relationship is intuitive. For example, in American running folklore, Bob Kempainen qualified for the 1992 Olympic marathon team by running in the trials with a stress fracture in one knee and tendonitis in the other; he went on to place 17th in the Olympics (Noden, 1993). This role model set a standard of toughness that may incur support for health-damaging behavior should the behavior (i.e., training through injury) be imitated.

Training volume (e.g., mileage) and intensity (e.g., pace) may also be viewed as prototypes. While the suggested weekly mileage total for novice competitors may be at most 40-50 miles a week, the suggested weekly mileage totals for experienced competitors is listed as 70-90 miles a week (Glover & Schuder, 1988). When runners train in a group, less experienced runners may attempt to conform to the prototypes and norms, taking pride in running at the mileage and pace levels of the group that are higher than prescribed for their individual experience and ability levels (Carron, Burke & Prapavessis, 2004; Hall, 2011; Leary & Kowalski, 1990). This may result in injury.

“Target values” also affect a person’s impression construction (Leary, 1996). For example, a coach may be a runner’s target. If the coach espouses a philosophy of 100% effort, then the runner may choose to construct an effort-based image to cater to that coach’s values (Leary, 1992). A behavior used to construct this image may be to run at inappropriate volumes and intensities, shown to contribute to running injuries (Benson, 1994; Galloway, 1984; Glover
Similarly, many coaches are known to value mental toughness. A model of mental toughness presented by Fletcher (2005) suggests that the attribute of mental toughness contributes to behavioral responses. It could be inferred that behavioral responses may consist of those which induce injury, and the desire to be perceived as mentally tough by targets could likewise result in these behavioral responses. Among the studies of mental toughness examined (Bull, Shambrook, James, & Brooks, 2005; Clough & Earle, 2002; Clough, Earle, & Sewell, 2002; Connaughton, Hanton, & Jones, 2010; Connaughton, Wadey, Hanton, & Jones, 2008; Crust, 2007; Crust, 2008; Crust & Clough, 2005; Golby & Sheard, 2004; Golby, Sheard, & van Wersch, 2007; Gucciardi & Gordon, 2009a; Gucciardi & Gordon, 2009b; Gucciardi, Gordon, & Dimmock, 2008; Gucciardi, Gordon, & Dimmock, 2009; Harmison, 2012; Jaeschke, 2012; Jones, Hanton, & Connaughton, 2002; Martin Ginis & Leary, 2004; Marsh, Cheng, & Middleton, 2011; Masters, 2012; Middleton, Marsh, Martin, Richards, & Perry, 2004a; Middleton, Marsh, Martin, Richards, & Perry, 2004b; Sheard, 2013; Sheard & Golby, 2006; Stonkus, 2011; Thelwell, Such, Weston, Such, & Greenlees, 2010; Thelwell, Weston, & Greenlees, 2005), none have been conducted to determine whether athletes tailor their behaviors to create an image to match the coaches’ value of mental toughness.

Upon establishing the situation has induced impression motivation, and the situation has specified what image, such as mental toughness, needs to be constructed, an individual then engages in self-presentational tactics (Leary, 1996). These tactics consist of behaviors in which the individual engages in order to present the desired image. The self-presentational behaviors may be verbal, such as marking answers on a questionnaire, or non-verbal, such as the actual health-damaging behavior of training at inappropriately high mileage and intensity.
1.2.3 Difficulty in Measuring Self-presentational Concerns

The actual goal of self-presentation is not necessarily to be perceived positively; rather, the goal is to influence others to respond in desired ways (Leary, 1996). If people manage to convey their desired image correctly, they will be more likely to be treated in the way they desire (Ford & Gordon, 1997; Leary, 1996). If they want to be selected for a team, they may execute behaviors that support that goal. If interviews or questionnaires are conducted, participants’ responses may not accurately reflect their self-presentational concerns because participants may have been engaging in impression management behavior. For example, if a desired image of the participants is to appear mentally tough, they may engage in behaviors—marking answers on questionnaires—in a manner that does not express the doubts and uncertainties they may actually feel (Leary, 1996; Macro et al., 2009; Sznycer, 2010). The responses may also be unconscious; non-sport studies lend substance to this argument, showing that people may not be conscious of self-presentational concerns that affect them, so they may not report them, yet their behavior may, nonetheless, be affected by the concerns (Leary, 1996; Leary & Kowalski, 1990; Martin Ginis et al., 2007; McGowan et al., 2008).

One method, then, to measure the presence of self-presentational concerns is to assess behavior that may reflect the tactics designed—consciously or not—to present the desired image. Particularly, athletes engage in the tactics in situations in which they know their behavior will be viewed by targets (Leary, 1996). Howle (2012) showed that a script can sufficiently induce participants’ belief that their behavior is being viewed and evaluated.

Another method of measuring presence of self-presentation is to observe behavior in differing levels of situational self-presentational concerns, with different behavior in different conditions indicating the presence of self-presentational concerns. It is also recommended that
measures of self-presentation include psychometrically valid measurements of self-presentational concerns and social desirability (Leary, 1996; Martin Ginis et al., 2007; Mesagno et al., 2011; Mesagno et al., 2012; Wiechman, Smith, Smoll, & Ptacek, 2000).

It is further recommended that studies of self-presentation incorporate naturalistic elements (Leary, Allen, & Terry, 2011). Specific recommendations address situational determinants such as goal relevance (e.g., selection for a team rather than hit a goal in a laboratory task) and inclusion of familiar and multiple targets (e.g., impress a coach, teammates, and a selection committee rather than impress a researcher). Studies should also consider incorporating imagined audiences when manipulating the situational determinant of publicity. For example, much of runners’ training may occur without coaches’ oversight, yet the runners train with the knowledge that coaches and others will view the results of their training in competitions. Taken altogether, an effective study could incorporate a script with naturalistic elements to induce self-presentational concern; groups exposed to differing levels of self-presentational concern; observation of behavior after exposure to self-presentational concern; and psychometrically valid measurements of self-presentational concerns and social desirability.

1.3 Research Aims, Questions, Hypotheses

The arguments and concepts presented so far indicate that self-presentational concerns may induce health-damaging behaviors, which in turn lead to chronic injury. Though self-presentational concerns have been associated with anxiety, effort, behavior and performance, very few experimental designs affording causal inferences have been conducted (Howle, 2012; Martin Ginis & Leary, 2004; Martin Ginis et al., 2007; Miller, 2008). Therefore, the purpose of this study was to examine the nature of the relationship between self-presentational concerns and behaviors that may relate to athletic injury in the United States. The study also enabled the study
of impression motivation and impression construction as candidates for the mechanism between situational self-presentational concern and its effects. Additional aims were to contribute by further building the theoretical basis of injury and self-presentation using the stress-injury and self-presentation models, and further confirming measurement tools by testing the revised Self-Presentation in Sport Questionnaire (revised SPSQ; McGowan et al., 2008) on diverse populations.

To this end, this study involved an experiment to compare the behaviors of competitive runners in situations of lower levels of self-presentational concerns to the behaviors of competitive runners in situations of higher levels of self-presentational concerns. As recommended earlier, the study incorporated a situational manipulation of self-presentational concerns as well as a behavioral outcome in conjunction with use of the psychometrically valid measurements of dispositional self-presentation and social desirability. This study aimed to answer these questions: How does behavior of athletes differ when situational self-presentational concerns increase? How does the behavior of athletes reflect the prototype-matching process? Specifically, will athletes engage in behavior to look more mentally tough when being evaluated by a target who values mental toughness? Will they engage in behavior to look as mentally tough as successful athletes? To answer these questions, the below hypotheses were formulated:

**Hypothesis 1:** Athletes with higher situational self-presentational concerns about mental toughness will attempt to project a more mentally-tough image than athletes not exposed to heightened situational self-presentational concern.

**Hypothesis 2:** Athletes in situations inducing high self-presentational concern about mental toughness will engage in behavior that conforms to the successful prototype of that sport.
CHAPTER TWO

METHOD

2.1 Participants

Participants (31 females, 36 males) in this investigation were roster members of NCAA collegiate cross country and/or track teams who were training for competition distances of 1,500 meters or more. The athletes ranged in educational level from incoming freshmen to recently-graduated seniors ($M = 2.18$, $SD = 1.29$), had a mean age 19.96 years ($SD = 1.48$), and had been running competitively for an average of 6.39 years ($SD = 2.18$). Because runners train and/or specialize in different distances, not all runners reported personal records for all distances. The average personal best times in minutes/seconds at varying distances of participants are displayed in Tables 1 (Females) and 2 (Males). The tables also include qualifying times for the 2013 NCAA outdoor track and field championship meet.

Table 1

*Best Reported Times (Means, Standard Deviations, Ranges) of Female Participants (n = 31) Compared to 2013 NCAA Outdoor Track and Field National Championship Meet Qualifying Times (Ranges) by Divisions*

<table>
<thead>
<tr>
<th>Distance</th>
<th>Sample</th>
<th>Division I</th>
<th>Division II</th>
<th>Division III</th>
</tr>
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<tr>
<td></td>
<td>$n$</td>
<td>$M$ (SD)</td>
<td>Range</td>
<td>Range</td>
</tr>
<tr>
<td>800m</td>
<td>13</td>
<td>2:20 (.07)</td>
<td>2:11 - 2:37</td>
<td>2:01 - 2:08</td>
</tr>
<tr>
<td>5km</td>
<td>31</td>
<td>18:40 (.55)</td>
<td>16:45 - 20:44</td>
<td>15:56 - 16:25</td>
</tr>
<tr>
<td>10km</td>
<td>3</td>
<td>37:02 (4:04)</td>
<td>33:34 - 41:30</td>
<td>33:17 - 35:15</td>
</tr>
</tbody>
</table>
Table 2

Best Reported Times (Means, Standard Deviations, Ranges) of Male Participants (n = 36) Compared to 2013 NCAA Outdoor Track and Field National Championship Meet Qualifying Times (Ranges) by Divisions

<table>
<thead>
<tr>
<th>Distance</th>
<th>Sample</th>
<th>Division I</th>
<th>Division II</th>
<th>Division III</th>
</tr>
</thead>
<tbody>
<tr>
<td>800m</td>
<td>13</td>
<td>1:52 (.03)</td>
<td>1:48 - 1:58</td>
<td>1:46 - 1:51</td>
</tr>
<tr>
<td></td>
<td>1500m</td>
<td>29</td>
<td>3:59 (.08)</td>
<td>3:46 - 4:15</td>
</tr>
<tr>
<td>5km</td>
<td>31</td>
<td>15:35 (.37)</td>
<td>14:23 - 17:11</td>
<td>13:46 - 14:12</td>
</tr>
</tbody>
</table>

Note. For Tables 1 and 2, times are minutes:seconds, rounded to nearest second. Ranges for Divisions I, II, and III times indicate the best season times of collegiate runners who qualified to participate in the 2013 NCAA outdoor track and field championship, per http://www.ustfccca.org/weekly-results/national-championships-central-outdoor-track-field.

As shown in Tables 1 and 2, the participants’ times at varying distances indicated most were sub-collegiate nationals level.

Prior to data collection, a power analysis was conducted for the various proposed statistical analyses with a power (1 – β) of .80 and effect size $f = .4$, resulting in a recommended total sample size of 66 (Cunningham & McCrum-Gardner, 2007; Faul, Erdfelder, Lang & Buchner, 2007). Previous studies involving experimental manipulations of self-presentational concerns with two to five groups were examined. Sample sizes of 34 to 65 participants yielded some medium and large effect sizes on some dependent variables (Howle, 2012; Mesagno et al., 2011; Mesagno et al., 2012). Based on the above analysis, it was concluded that a sample size of 66 was acceptable for the current study.
2.2 Design

The design of the study was a true experiment with a between-groups, posttest-only design, involving a control and two treatment groups. After the two treatment groups received a manipulation, post-tests were administered to all groups.

2.3 Measures

Measurements involving situational self-presentational concerns and expressions of toughness may be affected by individual factors such as age, type of sport, gender, and competitive level, as well as dispositional self-presentational concern and social desirability (Martin Ginis & Leary, 2004; McGowan et al., 2008; Miller, 2008; Nicholls, Polman, Levy, & Backhouse, 2009; Nixon, 1996; Sheard, Golby, & van Wersch, 2009; Wiechman et al., 2000). Because the manipulation in this study involved situational self-presentational concerns, and the post-manipulation variables involved expression of toughness, control of the aforesaid potential covariates was needed. Age, type of sport, and competitive level were expected to be controlled by sampling from a homogenous population of collegiate middle distance and distance runners. The attempt to balance gender across groups was made via stratified random assignment. Dispositional self-presentational concern and social desirability were expected to be distributed evenly across experimental groups via random assignment.

However, it was desirable to assess whether an imbalance of these factors occurred between groups due to chance or attrition. Therefore, this study included measurement of these potential co-variates. Participants reported age, gender, and competitive level in a demographic questionnaire. Dispositional self-presentational concern was measured via the revised Self-Presentation in Sport Questionnaire (SPSQ). Social desirability was measured via the Marlowe-
Crowne Social Desirability (MCSD) Form A. These data were gathered prior to the manipulation and hereafter referred to, collectively, as pre-manipulation variables.

To see if participants attempted to project a more mentally tough image in conditions of higher situational self-presentational concerns, expressions of toughness, i.e., mental toughness and tough attitude toward training through pain and injury, were measured after the manipulation. Expression of toughness consisted of scores of the participants on the Sports Mental Toughness Questionnaire (SMTQ) and the Tough scale of the Risk, Pain and Injury Items questionnaire (RPII). This data are hereafter referred to, collectively, as post-manipulation variables. All measures of pre-manipulation and post-manipulation variables are described below.

2.3.1 Pre-manipulation Variables

2.3.1.1 Demographic information (Appendix A). This questionnaire was used to ascertain age, gender, and competitive level. Information about competitive level was gathered via questions regarding experience, ability, and current training regimen. Questions pertaining to experience included number of years of competition in the sport and educational level (college year). Roster team members who were incoming freshmen (i.e., less than one year of collegiate running experience and currently training for the 2013 – 2014 collegiate competition season) were marked as 0; 1 indicated participant was enrolled in or had completed freshman year, 2 as being enrolled in or having completed sophomore year, 3 as being enrolled in or having completed junior year, and 4 as being enrolled in or having completed senior year within 3 months of participation in this study. The ability component of competitive levels was determined via fastest times (personal records) in various distance events including 800m, 1,500m, 5km, and 10km. The times in minutes and seconds were converted to decimal form for
Participants also provided information about their training regimens in the last two months which demonstrated eligibility for this study and further indicated competitive level. Information solicited regarding training included training volume (average frequency of running/additional types of training in days/week; average duration of weekly long run in minutes; average duration of other running sessions in minutes); training intensity (average number of days/week intensity of running exceeds 90%); and maintenance (how long this routine has been maintained in months).

2.3.1.2 Revised Self-Presentation in Sport Questionnaire (Revised SPSQ; McGowan, Prapavessis, & Wesch, 2008; Appendix B). In 1998, Wilson and Eklund developed the SPSQ. In 2008, McGowan et al. revised the SPSQ, reducing the number of items from 33 to 21. The revised SPSQ contains four subscales. The subscale Appearing Athletically Untalented (Competence) contains 6 questions (3, 6, 10, 13, 15, 17) including the item “Appearing athletically incompetent”. The subscale for Physical Appearance (Appearance) contains 5 questions (2, 5, 8, 9, 12) including the item “Appearing ugly or unpleasant in my uniform”. The subscale Fatigued / Lacking Energy (Fatigue) contains 4 questions (1, 4, 7, 16) including the item “Appearing exhausted”. The subscale Mental Composure Inadequacies (Composure) contains 6 questions (11, 14, 18, 19, 20, 21) including the item “Appearing nervous under pressure”. Each item is rated on a 5-point Likert-type scale, ranging from never (1) to always (5). The higher the score, the more worried a person is about how they are perceived by others. Scores range from 21 to 105.

Questionnaire responses of two samples totaling 639 athletes were used to confirm the validity of the revised SPSQ and verify its internal consistency. A factor analysis of responses of 359 athletes demonstrated acceptable levels of internal consistency (Cronbach’s alpha):
Competence, $\alpha = .91$; Appearance, $\alpha = .89$; Fatigue, $\alpha = .89$; and Composure, $\alpha = .84$. The interfactor correlations were all over .54. The revised SPSQ accounted for 61.38% of the response variance, comparable to 62.3% exhibited by the original SPSQ. A factor analysis of a second, independent sample of 280 athletes further demonstrated acceptable levels of internal consistency, with the Cronbach’s alpha of all subscales exceeding .85.

2.3.1.3 Marlowe-Crowne Social Desirability Form A (MCSD Form A; Reynolds, 1982; Appendix C). The MCSD scale developed by Marlowe and Crowne in 1960 contained 33 items and has been used to control for socially desirable response biases on self-report measures in psychology research (Loo & Thorpe, 2000; Reynolds, 1982). Reynolds (1982) subsequently conducted a factor analysis using a sample of students ($n = 608$); from this, short form versions were developed, including a version referred to as MCSD Form A. Form A contains 11 items in a true-false response format. Sample items include “No matter who I’m talking to, I’m always a good listener” and “I’m always willing to admit it when I make a mistake” (Reynolds, 1982). The more socially desirable responses (False for items 1, 2, 4, 6, and 9; True for items 3, 5, 7, 8, 10, and 11) were assigned a value of 1; less socially desirable responses were assigned a value of 0. A sum of the 11 items was taken to indicate social desirability scores ranging from 0 to 11.

According to Reynolds (1982), using the factor loading criterion of .40 or greater, MCSD Form A had factor loadings ranging from .40 to .54, with a median loading of .46. Form A demonstrated an acceptable level of reliability ($\text{rKR-20} = .74$) and a correlation of $r = .91$ with the original MCSD.

Loo and Thorpe (2000) conducted a confirmatory factor analysis of various versions of the MCSD using a sample of undergraduate students ($n = 232$). The authors revealed that Reynolds’ (1982) Form A was a suitable short version, demonstrating internal-consistency
reliability of $\alpha = 0.59$, fit indexes of RMSEAs < 0.001, AGFI = 0.952, and a correlation of $r = 0.87$ with the original MCSD.

2.3.2 Post-manipulation Variables

2.3.2.1 Sports Mental Toughness Questionnaire (SMTQ; Sheard, Golby, & van Wersch, 2009; Appendix D). Sheard, Golby, and van Wersch (2009) developed the SMTQ as a measure of mental toughness. The SMTQ contains 14 items, with three subscales: Confidence, Constancy, and Control. The Confidence subscale (1, 5, 6, 11, 13, 14) includes the sample item “I have unshakeable confidence in my ability”. The Constancy subscale (3, 8, 10, 12) includes the sample item “I get distracted easily and lose my concentration”. The Control subscale (2, 4, 7, 9) includes the sample item “I get anxious by events I did not expect or cannot control”. Each item is rated on a 4-point Likert-type scale, ranging from not at all true (1) to very true (4). Items 2, 4, 7, 8, 9 and 10 were reverse-scored, and the sum of the total 14 items were calculated to yield a total raw SMTQ score. Total raw scores range from 14 to 56.

Using a sample of 633 athletes, Sheard et al. (2009) asserted the Cronbach’s $\alpha$s showed acceptable internal consistency for each of three factors: Confidence = 0.80, Constancy = 0.74, and Control = 0.71. In a second, independent sample of 509 athletes, the three factors again demonstrated acceptable internal consistency: Confidence = 0.79, Constancy = 0.76, and Control = 0.72. Discriminant validity was demonstrated by low to moderate correlations between related concepts (e.g., hardiness, optimism) and by differences in scores of age groups, gender, and competitive standard. People of ages 25 years old and older scored significantly higher than those ages 16 to 24 years old; males scored significantly higher than females, and scores of county/provincial level athletes were significantly lower than those of club/regional, which in turn were lower than those of national/international level. Crust and Swann (2011) used a
sample of 110 males to conclude the SMTQ possesses adequate internal consistency overall ($\alpha = .81$).

2.3.2.2 Risk, Pain, and Injury Items Tough Scale (RPII Tough Scale; Nixon, 1996; Appendix E). Nixon (1996) developed this 19-item questionnaire to measure attitude toward risk, pain, and injury in sports via three scales: Pressed, Rational Choice, Tough. Using a sample of 195 athletes, Nixon conducted a factor analysis and concluded all three scales consisted of highly loaded items (> .46). Loading on items on the Tough scale ranged from .46 to .66.

Stadden (2007) conducted a pilot study with 105 participants, finding that the Pressed and Rational Choice scales demonstrated low reliability (.58, .31, respectively) whereas the Tough scale yielded a coefficient alpha of .79. Stadden’s final study, using 222 athletes, yielded a reliability coefficient alpha of .80 on the Tough scale. Only the Tough scale will be used in the current investigation.

The Tough scale consists of 11 items including “Coaches are impressed with athletes who play with injuries and pain”. Each item is rated on a 4-point Likert-type scale, ranging from strongly disagree (1) to strongly agree (4). Total scores range from 11 to 44. A difference in scores was found using gender as a predictor variable (Nixon, 1996; Stadden, 2007).

2.4 Manipulations

There were two manipulations. The first manipulated levels of situational self-presentational concerns. This manipulation involved reading a passage before marking answers on the SMTQ and RPII Tough scale. Participants in the two experimental groups, hereafter referred to as “High” and “Prototype” groups, read a passage (see Appendix F) which described how coaches and governing bodies can use runners’ past performance (i.e., fastest times) to
calculate a “Physical” score for each runner, then use scores on the SMTQ and RPII to calculate a “Mental” score for each runner. The Physical and Mental scores can be combined to create a composite score. The composite score can then be used to more reliably predict which runners will perform better at higher level meets and under stress. Coaches and governing bodies can then base their decisions about team selection and other benefits (e.g., scholarship awards) based on the composite scores. The passage included directions for the High and Prototype participants to imagine that their results on the SMTQ and RPII would be viewed and used by their coaches and sport governing bodies. The directions to imagine this were given again in the instructions to the High and Prototype participants, just prior to marking answers on the SMTQ and RPII Tough scale.

The passage was designed to capitalize on key elements in Leary and Kowalski’s (1990) self-presentation model in an effort to ensure that the manipulation was effective. Situational determinants to induce impression motivation were provided in the forms of goal relevance and multiple, familiar targets (Leary & Kowalski, 1990; Leary, 1996; Leary et al., 2011; Martin Ginis et al., 2007). Goal relevance included publicity (i.e., the coach and NCAA governing body would view the runners’ mental questionnaire scores), dependency (i.e., runners depended on the coach and NCAA governing body to achieve goals), and goal value (e.g., being selected for varsity/travel teams and/or higher-level competitions). Though participating in the same sport at the same collegiate level, different individuals may have different goals. For example, some may be more concerned about being selected for nationals or keeping a scholarship; being selected for the school’s varsity team may be considered a foregone conclusion. Others may aim to be selected for varsity team or for a travel team to desirable locations. The passage incorporated the various goals to ensure the element of goal value was met for all participants.
Situational determinants for image construction were also provided in the passage in the forms of desired identity images (i.e., high scores on mental questionnaires) and target’s values (i.e., coaches and NCAA governing bodies favorably perceive those with high scores on mental questionnaires). In this way, participants in the High and Prototype groups were exposed to increased impression motivation, and they were provided with one, singular desired image—that of a runner with a higher “Mental” score—to construct, thereby standardizing the impression construction cue.

Participants in the Control group read a generic passage (see Appendix G), regarding the history of the formation of collegiate sport governing bodies. The passage read by Control group participants was similar in length to the passage read by participants in the High and Prototype groups. Participants in the Control group marked answers on the SMTQ and RPII under the impression that their results would only be viewed by the researchers.

After marking answers on the SMTQ, participants in all three groups completed a worksheet directing them to calculate their SMTQ scores (Appendix H). Participants in the Prototype group received the same worksheet, but the worksheet additionally contained the false information that the average score of the most successful distance runners on the SMTQ is 50. This information constituted minor deception; the average score of the most successful runners is unknown to this researcher. This second manipulation, presented only to participants assigned to the Prototype group, was intended to provide an image construction situational determinant (i.e., role constraints) in the form of prototype information (i.e., a score of 50 out of 56 on the mental toughness questionnaire).

A manipulation check consisted of five items (see Appendix I). Question 1 assessed whether members of the Prototype group read the information on the calculation worksheet.
(Appendix H) indicating that most successful runners score a 50 on the SMTQ. Question 2 asked for information provided only in the passage given to the Control group. Though some participants may have prior knowledge about the history of collegiate sport governing bodies, the number of correct answers given by participants in the High and Prototype groups was expected to be less than that of the participants in the Control group. Question 3 was a distractor item regarding frequency of barefoot running; it was not included in the data analysis. The responses to questions 4 and 5 indicated whether the participants in the High and Prototype groups read and understood the concepts presented in the passage related to the creation of composite mental scores and how coaches’ knowledge of those scores may affect the runners. The post-manipulation variable measurements (i.e., SMTQ and RPII Tough scale) were given immediately following the manipulation so that the manipulation’s salience was not affected. Therefore, the manipulation check was presented after the SMTQ and RPII Tough scale.

2.5 Procedure

Approval for the current study was obtained from the Human Subjects Committee (H.S.C.) of the Institutional Review Board at Florida State University. I sent emails to coaches to inform them of the nature of the study and request assistance in posting flyers for collegiate runners to view. After the initial contact, I coordinated dates, times and locations I could meet with runners who expressed interest in participating in the study. Three sessions were offered on three dates (April 30, 2013; May 2, 2013; July 23, 2013) at three locations in the southeastern United States.

Runners met with me at the appointed dates/times/venues in group settings. I informed them that participation was voluntary and anonymous, and that they could end participation at any time. I explained that, if they participated, they would read a passage, fill out questionnaires,
and calculate a score for one of the questionnaires. I also stated they could ask questions and get my assistance in calculating scores at any time. I gave verbal and written instructions indicating that, upon receiving a study packet, participants were to direct questions and comments to me and out of earshot of other participants. This was done in order to eliminate interactions between individual participants and prevent overheard comments from affecting other participants’ results. All runners indicated they were still interested in participating.

Runners of each gender were randomly assigned to one of three groups (Control, High, Prototype) and given a packet containing the applicable materials. They read and completed an informed consent form (Appendix J), as required by the H.S.C. One runner discontinued participation at this point due to ineligibility as he only trained for distances less than the 1,500 meter event. The remaining participants completed a demographic questionnaire, revised SPSQ, and MCSD Form A, and then read the passage assigned to them. Participants in all groups then completed the SMTQ, calculated their SMTQ scores on the provided worksheet, and completed the RPII Tough scale. Upon completion of those items, participants were given the manipulation check items. After manipulation check items were collected, participants were debriefed about the purpose of the study and the minor deception used (Appendix K) and again given the opportunity to ask questions. All were asked to sign a Statement of Consent to indicate they permitted use of their results after learning of the minor deception (Appendix L). All were given a sheet of paper containing contact information for me, my supervisor, and the H.S.C. (Appendix L) so they could ask questions or express concerns about the study. Each participant took from approximately 17 to 45 minutes.
2.6 Data Analyses

Data analyses for this study were performed in several stages. First, manipulation check items were examined to see if participants in the High and Prototype groups read and understood the manipulations. Second, data were inspected for outliers and missing values. After outliers were removed, the missing values for age, college year, and number of years competed were substituted with the group mean value on these items; missing values for 5km times were substituted with the group’s gender mean (Kline, 2011). After screening data, assumptions for MANOVAs (i.e., cell size-to-dependent variable ratio, linearity, multicollinearity, normality, homogeneity of covariance/variances) and ANOVAs (i.e., independence, normality, homogeneity of variance) for the below tests were evaluated.

The next stage of data analyses concerned the hypotheses. As discussed above, two conceptual hypotheses were formed. Hypothesis 1 indicated that athletes with higher situational self-presentational concerns about mental toughness would attempt to project a more mentally-tough image than athletes not exposed to heightened situational self-presentational concern, after controlling for age, gender, competitive level, dispositional self-presentational concern and social desirability. To project a more mentally-tough image, athletes would express higher levels of mental toughness and tough attitude toward training through pain and injury. This hypothesis was operationalized in the following manner.

Expression of mental toughness:

1a) The mean SMTQ score of the runners in the High group was predicted to be significantly higher than that of the Control group.

1b) The mean SMTQ score of the Prototype group was predicted to be significantly higher than that of the Control group.
Expression of tough attitude toward training through pain and injury:

1c) The mean RPII score of the High group was predicted to be significantly higher than that of the Control group.

1d) The mean RPII score of the Prototype group was predicted to be significantly higher than that of the Control group.

Hypothesis 2 indicated that the athletes in situations inducing high self-presentational concern would engage in behavior that conforms to the successful prototype of that sport. This hypothesis was operationalized as follows, again controlling for age, gender, competitive level, dispositional self-presentational concern and social desirability:

2a) The mean SMTQ score of the Prototype group was predicted to be significantly closer to 50 than the other groups.

2b) The mean RPII scores of the High and Prototype groups were predicted to not differ significantly because no distinct prototype for the RPII was provided.

Given the need to control for age, gender, competitive level, dispositional self-presentational concern, and social desirability, the next set of tests was conducted to assess equivalence across groups on these pre-manipulation variables. To do so, means and standard deviations of pre-manipulation variables were obtained for each of the groups (Control, High, and Prototype). Chi-square tests were used to examine the difference among groups for gender and college year. To assess dispositional self-presentational concern, a one-way MANOVA was performed with level of situational self-presentational concern (Control, High, Prototype) as the Independent Variable (IV) and revised SPSQ subscales (Fatigue, Appearance, Competence, Composure) as the Dependent Variables (DVs); four, follow-up ANOVAs were performed with level of situational self-presentational concern as the IV and each SPSQ subscale as the DV. The
equivalence across groups of the other pre-manipulation variables (age, competitive level indicators, social desirability) were assessed via ANOVAs with level of situational self-presentational concern as the IV and the respective measurements as the DV.

The final set of tests was conducted to assess the hypotheses in relation to the post-manipulation variables, SMTQ and RPII. Descriptive statistics of the post-manipulation variables were obtained. The tests of hypotheses 1a and 1b started with a 2 X 3 factorial MANOVA. The IVs were gender and level of situational self-presentational concern (Control, High, Prototype); the DVs were the SMTQ subscales (Confidence, Control, Constancy). Follow-up ANOVAs were completed to reveal which group(s) were significantly different from the other group(s). The follow-up tests consisted of three, 2 X 3 factorial ANOVAs; the IVs were gender and level of situational self-presentational concern, while each of the three SMTQ subscales served as a DV for each test. The main effects for gender and manipulation, as well as the interaction of gender and manipulation, were examined for each MANOVA and ANOVA. Post hoc Tukey tests were conducted when significant findings were observed from ANOVA results. Hypotheses 1c and 1d were tested via a two-way ANOVA with gender and level of situational self-presentational concern as the IVs, and the RPII Tough scale score as the DV.

To examine hypothesis 2a, the differences between individuals’ SMTQ scores and 50 (the prototype score) were computed; the mean difference from 50 of each group was then calculated. The mean difference from 50 of each group (Control, High, Prototype) was compared via an ANOVA, with level of situational self-presentational concern as the IV, and mean difference from 50 as the DV. For hypothesis 2b, the ANOVA conducted previously to test hypotheses 1c and 1d was used to compare the RPII scores of the High and Prototype groups.
Effect sizes, including Cohen’s $d$ and partial eta squared ($\eta_p^2$), were calculated for variables when appropriate. Cohen’s $d$ is the difference between two sample means divided by the pooled standard deviation. A Cohen’s $d$ value of around .2 or less is considered a small effect size, around .5 is considered a medium effect size, and .8 or over is considered a large effect size (Cohen, 1988). Partial eta squared is the proportion of variability in the DV which can be attributed to the IV, with .01 regarded as a small effect, .06 a moderate effect, and .14 a large effect (Cohen, 1988). For a more thorough review of effect sizes and their interpretation, see Cohen (1992). For all inferential statistics, statistical differences were regarded as statistically significant at the $p < .05$ level unless otherwise stated.
CHAPTER THREE
RESULTS

3.1 Manipulation Check

The manipulation check items (Appendix I) assessed whether participants read the passages and instructions. Question 1 assessed whether members of the Prototype group read the information on the calculation worksheet (Appendix H) indicating that most successful runners score a 50 on the SMTQ. One Prototype group participant answered this item incorrectly; this case was deleted. Only 1 participant of the Control group answered this item correctly, and 66% of High group participants answered it correctly. Question 2 asked for information provided only in the passage given to the Control group. The number of correct answers given by the High and Prototype participants was expected to be less than that of the Control group. Indeed, 91% of the participants in the Control Group marked it correctly compared to 54% of the participants in the High group and 62% of the participants in the Prototype group. The responses to questions 4 and 5 indicated whether participants in the High and Prototype groups read and understood the concepts presented in the passage. One participant in the High group answered both of these items incorrectly; therefore, this case was deleted.

3.2 Outliers and Missing Values

Data were examined for outliers. One case was removed because the runner’s times were outliers, i.e., standardized and studentized residuals were greater than 3 (Cohen, Cohen, West, & Aiken, 2003). As a result of the three exclusions (two due to manipulation check, one due to 5km outlier), the number of cases included in the analysis was reduced to 67.

One participant in the Control group did not provide complete demographic information pertaining to age, year in college, number of years competed, and personal records; another
participant in the Control group did not provide age and year in college. Most runners ($n = 61$) reported personal records for the 5 kilometer distance. Of the 22 participants in the Control group, 3 males did not; of the 24 participants in the High group, 2 males did not; and of the 21 participants in the Prototype group, 1 male did not. The missing values were substituted with the mean value of each group (per gender, in the case of missing 5km times) in order to compare the competitive level of each group.

3.3 Equivalence across Groups of Pre-manipulation Variables

Because gender, age, competitive level, dispositional self-presentational concern and social desirability can impact measurements involving situational self-presentational concern and mental toughness, design methods were used to control these potential covariates. This stage of analysis was used to determine if the research design effectively ensured equivalence across groups on these factors.

Though random stratified allocation of gender was attempted, the balance of gender across groups was affected by the participation of more males than females in the study, and by the exclusion of cases after data screening. Thus, the Prototype group contained a higher proportion of females (52%) than the High (42%) and Control (45%) groups. The results of a Chi-square test revealed the groups did not significantly differ in regards to proportion of genders assigned, $\chi^2 = .526$, $p = .769$. The means, standard deviations, and results of the Chi-square and ANOVA tests of the other pre-manipulation variables related to age, competitive level, dispositional self-presentational concern, and social desirability are presented in Table 3.
Table 3

**Means, Standard Deviations and Results of ANOVA/Chi-Square Tests for Pre-manipulation Variables by Level of Situational Self-Presentational Concern (Control, High, Prototype)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Range</th>
<th>Control</th>
<th>(M) (SD)</th>
<th>High</th>
<th>(M) (SD)</th>
<th>Prototype</th>
<th>(M) (SD)</th>
<th>Total</th>
<th>(M) (SD)</th>
<th>df1,df2</th>
<th>F / $\chi^2$</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>18 - 24</td>
<td>20</td>
<td>(1.54)</td>
<td>20.5</td>
<td>(1.41)</td>
<td>19.29</td>
<td>(1.27)</td>
<td>19.96</td>
<td>(1.48)</td>
<td>2.64</td>
<td>4.136</td>
<td>.02*</td>
</tr>
<tr>
<td>College Year</td>
<td>0 - 4</td>
<td>2.15</td>
<td>(1.24)</td>
<td>2.71</td>
<td>(1.08)</td>
<td>1.62</td>
<td>(1.36)</td>
<td>2.18</td>
<td>(1.29)</td>
<td>10</td>
<td>15.864</td>
<td>.104</td>
</tr>
<tr>
<td>Years Competed</td>
<td>3 - 14</td>
<td>6.57</td>
<td>(2.27)</td>
<td>6.75</td>
<td>(1.42)</td>
<td>5.81</td>
<td>(2.71)</td>
<td>6.39</td>
<td>(2.18)</td>
<td>2.63</td>
<td>1.154</td>
<td>.322</td>
</tr>
<tr>
<td>Female</td>
<td>16:45 - 20:44</td>
<td>18.22</td>
<td>(1.11)</td>
<td>18.38</td>
<td>(.59)</td>
<td>18.57</td>
<td>(.25)</td>
<td>18.40</td>
<td>(.55)</td>
<td>5.44</td>
<td>3.13</td>
<td>.081</td>
</tr>
<tr>
<td>Male</td>
<td>14:23 - 17:11</td>
<td>15.47</td>
<td>(45)</td>
<td>15.16</td>
<td>(29)</td>
<td>15.45</td>
<td>(41)</td>
<td>15.35</td>
<td>(37)</td>
<td>3.33</td>
<td>2.274</td>
<td>.119</td>
</tr>
<tr>
<td>FrequencyDPW</td>
<td>0 - 7</td>
<td>6.50</td>
<td>(51)</td>
<td>6.58</td>
<td>(50)</td>
<td>6.43</td>
<td>(.60)</td>
<td>6.51</td>
<td>(.53)</td>
<td>2.64</td>
<td>.468</td>
<td>.629</td>
</tr>
<tr>
<td>Frequency2PD</td>
<td>0 - 6</td>
<td>1.45</td>
<td>(1.65)</td>
<td>1.79</td>
<td>(1.35)</td>
<td>1.38</td>
<td>(1.40)</td>
<td>1.55</td>
<td>(1.46)</td>
<td>2.64</td>
<td>.509</td>
<td>.603</td>
</tr>
<tr>
<td>DurationLR</td>
<td>35 - 140</td>
<td>80.27</td>
<td>(19.69)</td>
<td>87.21</td>
<td>(12.76)</td>
<td>85.57</td>
<td>(16.87)</td>
<td>84.42</td>
<td>(16.59)</td>
<td>2.64</td>
<td>1.08</td>
<td>.346</td>
</tr>
<tr>
<td>DurationOR</td>
<td>35 - 70</td>
<td>49.64</td>
<td>(8.10)</td>
<td>53.63</td>
<td>(9.59)</td>
<td>52.48</td>
<td>(8.20)</td>
<td>51.96</td>
<td>(8.73)</td>
<td>2.64</td>
<td>1.263</td>
<td>.290</td>
</tr>
<tr>
<td>IntensityDPW</td>
<td>0 - 7</td>
<td>1.77</td>
<td>(.81)</td>
<td>1.88</td>
<td>(.68)</td>
<td>1.71</td>
<td>(.78)</td>
<td>1.79</td>
<td>(.75)</td>
<td>2.64</td>
<td>.261</td>
<td>.771</td>
</tr>
<tr>
<td>FrequencyNonRun</td>
<td>0 - 7</td>
<td>2.05</td>
<td>(1.65)</td>
<td>1.71</td>
<td>(1.49)</td>
<td>1.57</td>
<td>(1.08)</td>
<td>1.78</td>
<td>(1.42)</td>
<td>2.64</td>
<td>.631</td>
<td>.535</td>
</tr>
<tr>
<td>Dispositional Self-presentation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPSQ Fatigue</td>
<td>1 - 5</td>
<td>1.98</td>
<td>(.82)</td>
<td>1.89</td>
<td>(.87)</td>
<td>2.18</td>
<td>(.95)</td>
<td>2.01</td>
<td>(.87)</td>
<td>2.64</td>
<td>.645</td>
<td>.528</td>
</tr>
<tr>
<td>SPSQ Appearance</td>
<td>1 - 5</td>
<td>1.82</td>
<td>(.92)</td>
<td>2.03</td>
<td>(1.00)</td>
<td>1.82</td>
<td>(.97)</td>
<td>1.89</td>
<td>(.95)</td>
<td>2.64</td>
<td>.353</td>
<td>.704</td>
</tr>
<tr>
<td>SPSQ Competence</td>
<td>1 - 5</td>
<td>2.05</td>
<td>(.84)</td>
<td>2.47</td>
<td>(1.10)</td>
<td>2.69</td>
<td>(1.09)</td>
<td>2.40</td>
<td>(1.04)</td>
<td>2.64</td>
<td>.213</td>
<td>.121</td>
</tr>
<tr>
<td>SPSQ Composure</td>
<td>1 - 5</td>
<td>1.61</td>
<td>(.61)</td>
<td>1.82</td>
<td>(.84)</td>
<td>1.70</td>
<td>(.59)</td>
<td>1.71</td>
<td>(.69)</td>
<td>2.64</td>
<td>.539</td>
<td>.586</td>
</tr>
<tr>
<td>Social Desirability</td>
<td>1 - 11</td>
<td>6.14</td>
<td>(2.15)</td>
<td>5.46</td>
<td>(2.13)</td>
<td>5.29</td>
<td>(1.71)</td>
<td>5.63</td>
<td>(2.01)</td>
<td>2.64</td>
<td>1.092</td>
<td>.342</td>
</tr>
</tbody>
</table>

*Note.* College Year “0” indicated the runner was an incoming freshman that had completed high school and was committed to a collegiate team for the 2013 – 2014 year. College Year “4” indicated the runner was in a fourth year of college or had completed a fourth year of college within 3 months of participation in the study. Times for 5km are minutes and seconds, rounded to the nearest second. Frequency DPW was the average number of days per week runner reported running. Frequency2PD was the average number of days per week runner reported running twice in one day. DurationLR was the average number of minutes of the runner’s longest run of the week. DurationOR was the average number of minutes of the runner’s other runs during the week, excluding the longest run. IntensityDPW was the average number of days per week runner reported running at intensity levels over 90%. FrequencyNonRun was the average number of days per week runner reported participating in non-running training/conditioning. The SPSQ scale ranged from 1 (*never*) to 5 (*always*). Chi-square test was used for the variable college year; ANOVA tests were used for all other variables.
As shown in Table 3, age was the only pre-manipulation variable which differed significantly among groups. Per Sheard et al. (2009), the SMTQ has exhibited discriminant validity for age; a group with participants of ages 25 years and over had significantly higher scores than groups with ages ranging from 16 to 24 years. In the current study, the participants’ ages ranged from 18 to 24 years. Therefore, the significant difference of age detected among groups did not appear to be a factor that would impact the SMTQ scores.

To assess whether dispositional self-presentational concern differed significantly among groups, a MANOVA was conducted. The SPSQ subscales (Fatigue, Appearance, Competence, Composure) met the assumptions (i.e., cell size-to-dependent variable ratio, linearity, multicollinearity, normality, homogeneity of covariance/variances) to be the DVs for a MANOVA, with level of situational self-presentational concern (Control, High, Prototype) as the IV. The MANOVA revealed that there was no significant difference of the mean of the composite SPSQ subscales between groups, Wilks’ $\lambda = .811$, $F (8, 122) = 1.679$, $p < .110$, $\eta_p^2 = .099$. The ANOVAs for each subscale, as displayed in Table 3, also revealed no significant difference among groups. Overall, the results of the analyses conducted on pre-manipulation variables indicated that hypothesis testing could be conducted with results being attributed to the manipulations and/or factors other than an unequal distribution of gender, age, competitive level, dispositional self-presentational concern, or social desirability across groups.

### 3.4 Hypotheses Testing

The means and standard deviations of post-manipulation variables, expressions of toughness, are displayed in Table 4. As shown in Table 4, the mean SMTQ scores of the High and Prototype groups on all three subscales were higher descriptively than those of the Control group. Descriptively, Prototype’s mean SMTQ total raw score was closer to 50 than that of the
Control group, but was not closer to 50 than that of the High group. Likewise, the mean RPII scores of the High and Prototype groups were descriptively higher than that of the Control group.

Table 4

Means and Standard Deviations of Post-manipulation Variables, i.e., Sports Mental Toughness Questionnaire (SMTQ) Subscales (Confidence, Constancy, Control) Scores, SMTQ Total Raw Score, SMTQ Difference from 50, and Risk, Pain, Injury Items (RPII) Tough Scale Scores, by Level of Situational Self-Presentational Concern (Control, High, Prototype)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control (n = 22)</th>
<th>High (n = 24)</th>
<th>Prototype (n = 21)</th>
<th>Total (N = 67)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental Toughness SMTQ</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confidence</td>
<td>3.02 (.46)</td>
<td>3.44 (.44)</td>
<td>3.18 (.64)</td>
<td>3.22 (.54)</td>
</tr>
<tr>
<td>Constancy</td>
<td>3.51 (.42)</td>
<td>3.78 (.36)</td>
<td>3.67 (.32)</td>
<td>3.66 (.38)</td>
</tr>
<tr>
<td>Control</td>
<td>2.58 (.56)</td>
<td>2.73 (.73)</td>
<td>2.79 (.67)</td>
<td></td>
</tr>
<tr>
<td>Total (Raw)</td>
<td>42.65 (5.66)</td>
<td>48.09 (5.81)</td>
<td>44.36 (7.06)</td>
<td>45.04 (6.52)</td>
</tr>
<tr>
<td>Difference from 50</td>
<td>7.77 (5.35)</td>
<td>4.75 (3.62)</td>
<td>6.76 (4.38)</td>
<td>6.37 (4.60)</td>
</tr>
<tr>
<td>Attitude towards Risk, Pain, Injury RPII</td>
<td>2.19 (.43)</td>
<td>2.38 (.60)</td>
<td>2.39 (.49)</td>
<td>2.32 (.52)</td>
</tr>
</tbody>
</table>

Note. The SMTQ scale ranged from 1 (not at all) to 4 (very). The RPII scale ranged from 1 (strongly disagree) to 4 (strongly agree) with 11 items.

Hypothesis 1 was tested to infer whether different levels of situational self-presentational concern affect expressions of toughness. The results of the MANOVA and follow-up ANOVAs for testing this hypothesis are summarized in Table 5. As shown in Table 5, there was a significant main effect for manipulation of situational self-presentational concern for the SMTQ Confidence and SMTQ Control subscales. That is, 10.9% of variance of SMTQ Confidence score and 9.1% of variance of SMTQ Control score were accounted for by level of situational self-presentational concern. There was also a strong significant tendency for the manipulation to account for 8.9% of variance of SMTQ Constancy score.
Table 5

Results of MANOVA and ANOVA Tests for Sports Mental Toughness Questionnaire (SMTQ) Subscales (Confidence, Constancy, Control), and the Risk, Pain, Injury Items (RPII) Tough Scale by Manipulation of Level of Situational Self-presentational Concern (Control, High, Prototype), by Gender, and by Interaction of Manipulation and Gender

<table>
<thead>
<tr>
<th>Effect</th>
<th>Wilks' λ</th>
<th>F</th>
<th>(df1,df2)</th>
<th>p</th>
<th>η²</th>
</tr>
</thead>
<tbody>
<tr>
<td>MANOVA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Manipulation</td>
<td>.862</td>
<td>1.518</td>
<td>(6, 118)</td>
<td>.178</td>
<td>.072</td>
</tr>
<tr>
<td>B. Gender</td>
<td>.994</td>
<td>.117</td>
<td>(3, 59)</td>
<td>.95</td>
<td>.006</td>
</tr>
<tr>
<td>C. Manipulation x Gender</td>
<td>.796</td>
<td>2.37</td>
<td>(6, 118)</td>
<td>.034*</td>
<td>.108</td>
</tr>
<tr>
<td>ANOVA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. SMTQ Confidence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Manipulation</td>
<td>-</td>
<td>3.917</td>
<td>(2, 64)</td>
<td>.025*</td>
<td>.109</td>
</tr>
<tr>
<td>B. Gender</td>
<td>-</td>
<td>.002</td>
<td>(1, 65)</td>
<td>.962</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>C. Manipulation x Gender</td>
<td>-</td>
<td>1.27</td>
<td>(2, 61)</td>
<td>.288</td>
<td>.04</td>
</tr>
<tr>
<td>2. SMTQ Constancy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Manipulation</td>
<td>-</td>
<td>3.108</td>
<td>(2, 64)</td>
<td>.052</td>
<td>.089</td>
</tr>
<tr>
<td>B. Gender</td>
<td>-</td>
<td>.005</td>
<td>(1, 65)</td>
<td>.945</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>C. Manipulation x Gender</td>
<td>-</td>
<td>.465</td>
<td>(2, 61)</td>
<td>.630</td>
<td>.02</td>
</tr>
<tr>
<td>3. SMTQ Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Manipulation</td>
<td>-</td>
<td>3.189</td>
<td>(2, 64)</td>
<td>.048*</td>
<td>.091</td>
</tr>
<tr>
<td>B. Gender</td>
<td>-</td>
<td>.253</td>
<td>(1, 65)</td>
<td>.617</td>
<td>.004</td>
</tr>
<tr>
<td>C. Manipulation x Gender</td>
<td>-</td>
<td>.952</td>
<td>(2, 61)</td>
<td>.392</td>
<td>.03</td>
</tr>
<tr>
<td>4. RPII</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Manipulation</td>
<td>-</td>
<td>1.081</td>
<td>(2, 64)</td>
<td>.345</td>
<td>.033</td>
</tr>
<tr>
<td>B. Gender</td>
<td>-</td>
<td>1.133</td>
<td>(1, 65)</td>
<td>.291</td>
<td>.17</td>
</tr>
<tr>
<td>C. Manipulation x Gender</td>
<td>-</td>
<td>.1754</td>
<td>(2, 61)</td>
<td>.182</td>
<td>.054</td>
</tr>
</tbody>
</table>

* p < .05

Post-hoc Tukey tests were conducted to examine group differences on the SMTQ subscales. The results are displayed in Table 6.
Table 6

*Cohen’s d Values for Sports Mental Toughness Questionnaire (SMTQ) Subscales (Confidence, Constancy, Control) between Levels of Situational Self-presentational Concern (Control, High, Prototype)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control : High</th>
<th>Control : Prototype</th>
<th>High : Prototype</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMTQ Confidence</td>
<td>(d = .82^*)</td>
<td>(d = .31)</td>
<td>(d = .51)</td>
</tr>
<tr>
<td>SMTQ Constancy</td>
<td>(d = .73)</td>
<td>(d = .42)</td>
<td>(d = .31)</td>
</tr>
<tr>
<td>SMTQ Control</td>
<td>(d = .73^*)</td>
<td>(d = .23)</td>
<td>(d = .50)</td>
</tr>
</tbody>
</table>

*\(p < .05\)

Per hypothesis 1a, the mean SMTQ score of the participants in the High group was predicted to be significantly higher than that of participants in the Control group, and, per hypothesis 1b, the mean SMTQ score of the Prototype group was predicted to be significantly higher than that of the Control group. The results in Table 6 support hypothesis 1a, in that the High group’s mean SMTQ Control score was inferred to be significantly higher than that of the Control group. Prototype group’s mean SMTQ Control score was not significantly different from High group, and the Control group’s mean was not significantly different from Prototype, thereby weakening support for Hypothesis 1b.

The pattern of SMTQ subscale scores across groups is visible in Figure 2. As shown in Figure 2, the mean scores of participants in the Control group were lowest on all three SMTQ subscales, whereas the mean scores of participants in the Prototype group were next highest on all three subscales, and the mean scores of participants in the High group were highest on all three subscales. Though the mean scores of the Prototype group participants were not significantly higher than those of the Control group participants per results in Table 6, the consistent pattern displayed in Figure 2 indicates some support for hypothesis 1.
After main effect for manipulation of situational self-presenterational concern was scrutinized, the main effect for gender on the SMTQ subscales was examined because the SMTQ has been shown to have discriminant validity for gender. As shown in Table 5, it was not found to be significant. However, the MANOVA, in which gender and manipulation of situational self-presentational concern were the IVs and the subscales of the SMTQ were the DVs, revealed a significant interaction, also shown in Table 5. Though the interactions of gender and manipulation were not found to be significant for each of the SMTQ subscales, details of these interactions are presented in Figure 3. As shown in Figure 3, females in the High and Prototype groups scored higher than females in the Control group on the SMTQ subscales, with one exception: the mean score of females in the Prototype group on the SMTQ Confidence subscale was lower than females in the Control group. Males in the High and Prototype groups also generally scored higher than males in the Control group on the SMTQ subscales, with one exception: the mean score of males in the Prototype group on the SMTQ Control subscale was
lower than males in the Control group. Therefore, though the interaction of manipulation and gender was not found to be significant, Figure 3 shows some descriptive support for hypothesis 1a and 1b, with the two exceptions noted.

Figure 3. Mean scores of runners on the Sports Mental Toughness Questionnaire (SMTQ) subscales, Confidence (top), Constancy (Middle), Control (Bottom), with interaction of gender (Females $n = 31$, Males $n = 36$) and level of situational self-presentational concern (Control, High, Prototype) for each subscale.
Figure 3 also revealed some medium effect sizes in the interaction of manipulation and gender. Females in the Control and High groups scored higher than males on the SMTQ Confidence subscale, but the females in the Prototype group scored lower than males in the Prototype group, with a medium effect size. Likewise, females in the High and Prototype groups scored higher than males on the SMTQ Control subscale, but females in the Control group scored lower than males in the Control group, with a medium effect size.

Hypotheses 1c and 1d involved analyses of RPII scores. The mean RPII score of the High group was predicted to be significantly higher than that of the Control group (hypothesis 1c) and the mean RPII score of the Prototype group was predicted to be significantly higher than that of the Control group (hypothesis 1d). As shown in Table 4, the mean scores of participants in the High and Prototype groups were descriptively higher than the mean score of participants in the Control group. However, as shown in Table 5, the ANOVAs yielded no significant effects on RPII score by manipulation, gender, nor interaction of the two. Thus, hypotheses 1c and 1d were not supported by these data.

Hypothesis 2 indicated that the athletes in situations inducing high self-presentational concern would engage in behavior that conforms to the successful prototype of that sport. Per hypothesis 2a, the mean SMTQ total raw score of the Prototype group was predicted to be significantly closer to 50, the provided prototype score, than the other groups. A visual examination of SMTQ total raw scores in Table 4 revealed the High group’s score ($M = 48.09$, $SD = 5.66$) was closer to 50 than that of the Prototype ($M = 44.36$, $SD = 7.06$) and Control ($M = 42.65$, $SD = 7.06$) groups. To test hypothesis 2a, the differences of individuals’ SMTQ scores from 50 were computed, as shown in Table 4. The mean difference from 50 for each group was compared via an ANOVA, with group as the IV, and mean difference from 50 as the DV. There
were no significant differences between groups, $F (2, 64) = 2.724, p < .073, \eta^2_p = .078$. Thus, hypothesis 2a was not supported.

In regards to hypothesis 2b, the mean RPII scores of the High and Prototype groups were predicted to not differ significantly because no distinct prototype for the RPII was provided. The ANOVA conducted to test hypothesis 1c and 1d (see Table 5, RPII) was used to compare the DV, RPII scores, of the High and Prototype groups. As hypothesized, the mean RPII Total scores of the High and Prototype groups did not differ significantly, supporting hypothesis 2b.
CHAPTER FOUR

DISCUSSION

Situational self-presentational concern has been studied in relation to effort (Hardy et al., 1986; Leary, 1992; Leary, 1996; Leary & Kowalski, 1990; Maddison & Prapavessis, 2005; Rejeski & Lowe, 1980; Tenenbaum et al., 2005; Worthingham & Messick, 1983), anxiety and performance (Howle, 2012; Martin Ginis et al., 2007; McGowan et al., 2008; Mesagno et al., 2011; Mesagno et al., 2012; Wilson & Eklund, 1998) and health-damaging behaviors such as eating disorders, steroid use, excessive exercise, and failure to wear safety equipment (Martin Ginis & Leary, 2004; Martin Ginis et al., 2007; Miller, 2008). Though situational self-presentational concern has been shown to have a relationship with these variables, the mechanism is relatively unknown. By manipulating situational self-presentational concern in accordance with Leary and Kowalski’s (1990) self-presentation model, the current study examined impression motivation and impression construction as the mechanisms between situational self-presentational concern and expressions of toughness that may be related to injury.

Impression motivation was raised by providing situational determinants (i.e., goal relevance, valued goals) in the passage and instructions read by runners in the experimental groups (Leary, 1996; Leary & Kowalski, 1990; Martin Ginis, Lindwall & Prapavessis, 2007). Situational determinants for image construction (i.e., desired identity images, target’s values) were also provided in the passage. For participants in the Prototype group, an additional situational determinant (i.e., role constraints) of impression construction was provided in the form of prototype information.

If impression motivation and construction were indeed the mechanisms of behavioral effects of situational self-presentational concerns, then it was hypothesized that runners exposed
to increased situational self-presentational concerns about mental toughness would project a more mentally-tough image than runners who were not. That is, they would express more toughness by marking answers yielding higher scores on questionnaires related to mental toughness and tough attitude toward training through pain and injury. Similarly, it was hypothesized that runners exposed to increased situational self-presentational concerns would engage in behavior that conformed to the successful prototype of that sport. That is, when given the prototype information that successful runners score 50 on the mental toughness questionnaire, runners would be more apt to mark answers yielding a score of 50 than runners not given the prototype information.

In relation to the first hypothesis, the results indicated that the manipulation of situational self-presentational concern was successful to some degree in regards to mental toughness, but not in regards to tough attitude toward training through pain and injury. Results for the second hypothesis, tested via the prototype manipulation, also differed in respect to these two forms of expression of toughness. Analysis of these findings and future research directions are discussed below.

4.1 Expressions of Toughness

4.1.1 Mental Toughness

Manipulation of situational self-presentational concerns significantly accounted for some variance on the mental toughness subscales Confidence (10.9%) and Control (8.9%), with medium effect sizes. The scores of participants in the High group were found to be significantly higher than those of participants in the Control group on both subscales, with large and medium effect sizes, respectively. Thus, when impression motivation is increased, and high mental toughness is the desired image, runners appear more likely to respond with a behavior, such as
marking answers on questionnaires, to make themselves appear to possess a high level of mental toughness (Sznycer, 2010).

Participants in the Prototype group were exposed to the same manipulation of situational self-presentational concern as participants in the High group. The expression of mental toughness by the participants in the Prototype group was consistently higher than that of the participants in the Control group who were not exposed to the manipulation of situational self-presentational concerns. The expression of mental toughness related to confidence by female participants in the Prototype group and the expression of mental toughness related to control by the male participants in the Prototype group may account for the lack of significant difference between the Prototype and Control groups. Though insignificant, some effect sizes were medium, suggesting that statistical power, perhaps gained via increased sample size, may be needed to examine this relationship more fully. The study’s sample size complied with the recommendation of the power analysis conducted prior to the study, but follow-up tests of 2x3 factorial MANOVA have generally been criticized for lack of power (Finch, 2007; Tabachnick & Fidell, 2007).

The prototype manipulation did not affect the expression of mental toughness as expected. To my knowledge, the prototype-matching process has not been studied in the sport context (Leary, 1996; Martin Ginis et al., 2007), so several recommendations for future studies stem from this finding. First, it may be of worth to study prototypes in relation to the self-presentation model (Leary & Kowalski, 1990). In the current study, only one of the two necessary components of self-presentation-based behavior related to the prototype was modified; that is, construction was modified (i.e., a prototype was provided), but motivation specific to that prototype was not. Only the general impression motivation was raised. If the prototype
information had been paired with information indicating the coaches and governing bodies specifically viewed runners who scored near a 50 more positively, participants in the Prototype group may been more apt to modify responses in order to make their scores be closer to 50. Thus, future studies of prototypes related to injury should incorporate both components in relation to the prototype information.

Further, future studies of the prototype-matching process can compare the difference in effects of generic prototypes, such as the one provided in this study (i.e., the score of successful runners), to prototypes and group norms (Carron et al., 2004) more specific to the participants (e.g., average score of varsity runners on a participant’s team). Though freshman runners may know that running the 100-miles-per-week mileage of professional distance runners would be absurd, they may attempt to emulate the high training volume of senior runners on their team.

Finally, future studies of the prototype-matching process should be structured to prevent the anchoring effect if numerical prototypes are provided. The anchoring effect is “the disproportionate influence on decision makers to make judgments that are biased toward an initially presented value” and has been shown to occur across a vast range of human decision-making processes (Furnham & Boo, 2011, p. 35). In the current study, participants in the Prototype group were informed that the most successful runners scored 50; participants in all three groups were informed that the highest possible score on the mental toughness questionnaire was 56. Thus, participants in the Prototype group received an “initially presented value” of 50 whereas participants in the High group received an anchor of 56. A participant in the Prototype group may have judged, for example, a score of 45 to be sufficiently near the anchor 50. A participant assigned to the High group may have judged 45 not to be sufficiently near the anchor.
56 and may have been more prone to change responses to achieve, for example, a score of 48. Thus the anchoring effect may affect findings and should be considered in future studies.

4.1.2 Tough Attitude toward Training through Pain and Injury

The manipulation of situational self-presentational concerns did not appear to impact expressions of toughness related to training through pain and injury. A principle of self-presentation is that “Self-presentations are tailored to the perceived values and preferences of the target” (Leary, 1996, p. 92). The lack of results with the RPII hints that behaviors of training through pain and injury are not perceived by runners to be in alignment with the values of their coaches and the NCAA governing bodies. Though much research has indicated the ‘train through pain’ sport ethic could be responsible for many health-damaging behaviors, this version of the ethic may not be as relevant to runners (Hughes & Coakley, 1991; Miller, 2008; Nixon, 1996). Thus, future studies may aim to address targets’ values related to mental toughness and effort (Hardy et al., 1986; Leary, 1992; Leary, 1996; Leary & Kowalski, 1990; Maddison & Prapavessis, 2005; Rejeski & Lowe, 1980; Tenenbaum et al., 2005; Worringham & Messick, 1983) as these values, rather than value of training through pain and injury, may be behind runners’ inappropriate training volume and intensity.

However, this interpretation must be made with caution. One must also consider that even though coaches and/or runners may not endorse an attitude of training through pain and injury, runners do train despite pain and injury, as evidenced by the occurrence of chronic injuries (Ekenman et al., 2001; Stephan et al., 2009; Wilder & Sethi, 2004). There are several explanations for this potential discrepancy between expressed attitude and behavior. First, as Leary (1996) explained, a reason “people sometimes engage in self-presentational behaviors nonconsciously is that they are simply not consciously aware of the stimuli that are causing their
behaviors” (Leary, 1996, p. 61). Though runners’ coaches may explicitly indicate disapproval of training through pain, they may render tacit approval by, for example, praising runners who get through a tough workout despite apparent difficulty or suffering.

Another explanation for the possible discrepancy between expressed attitude and behavior is that people “modify or construe their attitude statements in a single domain depending on the attitude position of the audience” (Leary, 1996, p. 20). Thus, runners may not express support of training through pain and injury in accordance with a coach’s expressed attitude against it, but they may exhibit those behaviors. In this study, the attitude statements may also have been influenced by what Leary (1996) termed, “the multiple audience problem” (p.109). Essentially, participants had two audiences: a sport psychology researcher, who they knew would view the scores, and a coach, who they only had to imagine would view the scores. Participants may have been influenced to express the attitude more in alignment with what they suspected the sport psychology researcher’s values to be.

In situations of heightened self-presentational concerns, runners may choose an image of toughness, then choose the behavior of marking responses on the questionnaires which disavows support for training through pain and injury, yet also choose to engage in the behavior of training at high intensity despite nagging knee pain (Leary & Allen, 2011; Leary et al., 2011). Altogether, the results regarding expressions of attitude toward training through pain and injury illustrate the need for future studies involving impression construction to separately examine the two components of choosing—whether consciously or not—a desired image, and choosing the behaviors used to display that image.
4.2 Strengths and Limitations

Per the recommendations of Martin Ginis, Lindwall, and Prapavessis (2007), this study incorporated an experimental design, a sample of competitive athletes, and was conceptually based on Leary and Kowalski’s (1990) model. The control of known covariates allowed for an examination of the causal mechanisms between situational self-presentational concerns and effects. Another strength was the treatment of dispositional and situational self-presentational concerns as separate entities which has not been addressed in many studies (Gammage & Gabriel, 2009; Leary, 1996; Leary & Kowalski, 1990; Martin et al., 2001; Martin Ginis et al., 2007).

There were strengths and limitations pertaining to the two manipulations in the study. The manipulations’ usage of impression motivation and construction components enabled effects to be attributed to situational determinants rather than a general increase in levels of situational self-presentational concerns. The manipulation also included some naturalistic elements recommended by Leary et al. (2011, i.e., goal relevance, familiar and multiple targets, imagined audiences) to increase impression motivation. However, the manipulation check endeavored only to make sure the participants understood the passage, and whether the Prototype group participants knew what the prototype was. An actual measure of impression motivation would have confirmed motivation was raised. The prototype manipulation initiated study of the prototype-matching process which to my knowledge has not been studied previously in the sport context. The prototype manipulation may have been strengthened by making the prototype more specific to the participants, providing more detailed information about it, presenting it prior to the behavioral response, making it resistant to the anchoring effect, and ensuring that impression motivation specific to the prototype was raised.
By selecting impression construction images related to mental toughness and tough attitude toward training through pain and injury, the study forms a novel foundation for studying a possible link between self-presentational concerns and chronic injury in sport. To my knowledge, this has not been studied. The selection of the SMTQ and RPII instruments was intended as a means to see if participants marked responses different due to the manipulation, that is, to measure a difference in scores rather than to measure differences in the latent variable of toughness. Random assignment was intended to reduce or eliminate difference between groups on these latent variables, but a repeated measures design with a pre-manipulation measure of the latent variables, rather than covariates, would have strengthened the study.

Altogether, given this was an initial study of the possible linkage between self-presentational concern and behaviors related to chronic injury, the selection of manipulations and outcome measures was appropriate. However, future study may incorporate the measure of actual health-damaging behaviors directly linked to injury, with the caution that manipulations cannot be used that might actually cause injury-inducing behaviors.

4.3 Conclusion

The present study investigated the impact of situational self-presentational concerns on expressions of toughness in a sample of collegiate middle-distance and distance runners. The results provided support for hypothesis 1 in regards to mental toughness but not tough attitude toward training through pain and injury. The results did not fully support hypothesis 2 in regards to the prototype-matching process. The results suggest there is a possibility that increasing situational self-presentational concerns related to being perceived as mentally tough can lead athletes to behave differently in how they display their mental toughness. The study also
indicated that runners and/or their coaches may already stigmatize behaviors of training through injury.

Several routes of future study were identified. Future studies could concentrate on sport-specific target values of effort and mental toughness, rather than attitude toward training through pain and injury, and compare the effects of values held by different targets (e.g., coaches, teammates). Studies could also probe the nature of self-presentation behaviors that may unconsciously stem from these values. Additionally, the prototype-matching process needs to be more closely inspected in relation to self-presentation and injury. Other studies could center on the impression construction component of self-presentation, distinguishing between the processes of choosing an image and choosing behaviors to construct that image. In all instances, measures of impression motivation should be incorporated. Finally, study of the relationships between gender, self-presentational concerns, social desirability, mental toughness, training regimens, and chronic injury occurrences are recommended to extend the initial findings of this study.

In other areas, after self-presentation was identified as a basis of maladaptive behaviors, researchers turned their attention to self-presentationally driven interventions. For example, studies showed that peoples’ self-presentational concern with appearance contributed to excessive tanning (Martin Ginis & Leary, 2004). Interventions that emphasized how tanning can result in unattractiveness, addressing the underlying self-presentational concern about appearance, were more effective than interventions that emphasized how tanning can cause cancer, which addressed the health risk. Likewise, an intervention to prevent chronic injury may be more effective when it addresses self-presentational concerns. Expansion of the findings in this study could lead to the development of interventions to reduce chronic injury.
APPENDIX A

DEMOGRAPHIC INFORMATION

Thank you for agreeing to participate in this study. Please read the following guidance.

- If you have any questions as you continue through this study, please raise your hand and the researcher will come to you. The researcher may be able to answer your question, or the researcher may ask you to continue as best you can, unable to provide further information until you have completed the entire packet.
- If any other people are nearby, please attempt to speak quietly so that others may not overhear your comments.
- When you are finished with the materials in this part of the study, please raise your hand to let the researcher know. The researcher will then debrief you about the study.

As you answer questions:
- Try to respond to each item separately in your mind from other items.
- Choose answers thoughtfully, and make your answers as true for you as you can.
- Please answer every item.
- There are not “right” or “wrong” answers, so choose the most accurate answer for you—not what you think “most people” would say or do.

When you are ready, begin answering the following questions.

I am a Male Female

My age (in years) is 17 18 19 20 21 22 23 24 Other______

I am a Freshman Sophomore Junior Senior Other

My best competitive times (personal records) in minutes:seconds are:
1,500m_______3km_______5km_______6km_______8km_______10km_______
Other distances/personal records: __________________________

I have competed in track/cross country for approximately this many years:
1 2 3 4 5 6 7 Other______

I am on a team which is governed by the following organization (circle one):
NCAA (National Collegiate Athletic Association)
NAIA (National Association of Intercollegiate Athletics)
NJCAA (National Junior College Athletic Association)
IOC (International Olympics Committee)
Please base answers to the following questions on training for distance running for the last two months. If you have been injured/unable to run consistently in the last two months, use the two-month period prior to your injury/non-participation.

**How many days per week do you run on average?**
0 1 2 3 4 5 6 7

**How many times a week on average do you run more than once a day?**
0 1 2 3 4 5 6 7

**What is the average duration of your longest run each week (in minutes)?** Note: If you only know the duration in miles, please multiply the number of miles by the minute/mile pace you believe you average on long runs; for example, if you average 10 miles at 8:00 minutes per mile, then your answer would be 80 minutes.

__________

**Not including your longest run of the week, what is the average duration of training runs (in minutes)?**

__________

**What is the average number of days/week that intensity of running exceeds 90% effort?**
0 1 2 3 4 5 6 7

**How long (in months) has this routine been maintained?_____**

**What additional types of training do you regularly do?**
Weights  Swimming  Cycling  Aquajogging  Other aerobic  _________Other_________

**What is the average number of days per week you engage in these additional training activities other than running?**
0 1 2 3 4 5 6 7

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APPENDIX B

REVISED SELF-PRESENTATION IN SPORT QUESTIONNAIRE (SPSQ)

Please circle one number for each of the following statements that best indicates your agreement/disagreement with the statement in relation to your involvement with distance running.

1. I worry that other people involved in my sport will perceive me as appearing exhausted.
   
   Never          Always
   
   1 2 3 4 5

2. I worry that other people involved in my sport will perceive me as appearing flabby.
   
   Never          Always
   
   1 2 3 4 5

3. I worry that other people involved in my sport will perceive me as appearing untalented.
   
   Never          Always
   
   1 2 3 4 5

4. I worry that other people involved in my sport will perceive me as appearing fatigued.
   
   Never          Always
   
   1 2 3 4 5

5. I worry that other people involved in my sport will perceive me as appearing physically untoned.
   
   Never          Always
   
   1 2 3 4 5

6. I worry that other people involved in my sport will perceive me as appearing athletically incompetent.
   
   Never          Always
   
   1 2 3 4 5

7. I worry that other people involved in my sport will perceive me as appearing tired.
   
   Never          Always
   
   1 2 3 4 5

8. I worry that other people involved in my sport will perceive me as appearing ugly or unpleasant in my uniform.
   
   Never          Always
   
   1 2 3 4 5
9. I worry that other people involved in my sport will perceive me appearing physically unattractive.
   1 2 3 4 5
   Never Always

10. I worry that other people involved in my sport will perceive me as appearing underskilled.
    1 2 3 4 5
    Never Always

11. I worry that other people involved in my sport will perceive me as appearing to lose composure.
    1 2 3 4 5
    Never Always

12. I worry that other people involved in my sport will perceive me as appearing too small or too big in my uniform.
    1 2 3 4 5
    Never Always

13. I worry that other people involved in my sport will perceive me as appearing not to perform or execute perfectly.
    1 2 3 4 5
    Never Always

14. I worry that other people involved in my sport will perceive me as appearing distressed.
    1 2 3 4 5
    Never Always

15. I worry that other people involved in my sport will perceive me as appearing to lack ability.
    1 2 3 4 5
    Never Always

16. I worry that other people involved in my sport will perceive me as appearing to lack energy.
    1 2 3 4 5
    Never Always

17. I worry that other people involved in my sport will perceive me as appearing unqualified.
    1 2 3 4 5
    Never Always

18. I worry that other people involved in my sport will perceive me as appearing unfocused.
    1 2 3 4 5
    Never Always
19. I worry that other people involved in my sport will perceive me as appearing underactivated.
   1 2 3 4 5
   Never  Always

20. I worry that other people involved in my sport will perceive me as appearing nervous under pressure.
   1 2 3 4 5
   Never  Always

21. I worry that other people involved in my sport will perceive me as appearing to lack necessary focus.
   1 2 3 4 5
   Never  Always
APPENDIX C

MARLOWE-CROWNE SOCIAL DESIRABILITY (MCSD) FORM A

Please circle True or False for each of the below statements.

1. It is sometimes hard for me to go on with my work if I am not encouraged. True    False
2. I sometimes feel resentful when I don’t get my way. True   False
3. No matter who I’m talking to, I’m always a good listener. True   False
4. There have been occasions when I took advantage of someone. True   False
5. I’m always willing to admit it when I make a mistake. True   False
6. I sometimes try to get even rather than forgive and forget. True   False
7. I am always courteous, even to people who are disagreeable. True   False
8. I have never been irked when people expressed ideas very different from my own. True   False
9. There have been times when I was quite jealous of the good fortune of others. True   False
10. I am sometimes irritated by people who ask favors of me. True   False
11. I have never deliberately said something that hurt someone’s feelings. True   False
APPENDIX D

SPORTS MENTAL TOUGHNESS QUESTIONNAIRE (SMTQ)

Please indicate your agreement/disagreement with each statement below in relation to your involvement with distance running.

Please think about the passage. Mark your responses as if you believed your coach and governing body will view your responses and make decisions about you based on your responses. (These underlined instructions were only printed in packets given to High and Prototype group participants.)

1. I can regain my composure if I have momentarily lost it.
   1 2 3 4
   Not at all Very

2. I worry about performing poorly.
   1 2 3 4
   Not at all Very

3. I am committed to completing the tasks I have to do.
   1 2 3 4
   Not at all Very

4. I am overcome by self-doubt.
   1 2 3 4
   Not at all Very

5. I have an unshakeable confidence in my ability.
   1 2 3 4
   Not at all Very

6. I have what it takes to perform well while under pressure.
   1 2 3 4
   Not at all Very

7. I get angry and frustrated when things do not go my way.
   1 2 3 4
   Not at all Very

8. I give up in difficult situations.
   1 2 3 4
   Not at all Very
9. I get anxious by events I did not expect or cannot control.
   1 2 3 4
   Not at all       Very

10. I get distracted easily and lose my concentration.
    1 2 3 4
    Not at all       Very

11. I have qualities that set me apart from other competitors.
    1 2 3 4
    Not at all       Very

12. I take responsibility for setting myself challenging targets.
    1 2 3 4
    Not at all       Very

13. I interpret potential threats as positive opportunities.
    1 2 3 4
    Not at all       Very

14. Under pressure, I am able to make decisions with confidence and commitment.
    1 2 3 4
    Not at all       Very

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APPENDIX E

RISK, PAIN, AND INJURY ITEMS (RPII) TOUGH SCALE

Please indicate your agreement/disagreement with each statement below in relation to your involvement with distance running.

Please think about the passage. Mark your responses as if you believed your coach and governing body will view your responses and make decisions about you based on your responses. (These underlined instructions were only printed in packets given to High and Prototype group participants.)

1. No pain, no gain.
   
   1        2      3            4
   Strongly Disagree Disagree Agree Strongly Agree

2. Athletes who endure pain and play hurt deserve our respect.
   
   1        2      3            4
   Strongly Disagree Disagree Agree Strongly Agree

3. Serious athletes have to play with injuries and pain.
   
   1        2      3            4
   Strongly Disagree Disagree Agree Strongly Agree

4. Athletes who care about their team will try to play with injuries and pain.
   
   1        2      3            4
   Strongly Disagree Disagree Agree Strongly Agree

5. Athletes should “tough it out” with an injury or pain today and not worry about the effects tomorrow.
   
   1        2      3            4
   Strongly Disagree Disagree Agree Strongly Agree

6. Coaches only care about their players who are healthy and able to play.
   
   1        2      3            4
   Strongly Disagree Disagree Agree Strongly Agree

7. Every athlete should expect to have to play with an injury or pain sometimes.
   
   1        2      3            4
   Strongly Disagree Disagree Agree Strongly Agree

8. Athletes should ignore pain.
   
   1        2      3            4
   Strongly Disagree Disagree Agree Strongly Agree
9. Coaches are impressed with athletes who play with injuries and pain.

1  2  3  4
Strongly Disagree  Disagree  Agree  Strongly Agree

10. Playing with injuries and pain demonstrates character and courage.

1  2  3  4
Strongly Disagree  Disagree  Agree  Strongly Agree

11. In sport, winning is everything and losing is nothing.

1  2  3  4
Strongly Disagree  Disagree  Agree  Strongly Agree

You have completed this section of the study. Please turn this packet into the researcher.
The researcher will then give you five more items to complete, then conduct a debriefing.
APPENDIX F

PASSAGE FOR HIGH SP AND PROTOTYPE SP GROUPS

* PLEASE READ THE FOLLOWING PASSAGE*

As used in the following passage, “governing bodies” refers to organizations such as
- National Collegiate Athletic Association (N.C.A.A.)
- National Association of Intercollegiate Athletics (N.A.I.A.)
- National Junior College Athletic Association (N.J.C.A.A.)
- International Olympics Committee (I.O.C.)

Often in cross country and track, past performances are used to decide who should
- be selected for varsity, or for the travel team to competitions
- be admitted into higher-level meets (sectionals, conference, regionals, nationals)
- receive scholarships.

Using previous times, solely, may not be the best predictor of who will do well in higher-level competitions. Perhaps someone ran fast times at a low-level competition, but does not handle stress well at higher-level meets. A runner may do well in a trial heat, but then choke in the final. If there was a way to predict these runners would not do well, coaches and governing bodies could have saved money by not sending the runner, or by selecting a runner who was more likely to perform well.

Researchers have developed questionnaires that could reveal more about whether a runner is mentally tough under pressure. The results of these questionnaires may help coaches and governing bodies better predict which runners will or won’t do well when it matters most. The questionnaires could be used in this way. A runner would answer the mental toughness questionnaires and receive a “Mental” score. The runner’s “Physical” score would reflect the runner’s fastest time/past performance. The runner’s “Composite Score” would consist of both the physical and mental scores. Coaches and governing bodies could review runners’ composite scores to decide who makes the team, goes to higher-level meets, and gets scholarships.

Here is an example of how composite scores would be used. Suppose 20 runners have run the provisional qualifying time needed to compete in the national track meet 5k. In the past, the 15 runners with the fastest times would have been selected to compete, though the slowest 5 runners’ times were very near the top 15 times. Now, the composite scores would be used to select the 15 that will compete at nationals. Perhaps two of the slower runners with higher composite scores would be selected instead of two of the faster runners. Also, if, say, the runner with the 8th fastest automatic qualifying time had a very low “Mental” score, that runner may not be invited to the national meet; a more mentally-reliable competitor would be chosen. As another example, a coach with a tight budget may only send runners whose composite scores show they will do well, rather than a full team, to a meet that takes a lot of travel money.

Now imagine that this system of using composite scores is currently in place. Answer the following questionnaires as though you believed your answers will be used to form a composite score for you. Imagine your composite score, based on what you answer today, will be kept on file for 5 years. Imagine that your coach, governing body, race directors, and the Olympic
Committee will be allowed to view your composite score. Imagine your composite score will be used to decide whether you make varsity, go to more expensive meets, higher-level meets, receive scholarship, and/or are invited to participate in a race.
APPENDIX G

PASSAGE FOR CONTROL GROUP

*PLEASE READ THE FOLLOWING PASSAGE*

“Governing bodies” of collegiate cross country and track in the United States include organizations such as
- National Collegiate Athletic Association (N.C.A.A.)
- National Association of Intercollegiate Athletics (N.A.I.A.)
- National Junior College Athletic Association (N.J.C.A.A.)

The N.C.A.A. was the first of these to be created. It was first created to regulate collegiate football. Early football resulted in numerous injuries and occasional deaths. In some instances, football players were hired to play for a college football team. Some of the players were not even students at the college. These practices led many people to believe the collegiate football programs needed to be reformed or discontinued. President Theodore Roosevelt held two conferences at the White House for college athletics leaders to discuss reforms of college football. At his prompting, college officials met to initiate changes in football playing rules. In 1906, 62 colleges agreed to participate in a governing body, which took its present name, the NCAA, in 1910. The NCAA eventually adopted a set of regulations called “the Sanity Code” to guide recruitment and financial aid awards. As televised games developed and attendance at football games grew, the NCAA became involved in balancing the money-making nature of the sport with the needs of the students.

Although it started out to address concerns related to football, the NCAA expanded its scope to other collegiate sports. In addition to discussing and making rules for college sports, the NCAA later began hosting athletic competitions. The first national championship hosted by the NCAA was in track and field, the National Collegiate Track and Field Championships. The NCAA currently oversees 89 championships in 23 sports. Over 400,000 students at over 1,000 schools participate in the NCAA.

The N.A.I.A. was created after the NCAA but started with the sport of basketball. Dr. James Naismith, the inventor of basketball, was first involved in organizing a collegiate basketball tournament. As the sport of basketball became popular, that tournament expanded to include 32 teams. Starting in 1940, a governing body formed to regulate intercollegiate basketball. In 1952, the governing body changed its name to NAIA and expanded to include sports other than basketball. The sports included golf, tennis and outdoor track and field. The NAIA currently oversees 23 national championships in 13 sports. About 60,000 students at about 300 schools participate in the NAIA and receive about $450 million in athletic scholarships.

The N.J.C.A.A. was created around the same time as the NAIA. It was created to regulate sports for two-year “junior” colleges. Track and field was the first sport for which the NJCAA hosted an event. The NJCAA has hosted an annual national track meet since 1939, except for three years during World War II. The NJCAA expanded to include basketball and, eventually, other sports. Though the NJCAA started in California, junior colleges in other states began
asking to participate in the NJCAA’s events, so the organization eventually expanded to become national.
The information above was gathered from these three websites: ncaa.org, naia.org, njcaa.org.
APPENDIX H

WORKSHEET TO CALCULATE SMTQ SCORE

Please calculate your score on the above section (pages 10 – 11) by following these directions.
If you need help, please raise your hand to obtain researcher’s assistance.

The average final score of the most successful distance runners is 50. (This statement was only printed in packets given to Prototype group participants.)

A. For Columns 1 & 2: Place the number you circled as your response into the blanks. For example, if you circled “4 Very” for question # 8, write “4” beside 8 in Column 2 below.

<table>
<thead>
<tr>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question 1:</td>
<td>Question 2:</td>
<td></td>
</tr>
<tr>
<td>Question 3:</td>
<td>Question 4:</td>
<td></td>
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<td>Question 5:</td>
<td>Question 7:</td>
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<td>Question 6:</td>
<td>Question 8:</td>
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<td>Question 11:</td>
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<td>Question 12:</td>
<td>Question 10:</td>
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<tr>
<td>Question 13:</td>
<td></td>
<td>Column 3 Total:</td>
</tr>
<tr>
<td>Question 14:</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Column 1 Total:</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B. For each space in Column 3, look at the number you wrote in the corresponding space in Column 2.
If you wrote a 1 in Column 2, write a 4 in Column 3
If you wrote a 2 in Column 2, write a 3 in Column 3
If you wrote a 3 in Column 2, write a 2 in Column 3
If you wrote a 4 in Column 2, write a 1 in Column 3

C. Add the numbers you wrote in Column 1 and place the Column 1 total here: _____
(Maximum is 32)
D. Add the numbers you wrote in Column 3 and place the Column 3 total here: _____ (Maximum is 24)

E. Final Score: Add Column 1 Total to Column 3 Total: _______ (Maximum is 56)

The average final score of the most successful distance runners is 50. (This statement was only printed in packets given to Prototype group participants.)
APPENDIX I

MANIPULATION CHECK

Please think about the passage you read and circle your answers to the following questions.

1. What is the average score of the most successful runners on the first toughness questionnaire?
   a. 30  b. 48  c. 50  d. 56  e. 60

2. What sport was one of the first sports to be regulated by one of the governing bodies (NCAA, NAIA, and NJCAA)?
   a. baseball  b. soccer  c. basketball  d. hockey  e. wrestling

3. How often in one week do you run barefooted for more than five minutes?
   a. 0 days  b. 1 day  c. 2 days  d. 3 days  e. 4 or more days

4. As described in the passage you read, coaches may make decisions about runners such as selection for meets and varsity teams based on
   a. composite score of toughness questionnaires and fastest times/past performances
   b. composite score of practice attendance and fastest times/past performances
   c. body mass index
   d. percentages of fast and slow twitch muscles
   e. This topic (selection of runners for meets and teams) was not discussed in the passage I read.

5. According to the passage I read, coaches might be interested in viewing runners’ scores on toughness questionnaires.
   True       False
APPENDIX J

INFORMED CONSENT FORM

FSU Behavioral Consent Form
Mental Toughness and Self-Presentation in Sport
You are invited to be in a research study concerning athletes’ beliefs and behaviors that stem from concerns about how they are perceived. You were selected as a possible participant because you are a collegiate runner competing in event distances of 1,500 meters or more. Please read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by Vista Beasley under the supervision of Professor Robert Eklund, Florida State University, College of Education, Department of Educational Psychology and Learning Systems.

Background Information:

The purpose of this study is to:
• Determine how others’ perceptions of one’s toughness relates to behaviors
• Determine whether self-presentation model explains these behaviors
• Further validate questionnaires used in research

Procedures:

If you agree to be in this study, you would:
• Complete a series of short questionnaires (~8 minutes)
• Read a short passage (~3 minutes)
• Complete a mental toughness questionnaire (~3 minutes)
• Calculate your score for the mental toughness questionnaire (~3 minutes)
• Complete a questionnaire about toughness (~3 minutes)
• Answer questions related to the passage (~1 minute)
• Participate in a debriefing (~5 minutes)

Risks and benefits of being in the study:

The study has few risks involved. By completing the questionnaires, you will be asked to disclose information including: demographics (such as your age, years of competition in sport); your training (such as frequency); concerns about how you are perceived; your beliefs about your own mental toughness; and your attitude about toughness in sport. Some may find this difficult to disclose, but the likelihood of this being detrimental to you in any way is very minimal.

The benefits to participation are only that you will receive information about sport psychology research about mental toughness and self-presentation in your sport that may help prevent health-damaging behaviors that lead to injury.
Compensation:
There is no compensation for participation.

Confidentiality:
The records of this study will be kept private and confidential to the extent permitted by law. In any sort of report we might publish, we will not include any information that will make it possible to identify a subject. Research records will be stored securely and only researchers will have access to the records.

Voluntary Nature of the Study:
Participation in this study is voluntary. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

Contacts and Questions:
The researcher conducting this study is Vista Beasley. You may ask any question you have now. If you have a question later, you are encouraged to contact me at (***), Florida State University, 3210 Stone Building, Tallahassee, FL 32306.

You may also contact the supervisor of this study, Dr. Robert Eklund, at (***), Florida State University, 3204-K Stone Building, Tallahassee, FL 32306.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher or supervisor, you are encouraged to contact the FSU IRB at (850) 644-8633, humansubjects@magnet.fsu.edu, 2010 Levy Street, Research Building B, Suite 276, Tallahassee, FL 32306-2742.

You will be given a copy of this information to keep for your records.

Use of Email Address:
We are asking you to provide your email address. Providing your email address is voluntary and not required. If you provide it, the researcher will use it only for the following purposes:
• to notify you when data collection is complete
• to send the results of this study to you
• to clarify unclear handwritten answers
• to see if you are willing to participate in related and/or follow-up studies by this researcher

Your email address will be kept confidential. It will not be provided to any other organizations or researchers unless required by law or Florida State University’s Institutional Review Board. Your responses to emails from the researcher and requests for participation in future studies are voluntary and not required.
Please write your email address here if you consent to being contacted as described above. If you do not consent, leave the space blank.

Email address: __________________________________

**Statement of Consent:**

I have read the above information. I have received answers to any questions I have asked. I consent to participate in the study.

_________________________________________    __________
Signature of Participant            Date

_________________________________________    __________
Signature of Investigator            Date
Office of the Vice President For Research  
Human Subjects Committee  
Tallahassee, Florida 32306-2742  
(850) 644-8673 · FAX (850) 644-4392  

APPROVAL MEMORANDUM  

Date: 04/18/2013  

To: Vista Beasley <*****@**********>  
Address: ****************, Tallahassee, FL 32312  
Dept.: EDUCATIONAL PSYCHOLOGY AND LEARNING SYSTEMS  

From: Thomas L. Jacobson, Chair  

Re: Use of Human Subjects in Research  

The application that you submitted to this office in regard to the use of human subjects in the research proposal referenced above has been reviewed by the Human Subjects Committee at its meeting on 03/13/2013. Your project was approved by the Committee.  

The Human Subjects Committee has not evaluated your proposal for scientific merit, except to weigh the risk to the human participants and the aspects of the proposal related to potential risk and benefit. This approval does not replace any departmental or other approvals which may be required.  

If you submitted a proposed consent form with your application, the approved stamped consent form is attached to this approval notice. Only the stamped version of the consent form may be used in recruiting research subjects.  

If the project has not been completed by 03/12/2014 you must request a renewal of approval for continuation of the project. As a courtesy, a renewal notice will be sent to you prior to your expiration date; however, it is your responsibility as the Principal Investigator to timely request renewal of your approval from the Committee.  

You are advised that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report, in writing, any unanticipated problems or adverse events involving risks to research subjects or others.  

By copy of this memorandum, the chairman of your department and/or your major professor is reminded that he/she is responsible for being informed concerning research projects involving
human subjects in the department, and should review protocols as often as needed to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

This institution has an Assurance on file with the Office for Human Research Protection. The Assurance Number is IRB00000446.

Cc: Robert Eklund <********@***********>, Advisor
HSC No. 2013.10092

Vista Beasley <*****@************>
***************, Tallahassee, FL 32312

EDUCATIONAL PSYCHOLOGY AND LEARNING SYSTEMS
Mental Toughness and Self-Presentation in Sport
03/12/2014
2013.10092
04/18/2013
03/13/2013
Robert Eklund <*******@***********>, Advisor
APPENDIX K

DEBRIEFING

Thank you for your participation in today’s study. Many injuries suffered by middle and long distance are related to overuse. Known physical causes include training errors such as inappropriate frequency, duration, and intensity. However, the psychological causes of these types of injuries are not as well-known. For example, if you are only used to running x number of miles a week, but start training with team members who run twice as many miles a week, this may result in injury. The psychological perspective may examine your decisions that led to this training error. As another example, some runners may detect acute pain but may not appropriately reduce their training; they may continue training, converting acute injury into overuse injury. Sport psychology researchers wish to examine the thought processes behind these choices.

One potential psychological cause is “self-presentation concern”. This is concern about how others—such as your coach or team members—perceive you. If they perceive you poorly, you may not get a desired goal, whether the goal is to be selected to travel to a meet, a scholarship, or even just to have them approve of you. If you want them to respect you, you may run the number of miles per week that your teammates run, even if that is twice as many as you were doing before. Similarly, you may try to do what the best runners do. The “best runners” serves as a prototype. If the best runner on your team (the prototype) runs x number of miles a week, perhaps you run x miles a week, too; that is an example of the “prototype matching process”. If your goal is to be perceived as mentally tough, you may continue training though you are experiencing injury-inducing pain. That is how self-presentation may contribute to overuse injury.

How was this tested?

In this study, all participants were asked to answer two questionnaires (one about mental toughness, one about risk/pain/injury) after reading a passage; then they calculated the mental toughness questionnaire score.

Participants in two groups were told to imagine that their scores on these questionnaires would be viewed by coaches and governing bodies who would make decisions about the participants based on the scores. However, this was an imagined scenario. Coaches and governing bodies will not view the participants’ responses in this study nor base decisions on questionnaire score. To this researcher, there is no known intent by your coach or the governing bodies to gather mental questionnaire scores, evaluate runners based on these scores, nor provide benefits to runners based on these scores. It is also unknown as to whether these scores have any meaning in relation to predicting runners’ performances or occurrences of choking. The scenario was provided to increase participants’ self-presentation concern, to see if participants would answer questions about toughness differently if they thought their scores would be viewed as compared to participants who did not imagine their scores being viewed.

Participants in one of the groups were also told that the average score of most successful runners on the mental toughness questionnaire is 50. This score was false information. I apologize for the use of this deception. The score of most successful runners on this questionnaire is unknown (to this researcher). This false information, 50, was given to serve as a prototype. If participants in this group score closer to 50 than those in other groups who did not
receive the false prototype information, that may indicate a tendency for behavior—whether consciously or not—to reflect a prototype matching process. I did not wish to provide a true prototype that could be harmful; for example, providing a prototype of successful runners related to average number of miles run each week might, if my hypotheses are correct, cause participants to run mileage that may not be appropriate and could result in injury. Likewise, if I provided a questionnaire in which the score of the most successful runners is known and therefore I provided the true prototype score, participants who learned they scored poorly in comparison may experience some psychological distress. For this reason, this instance of false information was selected as a prototype.

**Hypotheses and main questions:**

Will questionnaire scores related to toughness differ between groups exposed to increased self-presentation concerns about toughness and prototypes?

- It is expected that participants who imagined their scores would be viewed have more favorable scores than participants who weren’t told to imagine their scores would be viewed.
- It is also expected that scores of participants who were given the prototype average score of most successful runners will be closer to that “prototype” score.

**Why is this important to study?**
The ultimate goal is to reduce overuse/chronic injury. If research shows that self-presentation is a factor contributing to chronic injury, sport psychology practitioners can develop interventions to reduce this negative effect. If coaches and others who are important to an athlete’s career are sources of self-presentational concerns, interventions may aim to help them create healthy, competitive team environments.

All the information collected in today’s study will be confidential, and there will be no way of identifying your responses in the data archive. I am not interested in any one individual’s responses; I am looking at the general patterns that emerge when the data are aggregated together. Only researchers will have access to the records your identifying information. Coaches and governing bodies will not have access to records with your identifying information.

You may withhold use of the data you provided. If you opt to do this, please inform the researcher now.

Please do not discuss the nature of the study with others who may later participate in it, as this could affect the validity of our research conclusions.

**THANK YOU AGAIN FOR YOUR PARTICIPATION.**
APPENDIX L

STATEMENT OF CONSENT (POST-DEBRIEFING)

FSU Behavioral Consent Form
Statement of Consent After Debriefing:

Today, I participated in the study, Mental Toughness and Self-presentation in Sport, conducted by Vista Beasley. I have read the debriefing. I have received the contact information for the research supervisor and Florida State University’s Institutional Review Board. I have received answers to any questions I have asked.

I consent to allow the results from my participation to be used in this study.

____________________  _________________
Signature of Participant                      Date

____________________  _________________
Signature of Investigator                    Date

The below portion of this page (contact information) is to be detached and provided to the research participant.

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

***THANK YOU FOR YOUR PARTICIPATION IN THIS STUDY!***

The researcher conducting this study is Vista Beasley. You may ask any question you have now. If you have a question later, you are encouraged to contact me at (***)* ***-***,
*****@**********, Florida State University, 3210 Stone Building, Tallahassee, FL  32306.

You may also contact the supervisor of this study, Dr. Robert Eklund, at (***)* ***-****,
*******@*************, Florida State University, 3204-K Stone Building, Tallahassee, FL 32306.

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REFERENCES


Masters, T. J. (2012). A mental toughness development intervention in collegiate ice hockey: Examining a working model. Unpublished manuscript, University of Idaho, Moscow, ID.


Stonkus, M. A. (2011). The development and validation of the inventory of mental toughness factors in sport (IMTF-S). Unpublished manuscript, Boston University, Boston, MA.


BIOGRAPHICAL SKETCH

Vista Beasley competed in cross country and track at Fitzgerald High School and Emory University, graduating with a Bachelor’s degree in Biology. She has been a captain in the Air Force, a special agent in the Drug Enforcement Administration, a detective for the State of Florida, and a staff member at Nike camps for high school runners. She is a certified USA Track and Field coach. As a recipient of the McDonald Support of Education Scholars Fellowship, Vista completed her Master’s degree in Sport Psychology at Florida State University while serving as the managerial editor for the Encyclopedia of Sport and Exercise Psychology. She is now working towards a Ph.d in sport psychology.