A RELATIONSHIP BETWEEN MENTAL TOUGHNESS AND SPORT-RELATED MORALITY

by

Sakkaphat Thaveesri Ngamake

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The thesis of Sakkaphat Thaveesri Ngamake is approved:

Stephen J. Vodanovich, Ph.D., Committee Member	Date
Robert J. Rotunda, Ph.D., Committee Chair	Date

Accepted for the Department/Division:

Laura L. Koppes Bryan, Ph.D., Director	Date

Accepted for the University:

Richard S. Podemski, Ph.D., Dean, Graduate School	Date

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ABSTRACT

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Sakkaphat Thaveesri Ngamake

Numerous studies have demonstrated that mental toughness, as one of the critical factors for elite performance in sport, is positively associated with psychological characteristics such as optimism and coping skills; however, its relationship with sport-related morality is unknown. The present study aimed to examine this relationship, as well as the roles of mental toughness in elucidating how various psychological constructs predict aggressive behaviors. Results from 130 participants who had experiences in competitive sports during high school and college indicated that, overall, mental toughness was negatively correlated with acceptance of cheating behaviors, anger, and aggressiveness in sporting competition. Furthermore, confidence, as one dimension of mental toughness, was found to strengthen the relationship between acceptance of gamesmanship behaviors and aggressiveness, suggesting a moderating effect. Implications for training young athletes and recommendations for future studies were provided.

CHAPTER I

INTRODUCTION

It has long been believed that sport participation can develop good character. Unfortunately, it might not always be the case. Depending on the circumstances, sport participation could promote virtuous behaviors as well as develop aggressive and cheating behaviors (Shields & Bredemeier, 2007). For example, young athletes in a learning climate where their parents and coaches prioritize learning new skills, rather than winning a competition, often display graciousness and concerns for opponents (LaVoi & Stellino, 2008). On the other hand, players with high ego orientation, who frequently compares their ability to an external standard, may express aggressive behaviors when experiencing close competition or loss (Dunn & Dunn, 1999). Thus, from both ethical and moral perspectives, playing sports is neither good nor bad per se; it depends on various dispositional and environmental factors.

In general, athletes develop good psychological characters and physical well-being from participating in sporting activities. For example, Gould and Carson (2008) proposed a model describing how young athletes transfer mental and physical skills they have learned from sports to working and everyday life. Examples of these "life skills" include learning to deal with pressure and stress, counteracting negative attitudes and expectations, and resisting use and misuse of tobacco, alcohol, and drugs. Gould and Carson argued that life skills could be developed through sports, but only in an active

fashion. That is, it is unlikely that merely participating in sports would result in development of life skills. Coaches have to intentionally and directly teach athletes these skills and encourage them to use the skills outside the sporting contest. In addition, using an inventory that assesses mental, emotional, and physical toughness, Mack and Ragan (2008) found that athletes had higher total toughness scores than non-athletes. This finding indicates that character toughness may be one benefit from sport participation even though the direction of causality is arguable.

On the negative side, children and adolescents might learn undesirable behaviors from sports because of the presence of a competitive structure (e.g., pressure to win), peer group norms, or exposure to poor modeling by coaches and parents. Although there is a belief that sport participation may protect youth from smoking and drinking, it is not always the case. Lisha and Sussman (2010) reviewed studies examining the differences between high school and college athletes and non-athletes on tobacco, alcohol, and drug use. In most studies, those who participated in sports drank a greater amount of alcoholic beverages than those who did not. The authors posited that perhaps the competitive nature of sports encourages athletes to consume a large amount of these substances. Moreover, a review summary of 63 studies suggests that participation in particular sports is associated with higher levels of aggression and antisocial behaviors (Kimble, Russo, Bergman, & Galindo, 2010). Given that participation in sporting activities relates to desirable and undesirable behaviors, the present study focuses on the relationship between positive and negative constructs, such as mental toughness and aggression, important to the field of sport psychology.

Mental Toughness

To date, mental toughness has received attention from sport practitioners and academicians. Coaches and athletic trainers have pointed to the need to assess and develop athletes' mental toughness (Clough, Earle, & Sewell, 2002). Although there is little agreement on defining mental toughness (e.g., whether it is a state or a trait), investigators in this area have agreed that mental toughness is a multidimensional construct. The most commonly cited characteristics of mental toughness include abilities to maintain an unshakeable self-belief in controlling one's own fate, to recover from failure and hardship, and to push the boundaries in training and competition (Clough et al., 2002; Crust 2007, 2008; Jones, Hanton, & Connaughton, 2002; Mack & Ragan, 2008; Middleton, Marsh, Martin, Richards, & Perry, 2004; Sheard, Golby, & Wersch, 2009). Less consistent components of the definition include characteristics concerning an ability to cope effectively with pressure and adversity, a sense of competitiveness, persistence in facing a difficult task or challenge, and an ability to learn and execute superior mental skills (Crust, 2007). These defining characteristics are partially supported by a study by Gould and colleagues (Gould, Dieffenbach, & Moffett, 2002) who interviewed 10 Olympic champions as well as their coaches, parents, and significant others in order to identify major influences on their psychological development. They found that mental toughness was one of the distinct psychological characteristics contributing to their success along with an ability to deal with anxious feelings. Self-confidence, competitiveness, optimism, and adaptive perfectionism also characterized these athletes. Moreover, from their content analysis, the term *mental toughness* consisted of adjectives such as resilient and persistent.

Jones et al. (2002) have attempted to clarify the construct by making a distinction between mental toughness and its attributes. They proposed that mental toughness is a desired state of the mind (e.g., a capability to do something) whereas its attributes are specific actions leading to achievement of that state (e.g., interpreting obstacles as positive opportunities). By analyzing interview content from the world's elite performers (Connaughton, Hanton, & Jones, 2010; Connaughton, Wadey, Hanton, & Jones, 2008; Jones, Hanton, & Connaughton, 2007), they categorized 30 attributes into a framework of mental toughness, which consists of four dimensions (i.e., attitude/mindset, training, competition, and post-competition) and 13 subcomponents (Jones et al., 2007). They also found that among elite athletes these dimensions and subcomponents have been developed at different phases in their career. For instance, the attitude/mindset dimension is very important when the athletes initially became involved in their sports. During initial involvement, the athletes became aware that they possessed athletic skills superior to those of their peers, thereby developing confidence and a sense of competitiveness. After attaining elite status in international competition, they had to enhance mental toughness by formulating new practice routines (the training component) or setting more challenging goals (the competition and post-competition components). Although the conceptualization of mental toughness and its attributes, as well as the four-dimension framework, could advance knowledge and investigations in this area, no psychological instruments have been developed in accordance with these premises. That is, the existing instruments do not make a distinction between items measuring the state of mental toughness (e.g., "Even when under considerable pressure I

usually remain calm") and those assessing its attributes (e.g., "I generally look on the bright side of life").

Clough et al. (2002) developed the 48-item Mental Toughness Questionnaire (MT48) with six subscales: emotional control, life control, commitment, challenge, confidence in abilities, and interpersonal confidence (Crust & Swann, 2011). The MT48 possesses adequate construct validity because it is moderately and positively correlated with scores representing optimism, stability, self-efficacy, self-image, and life satisfaction (Kaiseler, Polman, Nicholls, 2009; Nicholls, Polman, Levy, & Backhouse, 2008). Moreover, athletes who were high and low in mental toughness measured by the MT48 performed cognitive and physical tasks differently (Clough et al., 2002). When work load was high, less mentally tough individuals perceived greater physical demands than their mentally tough counterparts. Additionally, when receiving (false) negative feedback, the participants with high mental toughness performed more consistently than those with low mental toughness. Unfortunately, the test developers did not provide full psychometric properties of the MT48 (e.g., factor loadings or item-total correlations) in published articles.

More recently, the Sports Mental Toughness Questionnaire (SMTQ) was developed by Sheard et al. (2009). The SMTQ has 14 items representing three dimensions of mental toughness: confidence, constancy, and control. The preliminary results showed that men, older athletes, and national and international performers scored significantly higher than women, younger athletes, and sub-elite performers. Construct validity was partially supported by evidence demonstrating that athletes competing at higher levels (e.g., national) rated themselves more mentally tough than those

competing at lower levels (e.g., regional). Furthermore, the authors reasoned that male athletes were more mentally tough than female athletes mostly because they had higher levels of confidence, a finding that is rather common in the realm of sports and physical activities (e.g., Lirgg, 1991).

Sport-related Morality

Aggressive behaviors and anger. Besides mental toughness, participating in sports may develop attitudes favorable to expressions of anger and aggressiveness, as well as a tendency to act aggressively, when competing. As discussed above, under certain circumstances athletes are more likely to engage in aggressive and antisocial behaviors than non-athletes. Aggressive behaviors also reflect a unique characteristic of the morality of sport. Based on the idea that sporting activities provide different standards (e.g., more tolerance) of aggressive behaviors than those in everyday life (Shields & Bredemeier, 2007), researchers have attempted to identify various sources of the athletic atmosphere that can influence athletes' aggression (Kimble et al., 2010). The competitive nature of sport may shape athletes' views of aggressive behaviors as more acceptable and tolerable. As Shields and Bredemeier (2007) have stated, differing moral attitudes and behaviors, as a form of "bracketed morality," can be seen in sporting competition. Although there are no studies demonstrating that competitiveness itself causes aggression, some researchers found that aggression varied as a function of competitive levels (e.g., Coulomb-Cabagno & Rascle, 2006). For example, Rascle, Coulomb-Cabagno, and Delsarte (2005) investigated the relationship between aggression and competitive levels among male handball players and observed that individuals who played in higher levels (more competitive) showed instrumentally

aggressive behaviors more frequently than those playing in lower levels (less competitive).

Perceived team norms may influence athletes' aggression. Guivernau and Duda (2002) examined perceptions of teams' moral climate and aggressive tendencies among young soccer players, aged 13 – 19 years. They found that, among male players, the perceptions of team norms in favor of aggressiveness can predict the aggressive tendency whereas, among female players, the perceptions of team norms in favor of cheating (over losing) were a potential predictor of the likelihood to behave aggressively. It may be possible that boys are more likely to make use of hostile aggression and focus more on norms related to aggression. In contrast, aggressive behaviors among girls may be geared toward instrumental aggression and more influenced by norms associated with cheating and winning. Nonetheless, the authors concluded that coaches are the primary source of influence when young athletes encounter the situations in which moral judgments are needed.

The moral climate created by coaches and teammates influences aggressive behaviors for mid-adolescent athletes and may also affect aggression levels among college athletes. Kavussanu, Roberts, and Ntoumanis (2002) measured athletes' moral functioning in four hypothetical scenarios. Two of the scenarios portrayed instrumental aggression, one was about hostile aggression, and another was about faking injury to gain an advantage. Moral functioning was assessed using three indicators: judgments of appropriateness for each behavior, intentions to do the behaviors, and actual behaviors observed in the past five games. The results indicated that perceptions of teammates engaging in aggressive behaviors (peer norms) and those of coaches encouraging them

to do such behaviors (coach norms) were strong predictors of moral functioning (i.e., moral judgment, intention, and behaviors). Hence, the competitive nature of sport can legitimate the use of aggressive behaviors among athletes in competition.

Cheating and gamesmanship behaviors. Despite agreement that to gain an advantage in competition by cheating and intentionally injuring an opponent is morally wrong (Shields & Bredemeier, 2007), the concept of gamesmanship has been widely debated. Shields and Bredemeier (2007) proposed the theory of game reasoning which suggests that the sporting context provides athletes a unique moral system, allowing them to exhibit less mature behaviors. For example, some players and coaches consider trash talking or insulting to be acceptable during competition, but these behaviors are unacceptable outside the sporting domain and even unlawful in some cultures.

Furthermore, Lee, Whitehead, and Ntoumanis (2007) posited the concept of "professional fouls" in addition to cheating and gamesmanship. According to Lee et al., cheating is characterized by behaviors that break the rules of the game and are intentionally deceptive to other parties (e.g., opponents or officials). A second category, professional fouls, includes behaviors that intentionally and deliberately break the rules of the game with an acceptance of a penalty to gain some advantage. The case of the Real Madrid red card controversy is a good example. In November 2010, two players of Real Madrid Football Club (the European soccer club) intentionally delayed the game, which was considered a time-wasting behavior, and received the second yellow card from a referee, resulting in their suspension for the next "unimportant" game in the first stage. After the suspension, these players were then "clean" in the second, more important stage. Thus, the team gained some advantages by letting the players break the

rule and receive the penalty. Unlike the first two categories, gamesmanship behaviors do not break the rules of the game but violate the spirit of sporting competition. Behaviors aimed at distracting or irritating opponents are included in this category.

Drug use and doping behaviors. With regard to behaviors that break the rule of the game, drug use and doping behaviors are clearly examples of cheating. Society has negative views toward athletes who have a history of using drugs, especially if their performance was improved by those drugs (Feinberg, 2009). Nevertheless, due to numerous advantages the athletes obtain when employing rule-violating drugs (e.g., building muscle strength or buffering competitive stress), it is not uncommon to see athletes being caught using illegal substances even though several sport organizations have applied strict drug-testing policies.

It is difficult to prevent doping behaviors because oftentimes athletes perceive that the short-term advantages (e.g., winning the competition or getting a goal medal) outweigh the long-term negative consequences such as a ban from official tournaments or deteriorating effects on their body (Petróczi, 2007). Moreover, prevention plans are often ineffective because there are too many factors leading to doping behaviors and different athletes are influenced by different factors. Petróczi (2007) found that there was a large proportion of unexplained variance of doping behaviors when doping attitudes, doping beliefs, goal orientation, and competitiveness were used as predictors. Interestingly, only doping beliefs (i.e., presumed opinion about doping behaviors) significantly predicted doping behaviors, but attitudes toward doping (i.e., a predisposition toward the use of performance-enhancing drugs) did not seem to be a mediator of this relationship. A plausible explanation is that the relationship between

doping attitudes and drug-taking behaviors may be moderated by variables not in the model, such as doping susceptibility (Gucciardi, Jalleh, & Donovan, 2010). Given that the doping attitude-behavior relationship is not fully understood as one type of sport-related morality, attitudes toward performance-enhancing drugs and doping behaviors were included in the present study to explore its relationships with mental toughness and other variables relevant to sport morality.

Relationships between Mental Toughness and Sport-related Morality

Explicit relationships. Previous research has examined the relationship between mental toughness and positive psychological characteristics such as optimism and coping abilities (Nicholls et al., 2008), self-efficacy (Clough et al., 2002), attitudes toward risk-taking (Crust & Keegan, 2010), and self-confidence, concentration, competitiveness, goal-setting, and adaptive perfectionism (Gould et al., 2002). Only one study has discovered a pitfall of being mentally tough. This study found that even though athletes high in mental toughness coped with pain and injury better than those with less mental toughness, the former showed less adherence to clinical rehabilitation perhaps because they perceived less pain and severity of the injury (Levy, Polman, Clough, Marchant, & Earle, 2006).

Because sport participation can impact athletes positively and negatively, and competitive individuals often gravitate toward sport, it is possible that athletes may develop mental toughness along with other undesirable characteristics (e.g., gamesmanship attitudes or aggressive behaviors) from sporting activities. Perhaps the more mental toughness athletes possess, the more they have favorable attitudes toward gamesmanship and aggression. Hence, the present study investigated the relationships

between mental toughness and attitudes toward cheating, gamesmanship, and performance-enhancing drugs, as well as expressions of anger and aggressive behaviors.

Given that mentally tough athletes are very competitive and possess a strong sense of control in uncertain situations and through adversity (Clough et al., 2002), it is possible that they may occasionally cross the line between good and bad sporting behaviors, either consciously or unconsciously. For instance, when a stake in a competition is high, an athlete may need to control the situation by using excessive force to intimidate an opponent (Maxwell & Moores, 2007). In this case, it is arguable whether psyching people out or acting aggressively is acceptable. Some may consider those behaviors as parts of the game whereas some may take a strong stance against them because they think that athletes should win properly rather than using unsportsmanlike strategies.

Further support of the relationship between mental toughness and certain undesirable behaviors in sport came from a study by Romand and Pantaléon (2007) who interviewed rugby coaches in France on their opinions about the display of moral character among young athletes. Although all coaches directly taught and developed moral character during practices, they acknowledged that it is very difficult to accommodate rule-compliant behaviors in sports with high stress and physical contact. Additionally, some coaches admitted that sometimes gamesmanship behaviors and aggressiveness can benefit the teams and the game outcomes. Thus, it is not surprising that athletes can learn and develop questionable behaviors so as to survive and progress into higher levels of competition. With highly competitive situations, they may become

more mentally tough and also gradually develop negative repertoires of sport-related behaviors.

Implicit relationships. Many studies have demonstrated an association between various dispositional and environmental constructs (e.g., attitudes toward risk-taking and ego goal orientation) and aggressive behaviors in sporting competition (e.g., Dunn & Dunn, 1999; Guivernau & Duda, 2002; Rascle, Coulomb, & Pfister, 1998). However, no studies have attempted to utilize the concept of mental toughness to explain the relationships between those variables and aggression. If the relationship between mental toughness and sport-related morality (e.g., aggression or acceptance of gamesmanship behaviors) were in the positive direction, mental toughness could be a potential variable that magnifies the relationship between those constructs (e.g., between acceptance of cheating and an expression of anger). For example, mentally tough individuals may be more likely to irritate their opponents by competing aggressively than those with lower mental toughness. On the other hand, if mental toughness was either unassociated or negatively associated with sport-related morality, it might be able to diminish the impact of obnoxious attitudes on aggression. For instance, even though they may have favorable attitudes toward the use of gamesmanship tactics, mentally tough athletes may be more likely to keep their focus on the task at hand, rather than investing their energy in unnecessary tactics.

In order to fully explore these possibilities, two more predictors were added to the models predicting the extent to which athletes display their anger and aggressive behaviors in sporting competition: attitudes toward risk-taking and ego goal orientation. Although research investigating the relationship between attitudes toward risk-taking

and aggressive behaviors in sport are very rare (Schwebel, Banaszek, & McDaniel, 2007), evidence from other areas of psychology has suggested that attitudes open to risk-taking or the personality trait of sensation seeking are associated with aggressive behaviors (e.g., Swaim, Henry, & Baez, 2004; Ulleberg & Rundmo, 2003). For example, Ulleberg and Rundmo (2003) attempted to predict risky driving behaviors by various attitudinal and dispositional factors and found that aggression was positively related to risk-taking attitudes relevant to driving and sensation seeking. Furthermore, Crust and Keegan (2010) found a relationship between mental toughness and attitudes toward risk-taking. Specifically, interpersonal confidence, which is one dimension of mental toughness measured by the MT48 (Clough et al., 2002), was positively associated with attitudes toward psychological risk. Athletes who had high confidence in initiating or maintaining their relationships with others tended to be involved in activities of which the majority would disapprove. Besides, attitudes toward physical risk were positively associated with three other dimensions of mental toughness, namely challenge, commitment, and confidence in one's own ability. Athletes who possessed a strong sense of challenge and commitment, as well as high confidence in their sporting ability, were more likely to engage in behaviors that risk injuring themselves or their opponents.

Sport researchers have long investigated potential predictors of sport-related undesirable behaviors and found that ego goal orientation has a strong influence. In general, athletes with higher levels of ego goal orientation, who focus primarily on winning and comparison to their opponents or teammates as opposed to personal standards (Duda & Nicholls, 1992), are more likely to accept the use of injuring

behaviors than those with lower levels of ego goal orientation (Kimble et al., 2010). Degrees of ego goal orientation were positively associated with approval of cheating and unsportsmanlike behaviors while those of task goal orientation (i.e., defining success in achievement situations by focusing on learning new skills and putting forth more effort) were positively related to prosocial and sportsmanlike behaviors (Shields & Bredemeier, 2007). However, Petróczi (2007) did not find an association between goal orientation and doping behaviors, nor between goal orientation and doping attitudes. Unfortunately, absent are studies examining the relationship between mental toughness and goal orientation. It is not unexpected to observe positive relationships between mental toughness and both categories of goal orientation since there have been studies demonstrating positive relationships between goal orientation and constructs closely related to mental toughness such as sources of sport confidence (Magyar & Feltz, 2003).

Hypotheses

In the present study, the first hypothesis was that mental toughness would be positively correlated with scores denoting anger and aggressive behaviors, acceptance of cheating and gamesmanship, and attitudes more permissive of performance-enhancing drugs. Second, it was hypothesized that mental toughness would be positively correlated with attitudes toward risk-taking and goal orientation. Third, based on prior studies (Crust & Keegan, 2010; Nicholls et al., 2008; Sheard et al., 2009), male participants were expected to rate themselves more mentally tough than female counterparts. For comparisons between participants who played contact sports (e.g., soccer and basketball) and non-contact sports (e.g., tennis and golf) with regard to mental

toughness, no specific hypotheses were made given the lack of research studies or theoretical writings examining this relationship.

For models predicting anger and aggressiveness, the present study aimed to replicate previous findings (Chantal, Robin, Vernat, Bernache-Assollant, 2005; Dunn & Dunn, 1999; Guivernau & Duda, 2002; Kavussanu et al., 2002; Rascle et al., 1998). It was thus hypothesized that acceptance of cheating and gamesmanship behaviors, attitudes toward risk-taking, and ego orientation were positively related to the extent to which athletes have expressed their anger and engaged in aggressive behaviors in past competitions. Finally, no specific hypotheses were stated as to functions of mental toughness in moderating the relationships between the five constructs reviewed earlier (i.e., acceptance of cheating and gamesmanship, attitudes toward psychological and physical risk-taking, and ego goal orientation) and aggression.

CHAPTER II

METHODS

Participants

A total of 177 undergraduate students originally participated in the study. However, 47 students indicated that they did not get involved in sporting competition. Consequently, these participants were removed from the analysis which resulted in a sample size of 130 students, who had experience in competitive sports either during high school or college, or both. Their average age was 23.2 (*SD* = 5.2), 50.8% were male, and the majority (72.3%) were Caucasian (Table 1). Sports played by these participants included baseball, basketball, bowling, cheerleading, cross country, dance, field hockey, flag football, football, golf, horseback riding, martial arts (e.g., judo), roller derby, rugby, soccer, softball, swimming, tennis, track and field, volleyball, water polo, and wrestling.

Table 1

Demographic Characteristics of the Sample

Characteristic	*n*	*%*
Gender		
Male	66	50.8
Female	64	49.2
Race/ethnicity		
Caucasian/White	94	72.3
African American/Black	14	10.8
Hispanic/Latino	13	10.0
Asian American/Pacific Islander	5	3.8
Other	1	0.8
Missing	3	2.3
Class		
Freshman	2	1.5
Sophomore	6	4.6
Junior	55	42.3
Senior	63	48.5
Graduate student	4	3.1
Sport category		
Contact (e.g., soccer and football)	66	50.7
Non-contact (e.g., track and field)	63	48.5
Missing	1	0.8
Competitive experience during high school		
Yes	126	96.9
No	4	3.1
Competitive experience during college/university		
Yes	45	34.6
No	85	65.4

Note. $N = 130$.

Measures

A survey packet included a demographic questionnaire (i.e., age, gender, race/ethnicity, class, types of sport, competitive experience, and amount of practice) and a series of standardized, self-report measures (Appendix A).

SMTQ. The SMTQ was developed by Sheard et al. (2009) and is comprised of 14 items assessing three dimensions of mental toughness in sports: confidence, constancy, and control. A series of exploratory and confirmatory factor analyses suggested that the items within each subscale assessed the same hypothetical construct and their scores were a good indicator of the higher-order construct of mental toughness, providing evidence for construct validity. Internal consistency coefficients of each subscale were acceptable (α = .80 for confidence, .74 for constancy, and .71 for control; Sheard et al., 2009). Examples of the items are "I have unshakable confidence in my ability" (confidence), "I am committed to completing the tasks I have to do" (constancy), and "I am overcome by self-doubt" (control). The items are arranged on a 4-point Likert-type scale ranging from 1 = "not at all true to me" to 4 = "very true to me."

In the present study, the control subscale of the SMTQ yielded an unacceptably low internal consistency coefficient (α = .56). Consequently, the control subscale was excluded from further analyses. A supplemental confirmatory factor analysis, using the statistical program LISREL 8.8 (Jöreskog & Sörbom, 2006) and the diagonally-weighted least squares estimation (DWLS), suggested that the 14-item three-factor structure of the SMTQ was not fitted to the data. Non-significant parameter estimates existed on the relationships between the control subscale and its indicators (results not shown). A

plausible explanation of the unreliability of this subscale is provided in the discussion section. As a result, only 2 subscales with adequate internal consistency reliability were retained (α = .78 for confidence and .66 for constancy).

Competitive Aggressiveness and Anger Scale (CAAS). The CASS measures frequency and acceptability of anger expression and aggressive behaviors in sporting competition (Maxwell & Moores, 2007). It contains 12 items (6 for the anger subscale and 6 for the aggressiveness subscale) with acceptable test-retest reliability (*r* = .86 for anger and .84 for aggressiveness). In the original study, male athletes reported exhibiting more anger and aggressiveness than female athletes, and athletes playing contact sports rated their aggressiveness greater than those playing non-contact sports, providing evidence for construct validity. An example item of the anger subscale is "I show my irritation when frustrated during a game," and "I taunt my opponents to make them lose concentration" is representative of items on the aggressiveness subscale. The items are answered on a 5-point Likert-type scale, ranging from 1 = "almost never" to 5 = "almost always." In the present study, both subscales showed good internal consistency reliability (α = .80 for anger and .85 for aggressiveness).

Attitudes to Moral Decision-making in Youth Sport Questionnaire (AMDYSQ). The AMDYSQ was developed by Lee et al. (2007) to measure attitudes toward winning and moral acts in sporting activities. Two subscales of the AMDYSQ (i.e., acceptance of cheating and acceptance of gamesmanship, 3 items each) were employed in the present study. Each subscale had good internal consistency coefficients (α = .73 for acceptance of cheating and .75 for acceptance of gamesmanship) and also adequate concurrent validity (Lee at al., 2007). Examples of each subscale are "I would

cheat if I thought it would help me win" (acceptance of cheating) and "it is not against the rules to psyche people out so it's OK to do" (acceptance of gamesmanship). The items are rated on a 5-point Likert-type scale anchored at 1 = "strongly disagree" and 5 = "strongly agree," with higher scores indicating greater acceptance of cheating and gamesmanship behaviors. Internal consistency coefficients were acceptable in the present study (α = .88 for acceptance of cheating and .60 for acceptance of gamesmanship).

Performance Enhancement Attitude Scale (PEAS). The PEAS (Petróczi & Aidman, 2009) assesses attitudes toward the use of performance-enhancing drugs in sporting practice and competition. It consists of 17 attitudinal statements such as "recreational drugs help to overcome boredom during training" and "doping is necessary to be competitive." The statements are responded to on a 6-point Likert-type scale from 1 = "strongly disagree" to 6 = "strongly agree," with higher scores signifying more positive attitudes toward recreational drugs and doping behaviors. Internal consistency coefficients of the scale ranged from .71 to .91 and the analysis of 2-week test-retest reliability yielded a good result (r = .75; Petróczi & Aidman, 2009). Its scores were also correlated with those denoting an intention to use performance enhancement substances and the self-report of past and current use. When applied to a sample of the present study, the scale showed strong internal consistency (α = .82).

Attitudes Towards Risks Questionnaire (RISK). The RISK was designed to measure attitudes toward psychological risks (i.e., disregard of social approval) and physical risks (i.e., disregard of physical danger; Franken, Gibson, & Rowland, 1992). From its development and validation processes, the scale had high internal consistency

coefficients for both male (α = .92) and female (α = .93) samples. Inverse relationships were found with scores representing fear expression and perceived danger of activities, demonstrating evidence for construct validity. Examples of items are "I do not let the fact that something is considered immoral stop me from doing it" (psychological risks) and "I like the feeling that comes with taking physical risks" (physical risks). Responses are made on a 5-point Likert-type scale, ranging from 1 = "not like me" to 5 = "like me," with higher scores indicating more positive attitudes toward risk-taking. The scale was quite reliable in the present study (α = .86 for psychological risks and .83 for physical risks).

Task and Ego Orientation in Sport Questionnaire (TEOSQ). The TEOSQ consists of 16 items asking when, and in what conditions, individuals feel successful in sport (Duda & Nicholls, 1992). There are 2 subscales (8 items each) gauging levels of task goal orientation (feeling successful when achieving self-based goals such as giving efforts, learning new skills, and improving from previous standards) and those of ego orientation (feeling successful in terms of social comparisons such as winning, outperforming an opponent, and receiving positive evaluation from external sources; Ryska, 2004). The subscales' internal consistency was adequate when administered among athletes (α = .81 for task orientation and .70 for ego orientation; Boyd & Kim, 2007) and non-athletes (α = .73 for task goal orientation and .71 for ego goal orientation; Gimeno & García-Mas, 2010). Examples of the TEOSQ are "I learn a new skill by trying hard" (task orientation) and "I'm the only one who can do the skill" (ego orientation), using a 5-point Likert-type scale anchored at 1 = "strongly disagree" and 5 = "strongly agree." Both subscales produced strong internal consistency coefficients for

use in the present study (α = .90 for task goal orientation and .93 for ego goal orientation).

Procedures

This research study was approved by the Institutional Review Board (IRB) of the University of West Florida (UWF; Appendix B). With permission from the instructors, participants were recruited from 4 psychology classes at UWF. Individuals were eligible for participation in the study if their age was over 18. In exchange for extra credit, they were asked to complete a pencil-and-paper survey packet, including six standardized self-report measures and a brief demographic questionnaire. The nature of the study, as well as risks and benefits of participating, was outlined in an informed consent statement (Appendix C). Participation was anonymous and voluntary.

Statistical Analyses

The relationships among mental toughness, sport-related morality (i.e., anger and aggressiveness, acceptance of cheating and gamesmanship, and attitudes toward performance-enhancing drugs), attitudes toward risk-taking, and goal orientation were tested by zero-order correlations. A series of independent-sample *t* tests with a Bonferroni correction (α = .05/11 = .004) was performed in order to compare levels of mental toughness and other criterion variables between male and female participants, as well as between individuals who played contacting sports and those playing non-contacting sports. Four hierarchical regression models (2 dimensions of mental toughness x the criterion variables of anger and aggressiveness) were performed in order to explore the role of mental toughness as a moderator on how various attitudinal and

dispositional constructs would predict the extent to which participants had vented their anger and acted aggressively in sporting competition.

CHAPTER III

RESULTS

Data Transformation

An inspection of univariate statistics (i.e., skewness and kurtosis) revealed that sample distributions of three variables were not normally distributed. Specifically, the scores representing levels of aggressiveness in sporting competition and acceptance of cheating behaviors were positively skewed, while those of task goal orientation were negatively skewed. The first two variables were then transformed by a square-root transformation and the last one by a square transformation (Hair, Black, Babin, Anderson, & Tatham, 2006). As a result, the transformation procedures acceptably addressed the problems of skewness so that all variables were ready for further bivariate and multivariate analyses.

Zero-order Correlations

Overall, mental toughness was negatively correlated with acceptance of cheating and expressions of anger and aggressiveness in sporting competition, which is not consistent with the hypotheses (Table 2). A negative correlation between levels of constancy and attitudes toward psychological risk-taking was observed. Although not statistically significant, there was a positive trend of the relationship between degrees of confidence and attitudes toward physical risk-taking. Not surprisingly, the participants

high in mental toughness were more likely to adapt task goal orientation in defining successful outcomes when practicing and competing with others.

Group Comparisons

Because of multiple comparisons, a Bonferroni correction was employed ($\alpha = .05/11 = .004$) in order to protect against a Type I Error. Male and female participants did not differ in either confidence or constancy dimensions of mental toughness (Table 3). Male participants reported engaging in aggressive behaviors in past competitions more than female counterparts. Males were also more tolerant of gamesmanship behaviors and use (or misuse) of performance-enhancing substances in sporting competition. Additionally, comparisons between players of contact sports and those of non-contact sports indicated that the former group expressed more aggressiveness in sporting competition than the latter group (Table 4).

Table 2

Correlations Among Two Dimensions of Mental Toughness and Criterion Variables

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
1. MT – Confidence	-									
2. MT – Constancy	.37*	-								
3. Anger	-.02	-.23*	-							
4. Aggressiveness	-.02	-.24*	.45*	-						
5. Cheating	-.18†	-.33*	.44*	.42*	-					
6. Gamesmanship	.01	-.07	.20†	.49*	.19†	-				
7. PED	-.14	-.16	.15	.45*	.24*	.27*	-			
8. Psychological risk	-.05	-.34*	.21†	.31*	.26*	.14	.42*	-		
9. Physical risk	.16	-.06	.16	.24*	-.02	.21†	.28*	.59*	-	
10. Task orientation	.26*	.30*	.08	-.07	-.03	-.01	-.22	-.08	.01	-
11. Ego orientation	.17	-.07	.37*	.20†	.22†	.27*	.06	.21†	.17	.43*

Note. MT = mental toughness; PED = attitudes toward performance-enhancing drugs. A listwise deletion was performed in order to simplify the results (n = 121). $^{\dagger}p < .05$, one-tailed; $^{*}p < .01$, one-tailed.

Table 3

Comparisons of Mental Toughness and Other Criterion Variables Between Male and Female Participants

	Male[a]		Female[b]				
	M	*SD*	*M*	*SD*	*t*	*p*	*d*
MT – Confidence[c]	3.22	0.47	3.13	0.46	0.99	.321	0.19
MT – Constancy[c]	3.20	0.60	3.27	0.58	-0.67	.500	-0.11
Anger	17.55	4.42	15.56	4.69	2.40	.018	0.43
Aggressiveness[d]	12.32	5.05	8.54	3.58	5.09	.001	0.86
Cheating[d]	5.42	2.69	4.36	2.25	2.51	.013	0.42
Gamesmanship	10.02	2.22	8.07	2.38	4.65	.001	0.84
PED	37.77	10.62	30.68	9.40	3.88	.001	0.70
Psychological risk	11.38	4.43	9.10	4.20	2.91	.004	0.52
Physical risk	15.33	3.81	14.08	4.59	1.62	.106	0.29
Task goal orientation[d]	35.78	3.99	36.56	5.17	-1.26	.210	-0.16
Ego goal orientation	30.97	7.77	28.93	8.57	1.36	.175	0.24

Note. MT = mental toughness; PED = attitudes toward performance-enhancing drugs. A listwise deletion was performed in order to simplify the results (n = 121). [a]n = 60; [b]n = 61. [c]Due to unequal numbers of items, average scores were reported instead of summed scores. [d]Means and standard deviations of untransformed scores were reported.

Table 4

Comparisons of Mental Toughness and Other Criterion Variables Between Participants Who Played Contact and Non-contact Sports

	Contact[a]		Non-contact[a]				
	M	*SD*	*M*	*SD*	*t*	*p*	*d*
MT – Confidence[b]	3.13	0.45	3.21	0.48	-1.00	.318	-0.17
MT – Constancy[b]	3.19	0.61	3.30	0.56	-1.03	.304	-0.18
Anger	16.90	4.50	16.37	4.65	0.63	.525	0.11
Aggressiveness[c]	11.95	5.14	8.95	3.82	3.86	.001	0.66
Cheating[c]	4.95	2.65	4.82	2.44	0.31	.754	0.05
Gamesmanship	9.33	2.31	8.70	2.65	1.39	.166	0.25
PED	37.05	11.44	31.57	8.88	2.92	.004	0.53
Psychological risk	10.53	4.54	9.80	4.28	0.91	.365	0.16
Physical risk	15.08	4.15	14.25	4.34	1.07	.286	0.19
Task goal orientation[c]	35.63	4.32	36.65	4.89	-1.49	.139	-0.22
Ego goal orientation	30.05	8.06	29.67	8.40	0.25	.799	0.04

Note. MT = mental toughness; PED = attitudes toward performance-enhancing drugs. A listwise deletion was performed in order to simplify the results (n = 120). [a]n = 60. [b]Due to unequal numbers of items, average scores were reported instead of summed scores. [c]Means and standard deviations of untransformed scores were reported.

Mental Toughness as a Moderator

In order to further explore the moderating role of mental toughness on the relationships between five psychological predictors and aggression (i.e., anger and aggressiveness), four hierarchical regression models (two dimensions of mental toughness x two criterion variables) were generated. Different predictors were entered into the models at each of four steps. Since men reported greater instances of anger and aggressiveness in past competitions more often than women (Table 3), gender was entered as a controlling variable in the first step. Entered next were the five predictors of acceptance of gamesmanship, attitudes toward psychological and physical risk-taking, and ego orientation, followed by either confidence or constancy. This analysis was done to examine whether each dimension of mental toughness uniquely and additionally accounted for variance of anger and aggressiveness already explained by gender and attitudinal/dispositional variables. In the final step, the products of mental toughness (either confidence or constancy) and each predictor in the second step were included, testing for moderating effects. As recommended by Cohen, Cohen, West, and Aiken (2003), all predictors except gender were mean-centered in order to avoid the problem of multicollinearity.

For the model predicting anger, after removing the variance explained by gender, acceptance of cheating and ego goal orientation were significant predictors (Table 5). That is, the participants who viewed cheating as an acceptable behavior in competitive sports and defined success by comparing their performance to others' tended to feel irritated when things go wrong and frequently expressed their anger in sporting competition. However, confidence levels did not mediate or moderate these

relationships. For the model predicting aggressiveness, acceptances of both cheating and gamesmanship behaviors were significantly and positively related to degrees of aggressiveness. More interestingly, confidence seemed to exaggerate the impact of the acceptance of gamesmanship on aggression. The participants who recognized and approved of gamesmanship behaviors and had high confidence were the most likely to engage in aggressive thoughts and behaviors toward their opponents. Constancy, on the other hand, was neither a potential mediator nor a moderator of the relationships between these constructs.

Simple Slope Analyses

Following Akin and West (1991), simple slope analyses were conducted in order to meaningfully interpret the relationship between the acceptance of gamesmanship behaviors and aggressiveness, which were conditioned upon the levels of confidence. Specifically, two simple slopes were calculated: a regression of aggressiveness on the acceptance of gamesmanship at the confidence level one standard deviation above the mean ($z_H = 2.87$) and another at one standard deviation below the mean ($z_L = -2.87$). As a result, at $z_H = 2.87$, the amount of aggressiveness would increase 0.144 standard deviation if the acceptance of gamesmanship increased one standard deviation whereas, at $z_L = -2.87$, the former would increase only 0.058 standard deviation if the latter increased one standard deviation.

Table 5

Hierarchical Regression Analyses Testing for Moderating Effects of Confidence on the Relationships Between Five Psychological Predictors and Aggression in Sport

	Anger		Aggressiveness	
Predictor	ΔR^2	β	ΔR^2	β
Step 1	.046†		.179*	
Gender		.21†		.42*
Step 2	.255*		.240*	
Acceptance of cheating		.38*		.30*
Acceptance of gamesmanship		-.00		.33*
Psychological risk		-.05		.07
Physical risk		.14		.10
Ego goal orientation		.26*		-.01
Step 3	.002		.001	
Confidence		-.04		.00
Step 4	.048		.061†	
Acceptance of cheating x Confidence		-.13		.00
Acceptance of gamesmanship x Confidence		.10		.18†
Psychological risk x Confidence		.07		.01
Physical risk x Confidence		.10		-.19
Ego goal orientation x Confidence		-.04		.03
Total R^2	.351		.481	

Note. $n = 120$. †$p < .05$; *$p < .01$.

CHAPTER IV

DISCUSSION

The present study is the first to examine the relationships between mental toughness and various psychological constructs of sport-related morality such as cheating and gamesmanship attitudes and aggressive behaviors. Explanatory roles of mental toughness on the relationships between various attitudinal or dispositional constructs and expression of anger or aggressiveness in sporting fields were also explored.

The results from zero-order correlations indicated that mental toughness was negatively correlated with how much the acceptance of cheating behaviors as a part of the game and how often the participants had acted aggressively in past competitions. In particular, those who believed that they possessed an ability to bounce back after losing a match and were greatly committed to their sports did not comfortably accept cheating behaviors. These findings suggest that even though mentally tough athletes will try very hard to overcome their obstacles, they are unlikely to adopt socially unacceptable means for their attempts. Why athletes choose the means that are morally acceptable rather than unethical might be explained by how they typically approach the problems. It was found that athletes with high mental toughness were more optimistic than those who were not mentally tough (Nicholls et al., 2008). In addition, those who viewed problems as challenging and anticipated positive outcomes were more likely to confront the problems

rightfully with greater efforts and less likely to use an inappropriate shortcut such as cheating (Gaudreau & Blondin, 2004; Nes, Segerstrom, & Sephton, 2005).

Only the constancy dimension (but not the confidence dimension) of mental toughness was negatively associated with the extent to which the participants had expressed their anger and engaged in aggressive behaviors during competitions. These findings are partly supported by prior studies investigating the relationship between mental toughness and the use of coping strategies (Kaiseler et al., 2009; Nicholls et al., 2008). Both studies found that commitment was inversely related to emotional venting. Provided that venting unpleasant emotions (e.g., anger) is one sort of emotional distraction (Crocker & Isaak, 1997) or disengagement-oriented coping (Gaudreau & Blondin, 2002), it is unlikely that athletes with strong commitment to complete something would lose their focus from the task at hand by expressing their anger toward opponents or officials. It seems that to some extent mentally tough athletes could withstand provocation from their opponents or spectators by not reacting emotionally to the circumstances. However, this hypothesis remains untested and needs further research.

Not consistent with the hypotheses, mental toughness was not associated with acceptance of gamesmanship behaviors. Knowing athletes' mental toughness levels did not predict the likelihood that they will provoke or irritate their opponents in order to gain advantages in sporting competition. It is possible that this association may be moderated by other factors such as levels of competition. For instance, the relationship between mental toughness and the acceptance of gamesmanship might be strengthened among athletes competing in national and international tournaments where an outcome

is prominent. On the other hand, degrees of mental toughness might be inversely related to the gamesmanship attitudes among athletes participating in recreational sports or local competitions. This assumption was partially supported by Rascle et al. (1998) who argued that sport contexts in which social comparisons and competitive outcomes are stressed would intensify athletes' ego orientation and aggression as well as the relationship between them.

Although the relationship between mental toughness and task orientation was not a primary focus in the present study, it is worth noting that a positive correlation was observed. Participants who possessed an unshakable confidence and were highly committed to sporting tasks evaluated their success in achievement situations by the amount of effort they put into tasks and how much improvement they make when compared to the past. Specifically, the association between constancy and task orientation found in the present study is consistent with the finding by Lerner and Locke (1995). They examined interdependent effects of situational factors and personality traits on performance of an endurance task (i.e., a sit-up task). Their preliminary analysis revealed a positive association between goal commitment and goal orientation (equivalent to task orientation) which was much stronger than that between goal commitment and win orientation (equivalent to ego orientation; Gill, Dzewaltowski, & Deeter, 1988). Another study (Clough et al., 2002) found that after receiving (false) negative feedback, mentally tough individuals performed more steadily on a task, as opposed to less mentally tough ones whose performance was dropped drastically. Therefore, task orientation might be an underlying explanation of this phenomenon. Since individuals high in mental toughness usually define their achievement in terms of

effort and improvement, they might be less impacted by negative feedback, particularly when provided by external sources.

Among four pairs of associations between mental toughness and attitudes toward risk-taking, only the relationship between constancy and attitudes toward psychological risks yielded a significant, negative coefficient. At first glance, these results seemed to contradict the findings from Crust and Keegan's (2010) study in which positive associations between three dimensions of mental toughness (i.e., challenge, commitment, and ability confidence) and attitudes toward physical risks were observed. However, this finding may better reflect two distinct yet complementary constructs of mental toughness and ongoing processes in developing its measurement (Crust & Swann, 2011). First, the "confidence" subscale of the SMTQ (Sheard et al., 2009) does not seem to measure the same content as the "ability confidence" subscale assessed by the MT48 (Clough et al., 2002). Not only does the former assess confidence in one's sporting abilities, it also implicitly includes confidence to do well under pressure, to control one's emotions, and to cope effectively with adversity. Perhaps the non-significant relationship between confidence and attitudes toward physical risk-taking found in the present study resulted from multidimensional characteristics of this construct. Although some scholars have pointed out such a limitation of using this scale (Crust & Swann, 2011), it reminds researchers and practitioners of the multidimensionality of the term "confidence" athletes should have so as to achieve their athletic goals. These multi-faceted characteristics are also consistent with the model of sport confidence proposed by Vealey and colleagues (Vealey, 1986; Vealey, Hayashi, Garner-Holman, & Giacobbi, 1998) and might better represent the confidence

components of mental toughness. In fact, the MT48 (Clough et al., 2002) contains another confidence subscale (i.e., interpersonal confidence) which could also considerably contribute to this sphere.

Second, it is worth noting the slightly different functions between the "constancy" subscale of the SMTQ and the "commitment" subscale of the MT48. By examining the item content of the scales, they appear to measure the same component of mental toughness – a tendency to continuously commit oneself to laborious tasks and never easily give up (Clough et al., 2002). However, the present study found a significant, negative relationship between constancy and psychological risk-taking, while Crust and Keegan (2010) reported no relationship between commitment and psychological risk-taking, suggesting that the scales might measure different constructs. While the items in the constancy subscale seem to have common characteristics with self-regulation (Kirschenbaum, 1984), those in the commitment subscale are geared toward measuring full involvement, as opposed to alienation, of oneself in certain situations. As found in self-regulation studies from areas other than sport psychology (e.g., Magar, Phillips, & Hosie, 2008; Quinn & Fromme, 2010), it is not surprising that participants who were high in self-monitoring and able to regulate their behaviors toward a goal (i.e., high constancy) had less positive attitudes toward behaviors or activities of which society disapproves.

There were no differences in the levels of mental toughness (i.e., confidence and constancy) between male and female participants and between those who played contact and non-contact sports. The similarity between men and women was incongruent with the result obtained by Sheard et al. (2009) in which male athletes rated their confidence

higher than female athletes. This result may be due to the fact that approximately one half of the participants in the present study were no longer engaged in sporting competition while all participants in the Sheard et al. study actively participated in competitive sports at the time the data were collected. A long interval from competition might unpredictably change individuals' perceptions of their abilities, causing greater within-group variances among male and female participants. For the comparisons between two types of sports, it was not surprising that significant differences were not observed. Since both bodily contact sports (e.g., football and basketball) and non-contact sports (e.g., tennis and golf) similarly challenge athletes to overcome a great deal of pressure and require constant practice and commitment, the types of sports played did not significantly affect the levels of mental toughness in the present study.

As expected, acceptance of cheating and gamesmanship as well as ego orientation has emerged as potential predictors of the extent to which participants vented their anger and acted aggressively in sporting events. These results have replicated those from prior studies (Chantal et al., 2005; Chantal, Soubranne, & Brunel, 2009; Dunn & Dunn, 1999; Guivernau & Duda, 2002; Kavussanu et al., 2002; Rascle et al., 1998; Schwebel et al., 2007) which support the predictive capability of sportspersonship and ego orientation in forecasting aggression in sport. More interestingly, confidence was likely to strengthen the relationship between the acceptance of gamesmanship behaviors and aggressiveness. Participants with high confidence who also had positive attitudes toward gamesmanship behaviors (e.g., psyching opponents out) were the most likely to employ aggressive strategies in sporting competition. As sport psychologists have tentatively agreed that high confidence is not problematic as long as it does not far

exceed actual abilities (Weinberg & Gould, 2007), perhaps only athletes who believe that they have mastered advanced skills, but in fact they have not, are prone to compete more aggressively if they view gamesmanship behaviors as simply "part of the game." Regarding mental toughness (e.g., Clough et al., 2002; Crust, 2008; Jones et al., 2002; Middleton et al., 2004; Sheard et al., 2009), athletes may not only have a misperception of their abilities (i.e., overconfidence), but also that of their confidence stability. Because the present study used self-report instruments as a way to assess mental toughness, the participants probably rated themselves having unshakable confidence (i.e., stable) in their abilities. In actuality, it is likely reasonable that their confidence varies greatly and is affected by many factors such as past performance, quality of opponents, and evaluations from others. To date, there have been no studies directly assessing stability in perceived self-confidence in relation to athletic performance across time. If mental toughness is characterized by consistent high confidence, it should help individuals perform optimally across situations. Future research testing this assumption is warranted.

Limitations

Some limitations of the present study should be acknowledged. First, roughly one half of the participants were no longer actively participating in sporting competition when the data were collected. They may not have been able to report precisely how they thought, felt, and behaved, compared to those who had been competing more recently. However, post hoc independent-sample *t*-tests between those groups indicated that, among 11 variables of interest, only anger and aggressiveness were found to be significantly different. Specifically, participants who played competitive sports during

college reported expressing greater anger and aggressiveness than those who only played competitive sports during high school. Although aggression might be a critical factor for athletes to be competitive in higher competition, these differences were more likely to result from personal experiences (Coulomb-Cabagno & Rascle, 2006) than dispositional characteristics. Moreover, adding this factor as a controlling variable in the hierarchical regression analyses did not change the direction of the results.

Second, the present study was correlational in nature. Therefore, causal relationships among variables could not be assumed. A recursive relationship was also possible. For example, cultivating mental toughness (i.e., constancy) may lead to lesser aggressiveness in some sporting fields. However, decreasing aggressive behaviors by creating cooperative atmospheres, as opposed to competitive atmospheres, may result in greater constancy in sporting activities as well. Longitudinal and experimental studies are needed in order to establish causal relationships between mental toughness and other variables and to further examine the functions of mental toughness in explaining how personal and environmental factors influence sport-related behaviors.

Third, the present study did not make a distinction between reactive aggression and instrumental aggression. According to Lefebvre, Leith, and Bredemeier (1980), different types of aggressive behaviors serve different functions in competitive situations. While an objective of reactive aggression is to harm an opponent, that of instrumental aggression is simply to distract others from performing optimally. It was also found that the former was negatively associated with “sportspersonship” orientation whereas the latter showed a positive association (Chantal et al., 2005). Thus, it was probable that mental toughness (i.e., confidence) would strengthen the influence of

gamesmanship attitudes when using instrumental aggression but not with reactive aggression.

Regarding an issue of measurement, the control subscale of the SMTQ yielded unacceptably low internal consistency reliability. This questionable psychometric property was also observed in the study by Crust and Swann (2011). A closer inspection of the items in the subscale suggested some plausible explanations. For instance, all items are negatively worded and do not directly convey how athletes control themselves and their environment. For example, the item "I am overcome by self-doubt" may indicate a lack of control as well as low self-confidence which might overlap with the content of the confidence subscale. Additionally, the relatively high internal consistency found in the original study (Sheard et al., 2009) might result from a common method factor (i.e., negative wording).

Implications

The present study portrayed important features of mental toughness among sub-elite athletes. Young athletes could develop mental toughness at the earliest phase of sport involvement (Connaughton et al., 2010), which is also a critical period for those youngsters to learn and build moral character as well as gamesmanship behaviors in sport (Shields & Bredemeier, 2007). The findings in the present study provided preliminary evidence that mental toughness may help athletes cultivate positive attitudes toward sporting competition (e.g., less preferable to cheating and use of performance-enhancing drugs) and diminish undesirable behaviors (e.g., aggression) in sporting fields. With some concern that mental toughness (i.e., confidence) might amplify the effect of gamesmanship attitudes on aggressive behaviors, sport practitioners (e.g.,

coaches or physical educators) should provide athletes an atmosphere that emphasizes development of mental toughness and other desirable characters such as intrinsic motivation and task goal orientation (Kavussanu et al., 2002). In particular, coaches and parents are significant role models who can teach athletes, directly and vicariously, how to confidently cope with a range of problems within and outside a sporting domain and how to continuously pursue athletic achievement, without committing themselves to unsportsmanlike behaviors (Guivernau & Duda, 2002). Again, mental toughness can contribute to positive athletic behaviors and outcomes; however, sport practitioners should always keep in mind that it might destructively impact sport-related morality if athletes perform in environment in which cheating and gamesmanship behaviors are encouraged.

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APPENDIXES

APPENDIX A

Standardized Questionnaires

A Demographic Questionnaire

What is your age? _____

What is your gender?

❍ Male ❍ Female

What is your class level?

❍ Freshman ❍ Sophomore
❍ Junior ❍ Senior
❍ Graduate student

What is your race/ethnicity?

❍ African American/Black ❍ Asian American/Pacific Islander
❍ Caucasian/White ❍ Hispanic/Latino
❍ Native American/Alaskan Native
❍ Other (please specify _____)

Did you play competitive sport(s) during high school?

❍ Yes ❍ No

If yes, which sport did you play the most? _____

If yes, how much did you practice?

❍ Less than once a week ❍ Once a week
❍ Twice a week ❍ Three times a week
❍ Five times a week ❍ More than five times a week

Did you play competitive sport(s) during college/university?

❍ Yes ❍ No

If yes, which sport did you play the most? _____

If yes, how much did you practice?

❍ Less than once a week ❍ Once a week
❍ Twice a week ❍ Three times a week
❍ Five times a week ❍ More than five times a week

SMTQ

Please indicate your response to the following items by choosing one of the numbers anchored by 1 = ***not at all true to me*** and 4 = ***very true to me***. Please answer these items carefully, thinking how you are ***in sporting activities*** (e.g., practice or competition).

1.	I can regain my composure if I have momentarily lost it.	1	2	3	4
2.	I worry about performing poorly.	1	2	3	4
3.	I am committed to completing the tasks I have to do.	1	2	3	4
4.	I am overcome by self-doubt.	1	2	3	4
5.	I have an unshakeable confidence in my ability.	1	2	3	4
6.	I have what it takes to perform well while under pressure.	1	2	3	4
7.	I get angry and frustrated when things do not go my way.	1	2	3	4
8.	I give up in difficult situations.	1	2	3	4
9.	I get anxious by events I did not expect or cannot control.	1	2	3	4
10.	I get distracted easily and lose my concentration.	1	2	3	4
11.	I have qualities that set me apart from other competitors.	1	2	3	4
12.	I take responsibility for setting myself challenging targets.	1	2	3	4
13.	I interpret potential threats as positive opportunities.	1	2	3	4
14.	Under pressure, I am able to make decisions with confidence and commitment.	1	2	3	4

CAAS

Please indicate your response to the following items by choosing one of the numbers, which have the following meanings:

1 = almost never
2 = occasionally
3 = sometimes
4 = quite often
5 = almost always

Please answer these items carefully, thinking ***how often*** you have these behaviors, thoughts, and/or feelings during a sport competition.

1.	I become irritable if I am disadvantaged during a match.	1	2	3	4	5
2.	I feel bitter towards my opponent if I lose.	1	2	3	4	5
3.	I get mad when I lose points.	1	2	3	4	5
4.	I show my irritation when frustrated during a game.	1	2	3	4	5
5.	I find it difficult to control my temper during a match.	1	2	3	4	5
6.	Official's mistakes make me angry.	1	2	3	4	5
7.	Violent behavior, directed towards an opponent, is acceptable.	1	2	3	4	5
8.	It is acceptable to use illegal physical force to gain an advantage.	1	2	3	4	5
9.	I taunt my opponents to make them lose concentration.	1	2	3	4	5
10.	I use excessive force to gain an advantage.	1	2	3	4	5
11.	I verbally insult opponents to distract them.	1	2	3	4	5
12.	Opponents accept a certain degree of abuse.	1	2	3	4	5

AMDYSQ

Please read each item and choose one of the numbers beside it, which are anchored by 1 = ***strongly disagree*** and 5 = ***strongly agree***, to show how much you agree or disagree with it. Some of these are not different so you will have to be careful.

1.	It is OK to cheat if nobody knows.	1	2	3	4	5
2.	I sometimes try to wind up the opposition.	1	2	3	4	5
3.	I would cheat if I thought it would help me win.	1	2	3	4	5
4.	It is not against the rules to psyche people out so it's OK to do.	1	2	3	4	5
5.	If other people are cheating, I think I can too.	1	2	3	4	5
6.	Sometimes I waste time to unsettle the opposition.	1	2	3	4	5

PEAS

Please read each statement and fill in the blank one of the numbers, which have the following meanings:

1 = strongly disagree
2 = disagree
3 = slightly disagree
4 = slightly agree
5 = agree
6 = strongly agree

to show how much you agree or disagree with it.

_____ 1. Legalizing performance enhancements would be beneficial for sports.
_____ 2. Doping is necessary to be competitive.
_____ 3. The risks related to doping are exaggerated.
_____ 4. Recreational drugs give the motivation to train and compete at the highest level.
_____ 5. Athletes should not feel guilty about breaking the rules and taking performance-enhancing drugs.
_____ 6. Athletes are pressured to take performance-enhancing drugs.
_____ 7. Health problems related to rigorous training and injuries are just as bad as from doping.
_____ 8. The media blows the doping issue out of proportion.
_____ 9. Media should talk less about doping.
_____ 10. Athletes have no alternative career choices, but sport.
_____ 11. Athletes who take recreational drugs, use them because they help them in sport situations.
_____ 12. Recreational drugs help to overcome boredom during training.
_____ 13. Doping is an unavoidable part of the competitive sport.
_____ 14. Athletes often lose time due to injuries and drugs can help to make up the lost time.
_____ 15. Doping is not cheating since everyone does it.
_____ 16. Only the quality of performance should matter, not the way athletes achieve it.
_____ 17. There is no difference between drugs, fiberglass poles, and speedy swimsuits that are all used to enhance performance.

RISK

Please indicate, using a 5-point scale, the degree to which each of the following statements describes you. Use the number "1" to indicate that the statement does not describe you at all (***not like me***) and the number "5" if the statement is a very good description of you (***like me***). Use remaining numbers to indicate the varying degrees that the statement is like you or not like you.

1.	I like the feeling that comes with taking physical risks.	1	2	3	4	5
2.	While I don't deliberately seek out situations or activities that society disapproves of, I find that I often end up doing things that society disapproves of.	1	2	3	4	5
3.	I often do things that I know my parents would disapprove of.	1	2	3	4	5
4.	I consider myself a risk-taker.	1	2	3	4	5
5.	Being afraid of doing something new often makes it more fun in the end.	1	2	3	4	5
6.	The greater the risk the more fun the activity.	1	2	3	4	5
7.	I like to do things that almost paralyze me with fear.	1	2	3	4	5
8.	I do not let the fact that something is considered immoral stop me from doing it.	1	2	3	4	5
9.	I often think about doing things that I know my friends would disapprove of.	1	2	3	4	5
10.	I often think about doing things that are illegal.	1	2	3	4	5

TEOSQ

Please indicate your response to the following items by choosing one of the numbers, which are anchored by 1 = ***strongly disagree*** and 5 = ***strongly agree***. Please answer these items carefully, thinking of the sport you play most often and indicating when you feel most successful in this activity.

I feel really successful when …

1.	I can keep practicing hard.	1	2	3	4	5
2.	I get the knack of doing a new skill.	1	2	3	4	5
3.	Others can't do as well as me.	1	2	3	4	5
4.	Others mess up and I don't.	1	2	3	4	5
5.	I work really hard.	1	2	3	4	5
6.	A skill I learn really feels right.	1	2	3	4	5
7.	I do better than my friends.	1	2	3	4	5
8.	I'm the only one who can do the skill.	1	2	3	4	5
9.	I learn a new skill by trying hard.	1	2	3	4	5
10.	I can do something I couldn't do before.	1	2	3	4	5
11.	I beat the others.	1	2	3	4	5
12.	I'm the best.	1	2	3	4	5
13.	Something I learn makes me want to practice more.	1	2	3	4	5
14.	I do my very best.	1	2	3	4	5
15.	I'm more skilled than other people.	1	2	3	4	5
16.	I have the highest score.	1	2	3	4	5

APPENDIX B

IRB Approval Letter

University of West Florida

Research and Sponsored Programs
11000 University Parkway, Bldg. 11
Pensacola, FL 32514-5750

Mr. Sakkaphat Ngamake
100/38 Rajchavitee
18 Samsanenai Phayathai
Bangkok 10400 Thailand

March 25, 2011

Dear Mr. Ngamake:

The Institutional Review Board (IRB) for Human Research Participants Protection has completed its review of your proposal titled "Relationships between Mental Toughness and Attitudes toward Sport-related Morality," as it relates to the protection of human participants used in research, and granted approval for you to proceed with your study on 04-01-2011. As a research investigator, please be aware of the following:

* You will immediately report to the IRB any injuries or other unanticipated problems involving risks to human participants.
* You acknowledge and accept your responsibility for protecting the rights and welfare of human research participants and for complying with all parts of 45 CFR Part 46, the UWF IRB Policy and Procedures, and the decisions of the IRB. You may view these documents on the Research and Sponsored Programs web page at http://www.research.uwf.edu/internal. You acknowledge completion of the IRB ethical training requirements for researchers as attested in the IRB application.
* You will ensure that legally effective informed consent is obtained and documented. If written consent is required, the consent form must be signed by the participant or the participant's legally authorized representative. A copy is to be given to the person signing the form and a copy kept for your file.
* You will promptly report any proposed changes in previously approved human participant research activities to Research and Sponsored Programs. The proposed changes will not be initiated without IRB review and approval, except where necessary to eliminate apparent immediate hazards to the participants.
* **You are responsible for reporting progress of approved research to Research and Sponsored Programs at the end of the project period 03-31-2012. If the data phase of your project continues beyond the approved end date, you must receive an extension approval from the IRB.**

Good luck in your research endeavors. If you have any questions or need assistance, please contact Research and Sponsored Programs at 850-857-6378 or irb@uwf.edu.

Sincerely,

Richard S. Podemski

Dr. Richard S. Podemski, Associate
Vice President for Research
And Dean of the Graduate School

Carla J. Thompson

Dr. Carla Thompson, Chair
IRB for the Protection of Human
Research Participants

CC: Robert Rotunda, Laura Bryan

Phone 850.474.2824 Fax 850.474.2802
Web research.uwf.edu

APPENDIX C

Informed Consent Form

Informed Consent Form

Thank you for your interest in this research project conducted by Sakkaphat Ngamake. Federal and university regulations require me to obtain signed consent for participation in research involving human participants. After reading the detailed statements below, please indicate your consent by dating this form and signing it. If you have any questions or comments about this research project, please contact Sakkaphat Ngamake by phone at (850) 361-9979 or e-mail at nsakkaphat@gmail.com, or Dr. Robert Rotunda at rrotunda@uwf.edu.

Statement of Procedure

This research project involves an assessment of perceptions and attitudes toward sport-related actions, as well as other psychological variables. You will find a summary of the major aspects of the study described below, including the potential risks and benefits of participating. Please carefully read the information provided below. If you wish to participate in the study, sign your name and write the date at the bottom of the page. Any information you provide to us will be kept strictly confidential.

I understand that:

1. I will be asked to complete a questionnaire packet assessing my perceptions and my attitudes toward sport-related actions such as gamesmanship and aggressiveness.
2. My individual responses will be kept confidential, and there will not be a way to link my responses to my identity.
3. My participation in this study is voluntary and I may discontinue participating in this study at any time without any negative consequences or penalties.

Potential Risks of the Study

Some participants may feel somewhat uncomfortable expressing their opinions and beliefs. These uncomfortable reactions are infrequent, and when they do occur, they are often brief and mild.

Potential Benefits of the Study

Information obtained from this study will provide a better understanding of the areas of sport psychology. It could also enhance coaches' understanding of athletes' performance and sport-related perceptions and attitudes.

Statement of Consent: I certify that I am 18 years of age of older. I certify that I have read and fully understand the Statement of Procedure given above and agree to participate in this study. Permission is given voluntarily and without coercion or undue influence. It is understood that I may discontinue participation at any time without penalty or loss of any benefits. I will be provided a copy of this consent form if I request.

_____ _____

Participant's Signature Date

_____

Participant's Name