The role of mental toughness, psychological skills and team cohesion in soccer performance

By

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Declaration

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Date: December 2013

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Dedication

I dedicate this thesis to my father Kwadwo Nkrumah.

Jesus Christ will not conquer in spite of the darkness of evil; He will conquer through it.

Summary

There is a relative lack of information in sport psychology research literature about the role of psychological dimensions in team sport – especially in soccer (Reilly *et al.,* 2000). It is consequently not surprising that research on applied strategies in soccer has concentrated mainly on technical, tactical and physiological aspects. This defies anecdotal evidence and literature reports alluding to the importance of psychological and team factors in achieving sport excellence.

This study examined the role of mental toughness, psychological skills and team cohesion in soccer performance. It also considered differences between individuals from different playing positions regarding these modalities.

A total of 263 male soccer players aged between 17 and 32 years from 16 South African tertiary institutions participated in the study. A cross-sectional study design was used to determine the players' mental toughness, psychological skills and team cohesion by means of the *Sports Mental Toughness Questionnaire* (SMTQ); the *Athletic Coping Skills Inventory-28* (ACSI-28); and the *Group Environmental Questionnaire* (GEQ). The final log standings at the 2012 University Sport South Africa (USSA) Soccer Championship were used as an indication of team performance.

The results yielded differences between successful and less successful teams with regard to age, previous tournament experience, and the time players had been part of their respective teams.

There were no significant differences between the teams for any of the mental toughness and psychological skills scores. However, group cohesion did play a role in team performance. The more successful teams scored better than their less successful counterparts in the following subscales of the GEQ: Individual attraction to group-social and individual attraction to group-task. However, the less successful teams scored better than their more successful counterparts regarding group integration-task, and group integration-social.

Practical significant differences of moderate magnitude were observed for five of the 96 player positional comparisons. Midfielders scored higher than the defenders and

forwards on the control subscale of the SMTQ. The forwards recorded higher scores than midfielders with regard to the GEQ subscale of group integration-task, whereas goalkeepers yielded higher scores than midfielders on the group integration-task subscale. There was a difference between the scores on the constancy subscale of the SMTQ where the defenders outscored the midfielders. No positional differences were recorded for any of the psychological skills.

The overall results revealed that at the developmental level of the study sample, team cohesion and other moderating variables might be the key to enhanced performance of soccer teams. In addition, the results supported the general assumption that a relationship exists between playing positions in team sports and various psychological variables.

Opsomming

Daar is 'n relatiewe gebrek aan navorsingsliteratuur in sportsielkunde oor die rol van sielkundige dimensies in spansoorte – veral in sokker (Reilly *et al.,* 2000). Dit is gevolglik logies dat navorsing oor toegepaste strategieë in sokker hoofsaaklik fokus op tegniese, taktiese en fisiologiese aspekte. Dit druis in teen anekdotiese getuienis en opvattings wat dui op die belangrikheid van sielkundige en spanfaktore in die bereiking van sportuitnemendheid.

Hierdie studie ondersoek die rol van geestelike taaiheid, sielkundige vaardighede en spankohesie in sokkerprestasie. Dit bestudeer ook die verskille tussen individue van verskillende speelposisies met betrekking tot hierdie modaliteite.

'n Totaal van 263 manlike sokkerspelers tussen die ouderdom van 17 en 32 jaar, van 16 Suid-Afrikaanse tersiêre inrigtings, het aan hierdie ondersoek deelgeneem. 'n Dwarsdeursnitstudie-ontwerp is gebruik om spelers se geestelike taaiheid, sielkundige vaardighede en spankohesie te bepaal deur middel van die *Sports Mental Toughness Questionnaire* (SMTQ); die *Athletic Coping Skills Inventory-28* (ACSI-28); en die *Group Environmental Questionnaire* (GEQ). Die finale posisies van spanne op die punteleer na afloop van die 2012 Universiteit Sport Suid-Afrika (USSA) sokkertoernooi is gebruik as aanduiding van hul prestasie.

Die resultate het verskille opgelewer tussen suksesvolle-en minder-suksesvolle spanne met betrekking tot ouderdom, vorige toernooi-ervaring, en die tydperk wat spelers lede van hul onderskeie spanne was.

Daar was geen beduidende tellingverskille tussen spanne rakende enige van die geestelike taaiheid en sielkundige vaardighede nie. Groepkohesie het egter 'n rol in spanprestasie gespeel. Die meer-suksesvolle spanne het beter gevaar as die minder-suksesvolle spanne in die volgende subskale van die GEQ: Individuele aantreklikheid van die groep-sosiaal; Individuele aantreklikheid van die groep-taak. Die minder-suksevolle spanne het egter beter gevaar as die meer-suksesvolle spanne met betrekking tot: Groepintegrasie-taak, en Groepintegrasie-sosiaal.

Prakties beduidende verskille is waargeneem vir vyf van die 96 speelposisie-vergelykings. Middelveldspelers het hoër tellings behaal as verdedigers en voorspelers op die beheer-subskaal van die SMTQ. Voorspelers het beter tellings aangeteken as middelveldspelers op die GEQ subskaal groepintegrasie-taak; terwyl doelwagters hoër tellings as middelveldspelers op die subskaal groepintegrasie-taak aangeteken het.

Daar was 'n verskil in die konstantheid-subskaal van die SMTQ waar verdedigers beter as middelveldspelers gevaar het. Daar was geen beduidende verskille tussen speelposisies rakend enige van die sielkundige vaardighede nie.

Die oorkoepelende bevindinge dui daarop dat op die ontwikkelingsvlak van die studiesteekproef, spankohesie, en ander prestasiedimensies moontlik die sleutel bevat vir verhoogde prestasie-uitkomste van sokkerspanne. Verder ondersteun die resultate die algemene aanname dat daar 'n verband bestaan tussen speelposisies in spansportsoorte en verskeie sielkundige veranderlikes.

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Abbreviations

α	:	Cronbach Alpha
%	:	Percentage
=	:	Equal
≤	:	Less than or equal to
±	:	Plus minus
16 PFQ	:	16 Personality Factor Questionnaire
3C's	:	Commitment, Control, Challenge
4C's	:	Commitment, Control, Challenge, Confidence
ACSI-28	:	Athletic Coping Skills Inventory-28
AFMTI	:	Australian Football Mental Toughness Inventory
ANOVA	:	Analysis of variance
ATG	:	Individual Attraction to the Group
ATG-S	:	Individual Attraction to Group-Social
ATG-T	:	Individual Attraction to Group-Task
CBT	:	Cognitive-behavioural theory
Cf.	:	Confer
CFA	:	Confirmatory Factor Analysis
CMTI	:	Cricket Mental Toughness Inventory
CSAI-2	:	Competitive State Anxiety Inventory-2
d	:	Cohen's d – value
e.g.	:	For Example
ES	:	Effect Size
GEQ	:	Group Environment Questionnaire

GI	:	Group Integration
GI-S	:	Group Integration-Social
GI-T	:	Group Integration-Task
i.e.	:	That is
LSD	:	Least Significant Difference
M	:	Mean
MTI	:	Mental Toughness Inventory
MTQ-48	:	Mental Toughness Questionnaire-48
n	:	Sample size/ Number of participants in each subgroup
p	:	Probability
PCA	:	Principal Component Analysis
PPI	:	Psychological Performance Inventory
PPI-A	:	Psychological Performance Inventory-Alternative
PST	:	Psychological Skills Training
SD/s	:	Standard Deviation
SMTQ	:	Sport Mental Toughness Questionnaire
Sp	:	Pooled standard deviation
USSA	:	University Sports South Africa
vs.	:	Versus

Chapter One

Problem Statement

Background

At the turn of the 21st century an estimated 250 million people in more than 200 countries played soccer (also internationally known as "football"). The game is the world's most popular sport supporting a worldwide industry worth about US$400 billion (Guttman, 1993; Mueller *et al.*, 1996; Dunning, 1999).

Soccer is a fast, multifaceted and multi-skilled team game characterised by short sprints, rapid acceleration and deceleration, turning, jumping, tackling, heading, passing, and striking for goal (Bangsbo, 1994; Wisloff *et al.*, 1998).

Over the years soccer has developed into a more complex game in which optimal performance depends on the interaction of five pillars: namely, technical skills, tactical strategies, physiological factors, psychological skills, and team factors (e.g., team dynamics and cohesion). Many coaches, however, focus almost exclusively on the first three dimensions of the game mentioned above. This negates anecdotal evidence and literature reports highlighting the importance of psychological aspects and team factors in achieving optimal performance (Weinberg & Gould, 2011). Yet, coaches and athletes often blame unsatisfactory performance on psychological factors with statements such as "I wasn't hungry enough" (achievement motivation); "She did not focus" (concentration); "They choked under pressure" (activation control).

Mental toughness is one of the psychological dimensions considered essential for performance excellence and wellbeing across a number of life domains. With regards to sport, mental toughness is a term that coaches, athletes and sport psychology consultants use when discussing psychological factors that differentiate between successful and less successful athletes (Gucciardi *et al.*, 2008; Tristan *et al.*, 2010). Despite the extensive use of the term "mental toughness", there remains some vagueness about the conceptualisation and practical application of mental toughness. It's only recently that researchers such as Jones *et al.* (2002), Thelwell *et al.* (2005) and

Gucciardi *et al.* (2009a) have provided some conceptual clarity to reduce the confusion relating to the understanding and operationalisation of the concept.

Experts propose numerous attributes to clarify the nature of mental toughness. Examples are: not letting adverse situations affect performance (Gould *et al.*, 1987), rebounding from failures (Woods *et al.*, 1995), possessing superior mental skills (Bull *et al.*, 1996), having the ability to cope with pressure (Goldberg, 1998) and being resilient (Crust, 2008).

Clough *et al.* (2002) believe that mental toughness comprises a variety of constructive psychological factors that reduce negative cognitive and somatic effects. This enables athletes to consistently perform well irrespective of situational factors. In other words, mental toughness is not only relevant in the face of adversity but also facilitates an appropriate focus and motivation even when circumstances are favourable (Gucciardi *et al.*, 2008).

Research findings acknowledge that mental toughness differentiates between more and less successful competitors across a variety of sports, ranging from golf (Thomas & Over, 1994) to equestrian events (Meyers *et al.*, 1999). Other studies (e.g., Bull *et al.*, 2005; Thelwell *et al.*, 2005; Gucciardi *et al.*, 2008; Gucciardi & Gordon, 2009) identified specific key psychological components that affect performance across many sports codes. These include: self-confidence, self-motivation, attention control, hardiness, enjoyment, ability to handle pressure, resilience and quality preparation. However, some dimensions are sport-specific, such as reaction time, team cohesion and team dynamics. In other words, the context of mental toughness may be determined by the nature of a specific sport (Crust, 2008; Connaughton & Hanton, 2009; Gucciardi & Gordon, 2009).

Apart from overall mental toughness, separate distinct mental skills also affect performance. Empirical data suggest that competencies in such skills are reliable predictors of performance (Smith & Christensen, 1994) and that they differentiate between more and less successful athletes (Mahoney & Avener, 1977; Gould *et al.*, 1981). It can be assumed that players from diverse competitive levels might not only differ in their physical skills, but also in their psychological skills. Therefore, the

identification of specific psychological skills that influence soccer performance should provide valuable information regarding optimal preparation for training and matches (Junge *et al.,* 2000).

Researchers have given attention to the psychological characteristics of exceptional athletes and made significant progress in psychologists' understanding of this area. Krane and Williams (2006) concluded that a number of psychological and behavioural skills and strategies (e.g., goal setting, imagery, anxiety control, and coping skills) are associated with peak performance. They further suggested that athletes can master these skills and strategies through psychological skills training and consistent practice. As psychological skills are developed and maintained with training, the benefit from such training accumulates over the years.

Also, in the field of talent development the value of these skills should not be underestimated. The claim that soccer is a demanding game that requires sustained effort to deal with mental and physical pressure cannot be overemphasised. Therefore, the identification of specific skills pertaining to the demands of different playing positions should provide valuable information regarding optimal preparation for training and competition.

Another factor that affects performance is team cohesion (Turman, 2003). Cohesion is defined as "a dynamic process that is reflected in the tendency of a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs" (Carron *et al.*, 1998: 213). Cohesion entails task and social dimensions (Carron, 1982). A review of literature by Carron *et al.* (2002) confirmed that both task and social cohesion were associated with enhanced performance. The findings of more recent researchers such as Heuze *et al.* (2007) and Callow *et al.* (2009) have confirmed the positive relationship between cohesion and performance.

Cohesion is a fundamental element of teamwork, because effective team functioning requires a high level of team spirit and cooperation. The way teams deal with this, distinguishes between successful and less successful outcomes (De Vries, 1999; Fiore *et al.,* 2001; Mach *et al.,* 2010). A basic requirement for success is a type of cooperative

consciousness, where team members are aware of how their actions are interrelated (Weick & Roberts, 1993; Mach *et al.*, 2010). This allows the team to perform at a level that is greater than the collective effort of all its individual members.

In conclusion: the three aspects discussed above – mental toughness, psychological skills and team cohesion – are associated with optimal performance.

Williams and Franks (1998) pointed out that, there is uncertainty about exactly which psychological constructs would facilitate the identification of talented soccer players. Drawing on this observation Reilly *et al.* (2000), Williams and Reilly (2000), as well as Coetzee *et al.* (2006), noted the importance of identifying the role and development of the most favourable psychological profile for achieving soccer success, so that coaches, administrators and sport psychologists could develop players with the most potential. However, despite the potential practical value of the current study within a talent-development context, the primary focus of the research reported in this thesis is not talent identification, but rather the role of these factors in on-field soccer performance.

Purpose of the study

The purpose of the study was to determine the role of mental toughness, psychological skills and team cohesion in soccer performance.

Specific aims

The specific aims of this study were to investigate…

1. the role of age, experience level and the time period players had been part of a team, on team performance (by determining how each of these aspects differentiate between more and less successful soccer teams).

2. the role of mental toughness, psychological skills and team cohesion scores on team performance (by determining how each of these aspects differentiate between more and less successful soccer teams).

3. whether mental toughness, psychological skills and team cohesion scores of soccer players in different playing positions differ.

Potential outcomes of the study

The negation of the role of psychological modalities in sports has been documented in literature (Hacker, 2000). Despite the fact that research into the psychological dimensions has maintained a high profile in sports science, specific research in soccer in this regard is deficient (Reilly *et al.*, 2000) – even more so within the African soccer context. There is scant research on the psychological skills that discriminate between successful and less successful soccer players. Furthermore, the findings of the few studies are often contradictory. This is unfortunate, because an understanding of the role of psychological and team factors that enhance successful athletic performance is essential for theory-based applied sport psychology.

The knowledge obtained from this study can contribute towards strengthening an awareness of the importance of psychological constructs and their application at all levels of the game.

In addition, exploring the specific demands of different playing positions should facilitate the appropriate selection of players, or more importantly, the development of specific training methods designed to implement psychological and team attributes considered essential for optimal performance.

Chapter Two

Literature Review

The results of elite sport contests are often decided by narrow margins. Because elite athletes and teams are usually physically, technically and tactically well prepared, the difference between finishing, winning or losing is often determined by other factors (e.g., psychological states or team-related modalities). There has been a kindled interest in the acquisition of psychological factors in gaining a competitive edge through Psychological Skills Training (PST) Programmes. A number of theoretical frameworks have been put forward for the development and implementation of PST interventions to guide research and practice. Therefore, it is imperative to outline the framework used in the current study.

The cognitive-behavioural theory (CBT) is one of the most widely used frameworks for research in applied sport psychology, especially within the context of the development and the implementation of psychological skills interventions (Hill, 2001). Applying CBT within this research field advances theoretical, empirical and practical knowledge of psychological constructs and how it affects the behaviour of athletes. This theory is a combination of two theoretical models in general psychology: the cognitive model (in which thought patterns and mental habits act as the driving force in processing information to create a clear view of the environment) and the behavioural model (i.e., the systematic learning and experience gained through the environment in order to influence self-enhancing behaviours while decreasing negative ones).

Interventions grounded in CBT allows athletes to be self-aware and behave in a manner by taking cognisance of the self and others in understanding how their actions are interrelated to help facilitate performance and sport experience (Oglesby, 1987; Hill, 2001). This allows the athlete to manage and control (self-regulate) both internal and external states in response to the environment, thereby promoting personal success. Mischel and Shoda (1995) and Smith (2006) surmised that, the self-regulation skills allows one to exert control over his/her thoughts, feelings and actions by employing both psychological (e.g., self-talk or visualisation) and physical strategies (e.g.,

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breathing, muscle relaxation) to effectively organise actions and influence behaviour outcomes.

The capacity to self-regulate and apply self-regulation skills (e.g., imagery, relaxation techniques) in response to changes in the environment is deemed to be critical to the success of athletes. Self-regulation refers to the ability of the athlete to regulate their own internal functioning within the context of environmental changes, without constant input from coaches or sport psychology consultants. Kirschenbaum (1984) regards self-regulation as the ultimate goal of theoretically grounded PST programmes. Harmison (2001) indicated that by understanding the cognitions, conditioned experiences and the ensuing behaviour of an athlete and how they are organised and interconnected with the athlete's personality system will help researchers to better predict, explain and develop mental skills in sport. This would essentially allow athlete's to improve their existing psychological skills in addition to addressing any weaknesses in their competitive behaviour.

Within this particular theory mental toughness, psychological skills and team cohesion are regarded as complex, cognitive-behavioural constructs that can be developed and modified at the individual player or team level over time.

Mental toughness

Conceptualisation

Clough *et al.* (2002) point out that the general belief is that, mental toughness is a vital contributing factor in the outcome of sport contests. Despite the pervasive support for such a belief, it is surprising that in the literature on mental toughness there is a general lack of conceptual clarity and consensus as to its definition and operationalisation (Crust, 2007). The creation of a clear conceptualisation of mental toughness has been a challenge because previous literature on mental toughness has lacked the ability to distinguish between "what mental toughness is" and the essential attributes of being mentally tough (Crust, 2007). However, there are some promising recent developments in research in this area (e.g., Jones *et al.,* 2002; Clough *et al.*, 2002; Middleton *et al.,* 2004a; Bull *et al.*, 2005; Gucciardi *et al.*, 2008).

Researchers (e.g., Jones *et al.,* 2002; Thelwell *et al.,* 2005; Gucciardi *et al.,* 2008, 2009a) have been persistent in their efforts to provide conceptual clarity by proposing improved theoretical frameworks to study the attributes of mental toughness.

In the past, mental toughness has been explained mainly by lists of positive qualities that mentally tough athletes possess, for example resilience, (Gould *et al.,* 1987), the ability to overcome setbacks and poor performance (Goldberg, 1998), and optimal self-confidence (Clough *et al.,* 2002). Jones *et al.* (2002, 2007) argue that these psychological attributes have some competitive benefits (e.g., a psychological edge and coping better than one's opponents), which differentiate between successful and less successful performances.

Beginnings of mental toughness research

The genesis of research related to the concept of mental toughness can be traced back to the related work of Cattell in the 1950s. He identified tough-mindedness as one of 16 personality traits (assessed by his *16 Personality Factor Questionnaire*) as an important trait for success (Cattell, 1957). Cattell defined tough-mindedness as being realistic, down to earth, independent, and responsible.

Alderman (1974) alluded to the association between mental toughness and sport performance when he proposed that the best athletes need to be both physically and mentally tough. He identified resilience as the core of mental toughness.

Loehr (1982, 1986) popularised the term mental toughness and kindled an interest for more rigorous investigations. His work on mental toughness revolved around the mental, emotional and physical conditioning of sportspersons – especially tennis players.

Fourie and Potgieter (2001) published the first research article on the nature of mental toughness in sport. They analysed the perceptions of a large sample of expert coaches and elite athletes from diverse sports. After an inductive content analysis they identified 12 components of mental toughness. These are; motivation level, coping skills, confidence maintenance, cognitive skills, discipline and goal directedness, competitiveness, possession of prerequisite physical and mental requirements, team

unity, preparation skills, psychological hardiness, religious convictions and ethics. However, being the first research of this kind it was not surprising that it was later strongly criticised. For example Harmison (2011) expressed concern regarding the contextualisation and comprehension of mental toughness, since Fourie and Potgieter's (2001) discussion, propositions and conclusions were not grounded in any existing theory of sport behaviour. Researchers (e.g., Connaughton & Hanton, 2009; Gucciardi *et al.,* 2009a) question the elite nature of the sample, the vagueness of the wording and meanings ascribed to the identified components, as well as the research methodology.

More recent research does not rely only on a qualitative approach to mental toughness. Quantitative approaches use psychometric inventories to study associations with hypothesised key mental toughness correlates (for reviews see, Connaughton & Hanton, 2009; Gucciardi *et al.,* 2009a).

Definitions and attributes of mental toughness

Loehr (1986) was the first expert to present a theoretical underpinning of mental toughness in sport. He defined mentally tough performers as disciplined thinkers who remain composed, unperturbed and energized regardless of competitive stress. They are able to do this because they can trigger the flow of positive energy under adverse conditions. Loehr (1986) proposed seven fundamental attributes of mental toughness: self-confidence, negative energy control, attention control, visualisation and imagery control, motivation, positive energy and attitude control. Loehr (1986) developed the *Psychological Performance Inventory* (PPI) to assess these aspects of an athlete's mental toughness. This inventory enjoys intuitive appeal as a measure of mental toughness in sport (Crust, 2008).

Jones *et al.* (2002) lay a theoretical foundation for the understanding of the concept of mental toughness in a qualitative approach using the context of Kelly's (1955) personality-construct theory. This theory underscores the important nature of an individual's motivation to appreciate, interpret, anticipate and control his/her experience of the world in order to deal effectively with it. Jones *et al.* (2002: 209) defined mental toughness as "having the natural or developed psychological edge that enables you to

generally cope better than your opponents with the many demands (competition, training, lifestyle) that sport places on a performer and specifically, be more consistent and better than your opponents in remaining determined, focused, confident, and in control under pressure."

Jones *et al.* (2002) proposed 12 mental toughness characteristics ranked in order of their relevance:

1. Having an unshakable self-belief in one's ability to achieve competition goals.

2. Recovering from performance set-backs with an increased determination to succeed.

3. Having an unshakable self-belief that one possesses unique qualities and abilities that make one better than one's opponents.

4. Having an insatiable desire and internalised motive to succeed.

5. Remaining fully focused on the task at hand in the face of competition-specific distractions.

6. Regaining psychological control following unexpected, uncontrollable competition-specific events.

7. Pushing back the boundaries of physical and emotional pain, whilst still maintaining technique and effort under distress (in training and competition).

8. Accepting that competition anxiety is inevitable and knowing that one can cope with it.

9. Thriving on the pressure of competition.

10. Not being adversely affected by another competitor's good or poor performances.

11. Remaining fully-focused in the face of personal life distractions.

12. Switching one's focus on and off as required by circumstances.

Jones *et al.'s* (2002) proposed outcome-based definition of mental toughness suggest that progressive research that seeks to evaluate their definition with another, generated by a population with a slightly different outlook on outcomes, such as ultra-elite athletes, would provide further insight into what mental toughness entails. However, Middleton *et al.* (2004a) have criticised Jones *et al.*'s (2002) definition for describing what a mentally tough performer can do rather than what mental toughness actually is.

Clough *et al.* (2002) also attempted to define and operationalise mental toughness. They tried to reconcile the distinctiveness of theoretical research and applied practice in the study of mental toughness by incorporating the judgement of elite athletes and coaches to gain insight into the applied perspective of mental toughness.

Clough *et al.'s* (2002) conceptualisation of mental toughness in sport was drawn from the theoretical works of Kobasa (1979) and Kobasa *et al.* (1982) within the field of health psychology. Clough and his co-workers incorporated the related concept of hardiness (i.e., commitment, control, and challenge) into a more sport-specific research setting, whilst contending that hardiness does not fully capture the distinctive nature of the cognitive, as well as the physiological demands of competitive sports. This resulted in the addition of a confidence dimension in proposing their 4C-conceptualisation of mental toughness.

Clough *et al.* (2002) integrated their own experience in applied sport psychology with the perspectives obtained from elite athletes and coaches in order to arrive at an outlook on mental toughness. They defined mental toughness to reflect the attributes that mentally tough individuals possess (Clough *et al.*, 2002: 38):

> *Mentally tough individuals tend to be sociable and outgoing as they are able to remain calm and relaxed. They are competitive in many situations and have lower anxiety levels than others. With a high sense of self-belief and an unshakable faith they are able to control their own destiny. These individuals can remain relatively unaffected by competition or adversity.*

There have been numerous reviews that support Clough *et al.'s* (2002) conceptualisation of mental toughness. This is probably due to the availability of a measuring tool developed to measure the four key components outlined in their model. However, there has also been criticism of Clough *et al.'s* (2002) work. Specifically, their concepts of mental toughness are criticised as being founded on a theoretical framework of a hypothesised-related construct (with no in-depth rationale for drawing on hardiness theory) and use of a sample that is not sport-based. This gives rise to doubt about the applicability of their model in sport (Gucciardi *et al.*, 2009a).

Middleton *et al.* (2004a; 2004b) generated the components of their conceptualisation and definition of mental toughness from the perspectives and experiences of 33 elite athletes and coaches from diverse sporting backgrounds. They defined mental toughness as "an unshakeable perseverance and conviction toward a common goal despite pressure or adversity" (Middleton *et al.,* 2004b: 6). Middleton *et al.* (2004a) affirmed the often-held assertion of the concept of mental toughness as being multidimensional. They indicated that they consider an athlete as being mentally tough when he/she possesses at least some of the 12 attributes of mental toughness outlined in their study. These include: self-efficacy, potential, mental self-concept, task familiarity, value, personal best, goal commitment, perseverance, task focus, positivity, stress minimisation, and positive comparisons. Their view of mental toughness defines the concept rather than describe what a mentally tough performer can do. Additionally, Middleton *et al.* (2004b) contended that their model of mental toughness transcends beyond the application within sports settings. Crust (2007) concurs with this assertion arguing that it is theoretically intricate to phantom mental toughness within a sport context only. Mental toughness generally enhances an individual's ability to cope effectively with stress, challenges, adversity and maintaining focus in everyday life.

A further attempt to investigate the definition and characteristics of mental toughness was conducted by Bull *et al.* (2005). They suggested that different aspects of a sport situation dictate the concept and definition of mental toughness relevant to that environment. To test this assertion they investigated mental toughness within the context of cricket, by sampling 12 players considered to be England's mentally toughest

cricketers. The methodology for obtaining participants' perspectives was initiated with a self-managed focus-group discussion among the researchers. This enabled them to draft a framework to conduct the participants' interviews focusing on various intricate dynamics that influence the development and maintenance of a "winning mind".

The results of the qualitative interviews were categorised into global themes. For instance: self-belief, robust and resilient confidence, thriving on competition, dedication and commitment, self-focus, ability to keep perspective, self-reflection. These were then subcategorised into five general dimensions which entail: developmental factors, personal responsibility, dedication and commitment, belief, and coping with pressure. Contrary to other similar studies, Bull *et al.* (2005) did not present any definition of mental toughness. Their proposed global themes show some similarities with the components and attributes presented by Jones and colleagues (2002). Some of the overarching themes that are mutual to both studies are: self-belief, desire/motivation, overcoming adversity, maintaining focus and dealing with pain/hardships. With this observation, Bull *et al.* (2005) concluded that the similarities existing in both studies give credence to the consistency of mental toughness attributes. There were, however, subtle observable differences between the two studies partly due to the different contexts. For example, Bull *et al.* (2005) discovered an attribute of "competitiveness with self and others" that concurs with Jones *et al.'s* (2002) definition of mental toughness, but not explicitly included in their identified attributes of mental toughness. Bull *et al.* (2005) acknowledge this as a positive addition to advance an understanding of the nature of mental toughness.

In addition to previous definitions of mental toughness, Thelwell *et al.*'s (2005) research on mental toughness was geared towards examining the definition and characteristics of mental toughness specifically within a soccer context. These researchers believed that, exploring the concept of mental toughness within soccer might lead to different outcomes. They employed the same sampling procedure as Jones *et al.* (2002) and enlisted athletes who competed at the international level. Their findings affirmed the validity of the definition and characteristics of mental toughness proposed by Jones *et al.* (2002).

Thelwell *et al.* (2005: 328) subsequently proposed the following definition:

> *Mental toughness is having the natural or developed psychological edge that enables you to: Always cope better than your opponents with the many demands (competition, training, and lifestyle) that soccer places on the performer and specifically, be more consistent and better than your opponents in remaining determined, focused, confident, and in control under pressure.*

The following characteristics emanated from this study and are presented in order of importance:

1. Having total self-belief at all times that one will achieve success.

2. Wanting the ball at all times (when playing well and not so well).

3. Having the ability to react to situations positively.

4. Having the ability to hang on and be calm under pressure.

5. Knowing what it takes to grind oneself out of trouble.

6. Having the ability to ignore distractions and remain focused.

7. Controlling emotions throughout performance.

8. Having a presence that affects opponents.

9. Having everything outside of the game under control.

10. Enjoying the pressure associated with performance.

Accordingly, the attributes of mentally tough soccer players as reported by Thelwell *et al.* (2005) bear close resemblance to those suggested by Jones *et al.* (2002). This reiterates the need for soccer players to have a resilient character, an unruffled self-belief, a mind-set that allows them to be rational, meticulous and focused to deal with the dynamic demands of soccer at all times. Thelwell *et al.* (2005) concluded that the wording of their definition and characterisation of mental toughness might have been different from that of Jones *et al.* (2002), but nevertheless project the same essential meaning. They also point out that the portrayal of an image of being mentally tough

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creates a sense of authority which might actually intimidate and affect opponents' performance. From these results it can be deduced that when mental toughness is contextualised within specific sports, it becomes apparent that some characteristics of mental toughness are exclusive to that sport. This is in line with Gucciardi *et al.*'s (2008) assertion that mental toughness attributes might be sport-specific.

The comparative comments cited in both Jones *et al.'s* (2002) and Thelwell *et al.'s* (2005) definition of mental toughness does not distinctively capture its essence. Referring to being "generally better than one's opponent" might imply that the effect of mental toughness is dependent on the strength/ability of the opponent. Andersen (2011) argues that the tenets of mental toughness portrayed in the definition of Jones *et al.* (2002) essentially takes mental toughness out of the control of the performer into the hands of the opponent, thus making the definition and operationalisation of mental toughness other-dependent.

Another advancement of knowledge about mental toughness is the work of Jones *et al.* (2007) which extends beyond self-belief as the core of known attributes of mental toughness. Consistent with their original definition which highlighted an outcome nature of mental toughness, they sampled athletes, coaches and sport psychologists who were successful in their careers. Using the same methodology as in their earlier research, they addressed three matters: the definition of mental toughness, characteristics, and frameworks for mental toughness attributes. Their findings substantiated their earlier definition of mental toughness (Jones *et al.*, 2002). It contains two components, general and specific which concur with previous studies. They firstly highlighted the general ability to cope with the different demands of sport on a personal level. Secondly, the definition acknowledges the outcome nature and relative nature of mental toughness which requires the use of superior psychological strategies and mental skills. Jones and his co-workers emphasised that the two components of the definition must not be analysed separately, because mental toughness cannot be implemented by merely using superior mental "tactics" in an isolated manner.

Jones *et al.* (2007) identified 30 attributes associated with mental toughness, for example: an unshakeable self-belief, inner arrogance of believing you can achieve

anything, belief in overcoming obstacles, not being swayed by short-term gains, and remaining in control. The authors streamlined the comprehensive characteristics of mental toughness into 13 subcategories (e.g., belief, focus, using long-terms goals as the source of motivation, control of the training environment, and pushing yourself to the limit, handling failure, handling success). These subcategories were incorporated into a framework of four dimensions. These are: attitude/mindset, training, competition, post-competition.

Incorporating the conceptual underpinnings of the subcomponents presented by Jones *et al.* (2007) into a framework of more sport-specific characteristics (e.g., Thelwell *et al.*, 2005) may advance knowledge for more adaptable attributes which may apply in different sporting contexts.

The most recent effort to advance knowledge on the attributes of mental toughness is the study by Gucciardi *et al.* (2008). They constructed an interview guide grounded on the personal construct psychology framework of Kelly (1955) and then sampled elite Australian football coaches' views, experiences, meanings, and perceptions of mental toughness. The coaches were further required to list the opposites of each identified attribute. They also had to rank the attributes in decreasing order of importance and identify situations that necessitate such attributes. Gucciardi and his co-workers defined mental toughness in Australian football as "a collection of values, attitudes, behaviours, and emotions that enables you to persevere and overcome any obstacle, adversity or pressure experienced, but also to maintain concentration and motivation when things are going well to consistently achieve your goals" (Gucciardi *et al.*, 2008: 218).

The authors developed a grounded theory of mental toughness that entails the interaction of three components deemed critical in the mental toughness in Australian football: characteristics, situations and behaviours. These components encompass 11 bipolar constructs of which seven were consistent with attributes forwarded by Jones *et al.* (2002): self-belief vs. self-doubt; self-motivated vs. extrinsically or unmotivated; tough attitude vs. weak attitude; concentration/focus vs. distractible/unfocused; resilience vs. fragile mindset; handling pressure vs. anxious and panicky; work ethic vs. lazy. Four other attributes were unique to this sample: personal values vs. poor integrity

and philosophy; emotional intelligence vs. emotionally immaturity; sport intelligence vs. lack of sport knowledge; physical toughness vs. weak sense of toughness. According to Gucciardi *et al.* (2008), the situational dimension captured in this research alludes to those events, both internal and external causing varying degrees of mental toughness (e.g., injury, fatigue). The behaviours include overt actions of mentally tough footballers in situations demanding mental toughness (such as consistent performances, and superior decision making).

Gucciardi *et al.'s* (2008) research differs from previous research in that it goes beyond the definition and attributes of mental toughness and draws attention to the negative attributes perceived as mental weakness and highlighting situations influencing such behaviour. The authors concluded that mental toughness is a multidimensional construct with sport-specific dimensions. They suggest that knowledge about mental toughness will be gained from further studies with athletes from different sport codes.

From the different definitions and conceptualisations outlined, it is appropriate to assume that mental toughness entails a complexity of issues regarding its variables and the breadth of its frameworks. These constructs are shaped by the sporting context of the participants under investigation. In going forward, the challenge for researchers will be to assimilate the proposed frameworks and concepts in a coherent manner based on a theoretically grounded perspective.

Development and maintenance of mental toughness

With a great deal of literature on the conceptualisation, definition and attributes of mental toughness, the issue that arises is the development of mental toughness – bridging the gap between research and practice. Specifically, there is uncertainty about mental toughness: is it an innate personality characteristic or can it be nurtured and developed through training? In the related area of talent identification, Gould *et al.* (2002) acknowledged the existence of a dichotomy between "developed" versus "innate" characteristics. Additionally, Ericsson (1996) suggested that consistent practice and training are vital mechanisms for talent development. However, Howe (1998) argued that innate characteristics are imperative in talent development. Gordon and

Sridhar (2005) proposed that some aspects of mental toughness are gained through social experiences, while acknowledging that other aspects could be taught. With a lack of consensus on the issue of "nature" versus "nurture", the debate is bound to continue (Crust, 2007). Moreover, the development of mental toughness may be specific to the framework to which the construct applies. In effect, the framework for conceptualising the development of programmes aimed at enhancing mental toughness may be improved by considering the specificity of the sport context and the dynamics of a particular competitive environment.

Bull *et al.* (2005) were among the first researchers to conduct a study to highlight the factors perceived to influence the development of mental toughness. They proposed that certain extraneous factors are influential in the advancement of mental toughness. These factors were listed as environmental influences which serve as the basis for the progression of other identified tiers (e.g., character, attitude, and thinking) in the systematic maturation of mental toughness. Environmental influences include the performer's childhood background, upbringing, and subsequent exposure to unfamiliar circumstances and environments. Such experiences supposedly create a challenging environment that acclimatises the athlete (both mentally and physically) to survive setbacks and cope with adverse situations. It is believed that an exposure to challenges builds a tough character, attitude, and thinking that facilitate independence, responsibility, self-reflection, and resilient confidence – that form part of overall mental toughness. Bull *et al.* (2005) state that a combination of tough character and tough thinking through environmental challenges creates a "winning mind". They are of the opinion that the unpredictable nature of the environment and its concomitant challenges have a stronger effect on the development of mental toughness than intentionally exposing athletes to situationally-induced challenges.

Connaughton *et al.* (2008) conducted an investigation with the primary focus on the development of mental toughness in different sport contexts. They interviewed seven athletes with in-depth knowledge of the specific underlying meanings of Jones *et al.'s* (2002) study to elicit their perception of how the 12 attributes of mental toughness identified in the Jones *et al.'s* (2002) study were developed and maintained at elite

competitive level. Their findings revealed fundamental mechanisms that operate in unison to facilitate the development of mental toughness (e.g., motivational climate, key social facilitators, and a strong intrinsic motivation to succeed). They concluded that certain aspects of the identified attributes in the Jones *et al.* (2002) study develop systematically and become prominent in one of the three distinct stages in an athlete's career – early, middle, and later years.

The early phase contends with the moulding of the athlete's self-worth and developing an insatiable desire to excel, usually through effective leadership and vicarious experiences.

The progression and maturation of these attributes carry over into the middle phase of the athlete's career where he/she is confronted with challenges, competitive setbacks, anxiety, and pressure situations. The exposure to such experience triggers strong affective responses (e.g., a strong determination to succeed, accepting success and failures, and competitive rivalry). This strengthens motivation by providing challenging goals and achievement expectations.

The final phase involves the growth, maturation and proficiency in handling and implementing the attributes gained through the years in specific competitive situations with ease: for instance switching focus on and off, not being affected by distractions and regaining psychological control.

Connaughton *et al.* (2008) further highlighted the importance of three key mechanisms facilitating mental toughness development and maintenance: an insatiable desire and motivation to succeed, a strong social support network, and the use of basic as well as advanced psychological skills. They surmised that the development of mental toughness is dependent on the fact that the attributes do not operate in isolation, but work in harmony with one another to achieve a holistic effect of mental toughness. While Connaughton *et al.'s* (2008) effort is heralded as an advancement of insight into the development of mental toughness, through the entire career of an athlete; it was based on the perceptions of elite athletes only. Also, the extent to which the attributes developed within each career stage was not investigated (Connaughton *et al.*, 2011).

Gucciardi *et al.* (2009e) used Australian football training programmes to uncover strategies and mechanisms which coaches incorporate in the development of mental toughness. They suggested that such training programmes could influence the development of mental toughness in a debilitative or facilitative manner.

Wyllemann and Lavallee (2004) also recognised that coaches play a pivotal role in the psycho-social development of athletes. Based on the responses from the coaches, Gucciardi *et al.* (2009e) came up with the following mechanisms that influence the development of mental toughness: early childhood experiences (emotional support and encouragement); coach–athlete relationship (e.g., open lines of communication); coaching philosophy (holistic development of athletes' skills and social and personal development); training environment (creating a challenging environment both on and off the field); specific strategies for improving three characteristics including: personal values, concentration and focus, and ability to handle pressure (i.e., using drills and training that help players develop an awareness and understanding of the game). In addition, the concept of negative football experiences, letting the desire for success overrule the need for individual player development, and over-emphasis on players' weaknesses were identified as hindrance to optimal development of mental toughness. The coaches further emphasised the athletes' childhood background experiences as being salient in moulding mental toughness. This, however, transforms into a sport-specific form of mental toughness as athletes progress and mature in a specific sport.

Gucciardi *et al.* (2009e) believe that a healthy coach-athlete relationship enhances the development of a key mental toughness characteristic – emotional intelligence. They not only addressed the developmental process involved in mental toughness but also how coaches cultivate the mechanisms embedded in such development: for instance, by exposing footballers to tough adverse situations to imprint some form of familiarity in the players' minds. This helps players to gain experience in adverse situations, thereby developing ways to deal with and even thrive in such conditions when competing. Gucciardi *et al.'s* (2009e) study was confined to mental toughness development within the Australian football and therefore, cannot be generalized to all sport codes.

The literature shows that the development of each key mental toughness attribute requires different strategies and mechanisms for its maturation. Also stemming from the developmental perspective of mental toughness is the understanding that mental toughness is not an enduring construct but might fluctuate in the respective phases of an athlete's career.

Measurement of mental toughness

In the domain of sport the recognition and nurturing of mentally tough athletes have become a prime focus for many teams. Consequently a need arises for psychometrically-sound instruments to assess mental toughness. Some researchers have focussed on developing questionnaires to measure mental toughness for specific sport codes (e.g., Gucciardi *et al.*, 2009b; Gucciardi & Gordon, 2009) and for sport in general (e.g., Clough *et al.*, 2002; Golby *et al.*, 2007). An obvious downside to the sport-specific approach is its limited usefulness (e.g., the *Australian Football Mental Toughness Inventory* and the *Cricket Mental Toughness Inventory*).

It is important to note that no soccer-specific measure of mental toughness has been developed. Therefore, the following discussion will focus mainly on general measurement of mental toughness.

The Psychological Performance Inventory (PPI)

The PPI (Loehr, 1986) has been used quite extensively in early research (e.g., Shin *et al.*, 1993; Lee *et al.*, 1994; Golby *et al.*, 2003; Golby & Sheard, 2004) as a general measurement of sport mental toughness. The PPI was developed to reflect seven psychological factors, namely: self-confidence, attention control, positive energy, negative energy, motivation, attitude control, and visual and imagery control. The PPI exhibits an intuitively engaging conceptualisation of mental toughness that is fairly consistent with more recent qualitative research (Crust, 2008).

Researchers such as Golby *et al.* (2007) and Gucciardi (2012) have criticized the PPI alluding to its lack of conceptual underpinnings of the seven-factor model (e.g., construct definition), lack of information on the theoretical background of item development, and scant psychometric data to support its reliability and validity.

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Furthermore, Middleton *et al.* (2004a) have questioned the factorial validity of the PPI. In addition, the PPI has been shown to contain insufficient discriminative power and only measures distinct attributes of mental skills (Golby *et al.*, 2003; Middleton *et al.*, 2004a). Gucciardi (2012) is of the opinion that the PPI should not be used in either research or applied practice settings.

The Mental Toughness Questionnaire-48 (MTQ-48)

Clough *et al.* (2002) presented what is deemed a ground-breaking scientifically rigorous measure of mental toughness. They adopted the hardiness theory with its tenets (i.e. commitment, control and challenge – 3Cs) to conceptualise mental toughness. Emanating from their qualitative interviews, the authors redefined their conceptualisation of mental toughness from hardiness by adding the fourth component of "confidence" to propose a 4C-model. These components include, challenge (the extent to which an individual interprets problems as opportunities for self-development); commitment (strong involvement in what one is doing); emotional control (keeping anxiety in check); life control (feeling and acting as if one is influential); confidence in abilities (a strong sense of self-belief and less dependency on external validation); and interpersonal confidence (being assertive when interacting with others).

Clough *et al.* (2002) formulated statements to capture the concepts of the 4Cs with 48 items. Despite the authors' failure to present a factor analysis to validate their hypothesised four-factor model, an internal consistency estimate of $α$ = .90 was reported as overall mental toughness, giving credence to the reliability of the MTQ-48. Moreover the factor structure identified in their research is in line with key attributes prominent in literature on mental toughness (Gucciardi *et al.*, 2011). There is also evidence to support the validity and reliability of the MTQ-48. For example Crust and Clough's (2005) work supported the validity when they found significant correlations between the MTQ-48 scores and pain tolerance. Furthermore, Nicholls *et al.* (2009) found significant relationships between the MTQ-48 scores, and optimism, and coping skills. Despite such support for the MTQ-48 as a measure of mental toughness, it is not free from criticism. Sheard *et al.* (2009) raised concerns about its conceptual basis and lack of independent scrutiny of the factor structure. Crust (2007) highlighted the MTQ-

48's limitation of not satisfying the different phases of statistical processes essential in structuring and validating a scientifically sound measuring instrument. In addition, Andersen (2011) contends that the 4C-model is simply hardiness "repacked" as something new.

The Mental Toughness Inventory (MTI)

The MTI (Middleton *et al.*, 2004a) is a 67-item self-report instrument purported to measure 12 attributes of mental toughness as well as a global measure of mental toughness, namely: self-efficacy, potential, mental self-concept, task familiarity, personal best, value, goal commitment, perseverance, task-specific attention, stress minimization, positivity, and positive comparison. The MTI was later revised and reduced to 36 items.

There is support for the validity of the revised MTI with Cronbach α's ranging from 0.84 to 0.94 among the sample of elite athletes. The MTI is regarded to be grounded on a solid theoretical and applied base and has been examine through a construct validity framework. However, the limitations of the MTI include the use of participants from a single elite sport high school (Crust, 2007). Moreover, Crust (2007) suggested that, since the key correlates employed in the development of the MTI was principally based on the reliance of self-report measures (i.e. flow, self-concept) additional analysis is warranted to further test the construct validity of the MTI.

The Psychological Performance Inventory-Alternative (PPI-A)

Golby *et al.* (2007) failed to find support for the hypothesised seven-factor structure of Loehr's (1986) PPI. A principal components analysis (PCA) revealed the presence of 14 higher-order general mental toughness elements. These were classified into four components: determination, self-belief, positive cognition, and visualization (Golby *et al.,* 2007). Golby and his co-workers labelled the amended and abridged version, the *Psychological Performance Inventory-Alternative* (PPI-A). They further examined the data by means of a confirmatory factor analysis (CFA) to assess the factorial validity of the 14-item hierarchical model. The CFA provided support for its hypothesised structure.

Satisfactory psychometric values have been found for the PPI-A, including internal reliability coefficients of 0.75 (Sheard, 2009). But, correlations between the PPI-A subscales and hardiness indicate a low to moderate relationship (r = 0.06 to 0.55). Despite some strong psychometric properties of the scale, Marsh (1997) warned against using the same sample to both identify (PCA) and confirm the factor structure (CFA). This could count against the PPI-A as a valid measuring instrument. There appears to be a need for cross validation of the hypothesised measurement model with a different sample to address issues pertaining to sample-specific chance relationships in the original set of data. Notwithstanding its limitations, item brevity is an important practical strength of the PPI-A (Gucciardi, 2012).

The Sport Mental Toughness Questionnaire (SMTQ)

The SMTQ (Sheard *et al.,* 2009) assess global mental toughness encompassing three factors: (1) confidence (which measures athlete's belief in their own abilities to achieve goals and be better than their opponents); (2) constancy (implying determination, personal responsibility, an unrelenting attitude and the ability to concentrate; and (3) control (relating to the perception that one is personally influential and can bring about desired outcomes with special emphasis on controlling emotions). Sheard *et al.* (2009) give credence to the SMTQ exhibiting satisfactory psychometric properties with adequate validity and discriminating power. Gucciardi and Gordon (2011) observed that, the application of a construct validation approach in the development and evaluation of the SMTQ was a key methodological strength that must be encouraged in the development of questionnaires based on solid theoretical grounding. A more detailed discussion of the SMTQ is presented in Chapter Three.

From the different instruments discussed, there seems to be issues and concerns with an emphasis on the psychometric inconsistencies and some constructs not being based on sound theoretical underpinnings. As construct validation is an ongoing process (Marsh, 1997, 2002), meticulous effort in conceptual development and statistical examination of the discussed instruments are warranted. Therefore, much work is still needed to clarify the inconsistencies and reach consensus about the definition, conceptualisation, operationalisation and measurement of mental toughness.

Summary

Mental toughness has been highlighted as a decisive factor in athletic success (Bull *et al.*, 2005; Crust & Clough, 2005). However, there sometimes is a lack of consensus about the relationship between mental toughness and performance. For example, some researchers (e.g., Gucciardi *et al.*, 2008) support the notion that mental toughness can transform physically talented athletes into great athletes. Other experts adopt a more cautionary approach by emphasizing that success in sport can be achieved through consistent effort and practice (Ericsson, 1996). Athletes who are endowed with exceptional physical, morphological and psychological attributes obviously have a head start (Crust, 2008).

Notwithstanding some negative observations, mental toughness is an attribute associated with excellence. Smith and Smoll (1989) regard mental toughness as a highly prized characteristic in sport. They describe it as the ability to deal with stress and adversity in such a manner that performance does not suffer under conditions that place high physical and psychological constraints on the performer. Also, Loehr (1995: 127) argues that "mental toughness is not a substitute for well-grounded strokes in athleticism or top physical condition; but when most other things are equal, the mentally tough performer and the team that practices mental toughness will succeed." Additionally, mental toughness has been found to facilitate the formulation of good imagery and coping strategies in sport performance (Omar-Fauzee *et al.*, 2009). Thus, mentally tough athletes possess the psychological edge to challenge their ability and thrive in both positively and negatively interpreted challenges and adversities (Coulter *et al.*, 2010).

There has not been any research on the direct link between mental toughness and performance outcome. However, the associated relationship between mental toughness and other psychological skills related to performance excellence have been noted. The literature and anecdotal reports propose that motivation is particularly important to a mentally tough performer since this attribute is used to view setbacks as a source of increased determination, to recover from failure and to develop an intense desire to function optimally and be the best one could be (Jones *et al.*, 2002, 2007). Moreover,

mental toughness helps to develop arousal control to deal effectively with both the externally derived pressures of competition and internally generated anxiety by focusing on relevant cues during competition. Thus putting the definition of mental toughness by Jones *et al.* (2002) into perspective: it enables the athlete to exhibit a high level of ability to control motivation, attention, confidence and stress – which are all relevant factors in performance excellence.

Nicholls *et al.* (2008) reported that athletes who obtained high scores with regard to mental toughness are proficient in the use of certain psychological skills. The next section will focus on the various psychological skills and strategies believed to be important in sport performance.

Psychological dimensions/skills

In the on-going search for performance excellence, coaches and athletes remain interested in the "power" of the mind (mental skills) to achieve superior athletic performance. The importance of the psychological dimensions associated with performance is well documented (Morgan, 1984; Morgan *et al.*, 1988; Weinberg & Gould, 2011). To this extend, interventions by sport psychology practitioners should be based on accepted theories and research within this domain (Hardy *et al.,* 1996; Murphy & Tammen, 1998).

The following section deals with the psychological skills, attributes, and topics that are prominent in the literature:

Motivation

The role of motivation is regularly singled out as one of the factors that influence performance (Roberts, 1993; Theodorakis & Gargalianos, 2003). The nature of motivation has been described in terms of the direction, intensity, and persistence of one's actions (Sage, 1977). In essence motivation activates an athlete's action towards a goal. Weinberg and Gould (2011) underscored motivation as being driven by individual characteristics (e.g., personal needs, goals and behaviour), situational dynamics of the competitive environment as well as the interaction between the

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individual characteristics and the environmental situation. In other words, motivation is concerned with why people behave in a certain manner and how situational dynamics influence a particular course of action.

The incorporation of the self-determination theory of Deci and Ryan (1985, 1991) into the motivational framework is regarded as an advancement of an understanding of an athlete's motivation in sport (Vallerand *et al.*, 1987; Fortier *et al.*, 1995; Pelletier *et al.*, 1995). The self-determination theory states that an individual has a need to feel self-determined and competent when dealing with a competitive environment. According to Deci and Ryan (1985, 1995), self-determination refers to the freedom to choose from available options (e.g., to participate in sport). Their theory also emphasises that people are motivated by the intrinsic benefits involved in certain activities (e.g., competing in sport). Gill and Williams (2008) affirmed the self-determination analogy in a study that concluded that novices reported a number of intrinsic motives for sport participation including skill development, the demonstration of competence, challenge, and excitement. This focus on the intrinsic rewards of certain behaviours creates a sense of competence in one's interactions and dealings with the environment (Chantal *et al.*, 1996). Moreover, the competence theory highlights an athlete's understanding of control (feeling control over the learning, acquisition and execution of skills) and self-evaluation of worth, which engender feelings of motivation to persist in the achievement of set objectives (Weinberg & Gould, 2011).

Wong and Bridges (1995) investigated the viability of this model by examining the perceived competence and control, trait anxiety, motivation and various coaching behaviours of 108 youth soccer players and their coaches. Their findings revealed that trait anxiety and coaching behaviours predicted perceived competence and control which in turn influenced players' motivational levels. This implies that feelings of competence and control gained through mastery of skills serve as critical determinants of motivated behaviour.

It is suggested that the need for self-determination and competence in the competitive sport environment could lead to different types of motivation: intrinsic motivation, extrinsic motivation, and amotivation (Vallerand & O'Connor, 1989; Weinberg & Gould,

2011). Intrinsic motivation refers to the motivation that is characterised by the pleasure, satisfaction and enjoyment derived from the task itself and exists within the individual rather than relying on the external pressure or incentives. Additionally, it is often inferred that intrinsic motivation is superior to extrinsic motivation as it leads to greater effort and persistence (Weinberg & Gould, 2011). Seifriz *et al.* (1992) proposed that, a perceived mastery-oriented climate (i.e., task orientation) is associated with personal improvement and greater intrinsic interest which usually leads to improved performance. Mallet and Hanrahan (2004) study on sustained motivation of elite athletes, found that elite performers were primarily driven by personal goals and achievement rather than financial rewards and accolades.

Extrinsic motivation involves doing something to gain externally desirable rewards (e.g., status, trophies, medals, money). The activity is a means to an end (reward). Supporters of extrinsic motivation contend that rewards generate motivation, learning, and increase the desire to persist in an activity (Weinberg & Gould, 2011). In essence, extrinsic motivation places the emphasis on the reward rather than on the inherent satisfaction derived from a specific activity.

Amotivation entails an absence of any form of motivation and a lack of planned contingencies relating to actions and the ensuing outcomes (Chantal *et al.,* 1996). This becomes apparent when an athlete experiences an overwhelming feeling of incompetence and lack of control. The athlete is neither intrinsically nor extrinsically motivated and thus feels he/she has no compelling reason to train or compete (Chantal *et al.*, 1996).

These affective states do not influence motivation directly, but rather the perceived levels of competence that create positive emotions (e.g. enjoyment, pride) and/or negative connotations (e.g., anxiety, shame) which in turn influence motivation (Weiss, 1993). The pursuit of mastery serves as motivation with the primary focus of attaining satisfaction from the acquisition and development of skills (Roberts *et al.,* 1998). Athletes with such disposition tend to exhibit persistence and increased effort when confronted with major setbacks (Xiang & Lee, 2002).

Correspondingly, motivation and successful performance have been espoused as not just delineated or confined to the final outcome or the pursuit of excellence, but also reflect the psychological process of accomplishing the set objectives. A study by Weiss (1993) highlighted the relationship between perceived competence and motivation. She found that, competence improves motivation, resulting in positive achievement behaviours and sustained effort.

Goal setting

Goal setting is generally used as a motivational tool for athletes to achieve higher proficiency in tasks and regulation of their actions (Silva & Weinberg, 1984). This is often achieved through a comparison of personal standards against which performance is measured (Weinberg, 1996). Goal setting provides a sense of focus and direction, increases effort and intensity, and promotes the development of relevant strategies to enhance performance (Harris, 1985; Morris & Summers, 1995). The goal setting process drives and sustains a particular level of proficiency, which is deemed to provide a positive source of efficacy information to athletes (Bandura, 1977; Weinberg, 1996).

The pursuit of goals can be categorised into a performance-based goal orientation and an outcome-based goal orientation, each with a different structure (Burton & Naylor, 2002). Athletes with a performance-based goal orientation generally exhibit a positive and optimistic outlook. They focus on learning, improving and mastering of skills. They have confidence in their ability to produce the effort that is required to learn and become proficient performers. In contrast, those with a proclivity of an outcome-based goal orientation are more inclined to focus on how other people judge them (social appraisal) or how they are performing in relation to others than on personal development (learning or overcoming challenges) (Burton & Naylor, 2002).

The positive effect of goal setting in the industrial sector (Locke & Latham, 1990) as well as in sport is well documented (Kyllo & Landers, 1995; Burton *et al.*, 2001), which have given credence to its encompassing effects as being critical to performance enhancement strategies. There is general consensus in sport from the results emanating from more than 500 studies on goal setting (e.g., Locke & Latham, 1990;

Burton, 1992, 1993; Weinberg, 1994; Burton *et al.,* 2001; Burton & Naylor, 2002) alluding to the fact that, specific and difficult goals prompt better performance than vague, "do your best" or "no goals". These findings were consistent irrespective of the type of task, the situation dynamics or settings in which the goals were set, the way performance was measured, as well as the age, ability and motivation of the participants. Burton *et al.* (2001) supported earlier assertions that the perceived effectiveness of goal setting in sport is as effective as in business settings. They reported that out of the 56 published goal setting research studies in a sport and exercise context, 44 studies produced moderate to strong goal setting effects on sport performance. In addition, studies by Filby *et al.* (1999) and Gould (2005) reinforced goal setting as highly effective in enhancing performance and shaping positive behaviour.

Research by Locke and Latham (1990) revealed that group goals enhanced performance as effectively as individual goals. Johnson *et al.* (1997) highlighted the effectiveness of goal setting on team efficacy, when they observed that team goals increased performance more than individual goals or "do your best goals". The few observations of the facilitative effects of team goals have been reported as either strong or consistent (Locke *et al.,* 1997; Paulus, 2000). Team goals provide motivation, purpose and direction for performance of the group and also affect individual goals positively. In effect, team goals precipitate the motivation for athletes' synergy to perform effectively as a group, but such goals must be congruous with the goals of the individual team-members (Locke & Latham, 1990).

Goal setting in its own is no magic performance enhancement tool without a plan of action. Burton *et al.* (2001) asserted that goal setting is more effective when a systematic plan is formulated to guide its attainment.

Arousal regulation

The quest for consistent performance creates the need for athletes to seek strategies to sustain optimal performance in anxiety-producing situations. An ability to manage arousal could enable athletes to optimize performance by recognising situations that necessitates the elevation or lowering of arousal (Zaichkowsky & Baltzell, 2001). This is

important because the interpretation of the perceived anxiety lays the foundation for the athlete's competence in mastering other psychological skills.

The literature on arousal regulation often ascribe terms interchangeably as stress, anxiety, or arousal (activation) to describe some affective responses (both positive and negative) that surface in a competitive environment. Weinberg and Gould (2011) bemoan this phenomenon and recommend that a clear distinction should be made between these related terms.

"Arousal" is a more general term than "stress" and "anxiety". Arousal is expressed as an activation of the mind and body leading to a condition of alertness (Sage, 1978; Landers, 1980). It can lie somewhere on a continuum ranging from deep sleep to extreme forms of excitement (Gould *et al.,* 2002). "Stress", on the other hand, is an overall concept which encompasses a range of unpleasant emotional states such as anxiety, depression, and anger (Smith & Smoll, 1990). Stress is an emotional response and usually manifests when threat and increased physiological arousal are appraised that challenge our coping abilities. In essence, stress is the result of a disproportionate appraisal of perceived demand and perceived ability (Smith *et al.*, 2000).

Competitive anxiety

Levitt (1980) views anxiety as a subjective feeling of apprehension or perceived threat usually accompanied by heightened physiological arousal. Anxiety has two components. Firstly, a cognitive dimension characterized by negative expectations such as worry and concerns of potential consequences. Secondly, a somatic response encompassing all aspects of physiological feelings experienced (e.g., elevated blood pressure, muscle tension). It is important to distinguish between the two dimensions of anxiety in relation to performance, as their origins determine their effect on performance (Gould *et al.*, 1984; Gould *et al.*, 1987). Cognitive anxiety might have a positive effect on performance if the athlete can manipulate it successfully. Conversely, cognitive anxiety is believed to have a more devastating effect on performance than somatic anxiety if not properly managed (Morris *et al.,* 1981; Jones *et al.*, 1990). Athletes with a strong tendency to suffer from cognitive anxiety experience more debilitative performance

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effects. This is partly due to a narrowing of the width of their attentional focus below an optimal point, creating a "tunnelling effect", which eliminates some task-relevant cues needed for successful performance (Gould *et al.*, 1984).

There have been consistent efforts over the years to understand the perceived relationship between anxiety and performance (Woodman & Hardy, 2001). The recognition of separate cognitive and somatic dimensions encouraged a multidimensional approach to anxiety in sport. For example, Martens *et al.'s* (1990) *Competitive State Anxiety Inventory-2* (CSAI-2) indicates a negative linear correlation between cognitive anxiety and performance whilst an inverted-U relationship exists between somatic anxiety and performance.

However, studies on the anxiety-performance relationship produced inconsistent findings. According to Jones (1991), this is partly due to researchers failing to clarify why or how anxiety affects performance. The model of directional interpretation of the anxiety proposed by Jones (1991, 1995) has advanced knowledge on the question of how anxiety influences performance. The direction of interpretation relates to whether an individual perceives anxiety symptoms as being facilitative or debilitative to performance (Jones & Swain, 1992). Conclusions drawn from a number of studies (e.g., Jones & Swain, 1992; Swain & Jones, 1996) show that the directional interpretation of anxiety symptoms (facilitative or debilitative) is influenced by the mental disposition of the athlete and variables present in the competitive environment.

Studies conducted on temporal patterns of anxiety interpretation and predisposition to anxiety interpretation effects among elite and sub-elite athletes revealed no significant difference between "facilitators" and "debilitators" (Jones & Swain, 1995). Elite athletes, in contrast to sub-elite athletes reported more facilitative interpretations of both cognitive and somatic anxiety symptoms. The elite athletes also demonstrated greater levels of self-confidence than their sub-elite counterparts who perceived their symptoms as more debilitative. Correspondingly, the mediating effect of self-confidence in the perceived anxiety intensity-direction relationship influenced Jones (1995) and Jones and Hanton's (1996) proposition that confidence and perceptions of control facilitate the moderation and interpretation of the observed causal effect of anxiety intensity in relation to

performance outcome. Emanating from such observations was their formulation of a control model based on the earlier work of Carver and Scheier (1988) and Carver *et al.* (1989). The control model hypothesised that self-confident performers espouse their ability to assert control of their actions and the environment (which leads to facilitative interpretations), whereas those with less control would tend to manifest a debilitative interpretation of anxiety (Jones & Hanton, 1996). A number of empirical studies have substantiated the predictive efficacy of this model (e.g., Jones & Hanton, 1996; Ntoumanis & Jones 1998; Hanton *et al.,* 2008).

Hanton and Connaughton (2002) tested the control model among swimmers and found that factors that were construed to be under their control were interpreted as having a positive effect on performance. On the other hand, symptoms deemed to be outside their control were perceived to have a negative effect on performance. Self-confidence therefore, had a moderating effect on their interpretations of anxiety symptoms.

Despite advances in explaining how anxiety influences performance, there still remains a need for more rigorous theoretical efforts to understand the mechanisms underlying the way in which anxiety influences performance in a particular direction. The research of Eysenck and Calvo (1992) emphasized the role of motivation and persistent effort in strengthening self-confidence which in turn enhances the facilitative interpretations of anxiety symptoms increasing the probability of success.

In the context of competitive sport, the theoretical underpinnings of how and why athletes perceive and respond to anxiety-induced situations and the underlying strategies of how they adapt and thrive in such situations are important. This applies to both practice (e.g., psychological skills intervention programmes) and research.

Attentional focus

In soccer one of the most important skills is the ability to respond swiftly and effectively to the changing dynamics of the game (e.g., position of the ball, teammates, and opponents). Focusing attention on relevant environmental cues is therefore important for optimal performance. In essence, the ability to selectively concentrate on relevant cues while ignoring irrelevant information separates elite athletes from average

competitors (Weinberg & Gould, 2011). Orlick and Partington's (1988) study of Olympic athletes accentuated the role of concentration in enhancing performance.

The concepts of attention and concentration are used interchangeably throughout sports psychology literature.

Potgieter (2006) cited William James's (1890: 403) definition of attention as "the taking possession by the mind in clear and vivid form of one out of what seem several simultaneously possible objects or trains of thought ... It implies withdrawal from some things in order to deal effectively with others".

Research has confirmed the importance of attentional focus in motor learning and control (Wulf & Prinz, 2001; Wulf *et al.,* 2001). There has been substantial literature attesting to the effect of attentional focus with regard to the skill level of the performer (Wulf & Prinz, 2001). The findings from most of these studies are in agreement that an over-awareness of bodily movements will negatively affect performance in comparison to a primary focus on the desired outcome of one's movements (e.g., a target) (Weinberg & Gould, 2011). This assumption is supported in research on elite athletes (e.g., Gray, 2004; Castaneda & Gray, 2007), which reported that a focus on movement execution was detrimental for performance at an elite level. In contrast, performance is impeded in the case of novices who direct their attention away from skill execution.

Jackson and Csikszentmihalyi (1999) alluded to three levels of concentration associated with peak performance: (a) being engrossed in the present with no thoughts about the past or future; (b) being mentally relaxed with a high degree of concentration and control; and (c) being in a state of exceptional awareness of both one's body and the external environment.

Research on diverse individual and team sports such as tennis, soccer and basketball have acknowledged differences in eye movement patterns, with elite athletes exhibiting different attentional focus than non-elite athletes (Moran, 1996). Memmert's (2009) study outlined the relevance of attentional selectivity in relation to performance by stressing that, it is not only the longevity of the focus that counts in performance, but also the essence ascribed to what one concentrates on enhances performance. As the

process of an activity is mastered with consistency and finesse in the proficiency of delivery, an athlete can depart from more conscious control to more automatic control. This in effect allows attention to be directed to other aspects of the game and environmental situation (Weinberg & Gould, 2011); which has special relevance in a sport like soccer.

Attentional models

The vast literature addressing attentional styles in sport have focused and adapted the theoretical framework of Nideffer (1979, 1981) and Nideffer and Sagal (2001), who identified three components of attention focus: width of attention (broad or narrow); direction (internal or external); and the ability of the individual to shift attentional focus.

A broad attentional focus allows one to focus on numerous occurrences simultaneously. Athletes who are good at this, possess good anticipation skills and can adapt to rapidly changing conditions. The disadvantage of this attentional style is the possibility of being easily distracted by irrelevant environmental stimuli.

A narrow attentional focus relates to selectively focusing on only one or two external cues. This type of attention is recommended for focusing on a single primary target and blocking out distractions. It is cautioned that when used inappropriately it could lead to lack of variation and adaptability (Weinberg & Gould, 2011).

The internal attentional focus (association) is projected inwards at thoughts and emotions. This type of attentional focus is good for focusing on body awareness, energy management, and imagery. The disadvantage of such an attentional focus is the tendency to become self-conscious. Such self-absorbed ego-involvement might lead to "choking" under pressure (Potgieter, 2006; Weinberg & Gould, 2011).

A broad internal attentional style helps the athlete (or coach) to analyse strategies based on previous experience and knowledge. When this attentional style is employed inappropriately, it could induce cognitive interference and "paralysis by analysis" in situations that require automatic action (Weinberg & Gould, 2011).

An important component of Nideffer's model is the ability to shift attention. Because it is impossible to attend to both internal and external cues simultaneously the athlete needs

to shift back and forth from one style to another– depending on the competitive demands at a particular moment (Harris & Harris, 1984; Morris & Summers, 1995). Athletes are also required to shift their focus on the broad narrow continuum depending on the requirements of the situation. For instance a soccer player must quickly shift attention to broad-external as he scans the field, observing the defensive alignment of the opposing team, an open teammate to pass the ball to, or the position of the goal keeper to strike for goal. In essence, peak performance is enhanced when athletes maintain an attentional focus which is appropriate at a specific time during a contest.

Imagery

Imagery involves a recollection of information kept in one's memory and reconstructing them into meaningful images (Weinberg & Gould, 2011). These can be used to mentally prepare for future performances. They can also be used to acquire and mentally practise motor skills. In effect the continuous process of imagery enables the athlete to generate a progressive sequence of interacting processes encapsulating goals, schemata, actions, objects and effects needed for effective skill acquisition and implementation. Imagery provides the mechanism for planning, learning and acquiring the necessary skills in an evasive manner as if the situation and self-activity were really happening (Feltz & Landers, 1983).

The clarity and effectiveness of imagery are enhanced when all the senses are activated when imaging (such as vision, smell, taste, hearing and feeling) (White & Hardy, 1998). Moreover, incorporating emotions and thoughts as well as concentration in imagery facilitates the familiarization and control and positive interpretation of such affective states (Gregg *et al.*, 2005).

Apart from using all the senses to make imagery vivid, it is also recommended that the tempo of imagery must mirror the actual duration of an action. Calmels *et al.* (2003) found that this is an important factor that distinguishes between effective and less effective imagery.

As far back as 1934, Sackett asserted that imagery equips athletes with a mental imprint and plan for their actions; thereby making their movement more familiar and

automatic. The effectiveness of mental imagery in athletic performance cannot be over-emphasized (Paivio, 1985; Driskell *et al.*, 1994; Morris *et al.*, 2004). The documented effectiveness of imagery has been reflected in the frequent use of imagery reported by athletes (Hall *et al.*, 1990; Barr & Hall, 1992) and the inclusion of imagery in psychological skills intervention programmes (Gould *et al.*, 1990; Kendall *et al.*, 1990).

Weinberg and Gould (2011) cited the work of Murphy *et al.* (1990) in which they reported that 90% of Olympic athletes employ some form of imagery, with 97% of these athletes believing that it boosted their performance. Titley (1976) and Jordet's (2005) studies revealed significant improvement in the performance of athletes after employing imagery strategies in their training regimen. Moreover, Evans *et al.* (2004) reported positive effects of imagery on confidence and coping with anxiety.

Studies using imagery as part of a psychological intervention programme reported performance enhancement in sports such as basketball, golf, football and swimming. However, this improvement cannot be attributed to imagery alone (Perry & Morris, 1995; Weinberg & Williams, 2001). Weinberg (1981), Feltz and Landers (1983), and Martin *et al.* (2001) provided empirical evidence highlighting the effectiveness of imagery in learning and enhancing the performance of motor skills. However, this does not mean that imagery replaces physical overt practice. It is merely a useful adjunct to real practice.

Grouios (1992) suggested that, the effectiveness of imagery is more pronounced in sport with strong cognitive demands such as those involving tactics and strategies. Additionally, Vealey and Greenleaf (2001) have added that not only does imagery facilitate the quality of athletic movement, but that it also strengthens concentration, self-composure, and moderates the effect of anxiety and stress.

Martin *et al.* (1999) proposed that imagery should be performed with a specific purpose. In other words the nature of imagery employed must match the intended specific outcome. Therefore, it is recommended to individualize imagery intervention according to the specific needs of athletes to maximize its effectiveness (Gregg *et al.*, 2005).

There still remains a need for research to provide answers about the moderating factors influencing the efficiency of imagery in a variety of competitive environments (White & Hardy, 1998).

Self-confidence

The importance of self-confidence in sport cannot be over-emphasized. In a sense, self-confidence is considered an important factor that differentiates between successful and less successful athletes (Krane & Williams, 2006). Self-confidence involves a belief that one can successfully execute a specific activity or skill (Vealey, 1986). Vealey (2001) describes self-confidence as either trait-like or state-like. Trait sport-confidence is defined as the usual belief athletes have about their ability to be successful in sport, which essentially can be expressed as an inherent or part of an individual's personality. State sport-confidence is defined as the degree or belief of certainty athletes have at a particular moment and in a particular situation about their capability to be successful.

Vealey and Knight (2002) believe that sport self-confidence is multidimensional. It encompasses confidence about one's ability to execute physical skills, confidence about one's ability to use psychological skills (e.g., imagery, self-talk), confidence to use perceptual skills (e.g., decision making, adaptability), confidence in one's level of physical fitness and training states, as well as confidence in one's learning potential or ability. Hays *et al.* (2007) made a further addition to the understanding of the multidimensional nature of self-confidence when they examined self-confidence among elite athletes. They came up with additional dimensions such as a belief in the ability to achieve (winning, improved performance), and belief in one's superiority over an opponent. This is in line with the importance of self-belief as evident throughout the literature on mental toughness.

In competitive sports, the phenomenon of self-fulfilling prophecy seems clear where positive expectations influence the occurrence of desirable outcomes. A negative self-fulfilling prophecy, on the other hand, is deemed a psychological barrier, where the expectation of failure actually results in failure (Weinberg & Gould, 2011).

Self-confidence is therefore synonymous with a high expectancy of success. Mahoney *et al.* (1987) for example, observed that successful athletes exhibited stronger and more stable levels of self-confidence than less successful athletes. Additionally, self-confidence initiates positive emotions, allowing athletes to remain calm and relaxed in adverse situations. Optimal self-confidence (not under- or over-confidence) increases effort and enhances performance (Weinberg *et al.*, 1980).

Self-confidence also promotes positive thinking about one's potential and ability. This contributes to successful performance (Kendall *et al.*, 1990; Van Raalte *et al.*, 1994). This type of positive thinking also applies to teams that "play to win" rather than "play not to lose" (Weinberg & Gould, 2011). This view is in line with Feltz and Chase's (1998) observation that confident teams are willing to take calculated risks when competing. Notably, in a team sport such as soccer, building collective confidence is imperative for success (Heuze *et al.*, 2007).

However, the importance of confidence in sport should not be seen as a remedy for incompetence. Confidence can only propel an athlete's perceived ability up to a point. In fact, it is speculated that performance progresses steadily as the level of confidence increases up to an optimal point. Beyond this point any further rise in confidence can actually hinder performance. Performance suffers when athletes have a false sense of confidence (i.e., over-confidence) that result in poor performance (Weinberg & Gould, 2011). Self-confidence is therefore not a guarantee for success, but it can help athletes to cope better and even thrive in both successful and unsuccessful situations (Martens, 1987).

Psychological skills training

Psychological skills training (PST) is widely regarded as an effective way to enhance sport performance (Williams & Krane, 2001). Vealey (1988) highlighted that PST programmes are designed to educate and equip athletes with techniques and strategies that can be employed to examine, monitor and adjust their thoughts and feelings to produce psychological state that facilitate performance and build positive personality characteristics. PST entails methodical and consistent practise of cognitive skills to

facilitate performance excellence and increase the enjoyment of physical activity and sport (Weinberg & Gould, 2011). A well-constructed PST programme also bolsters athletes' personal lives in areas outside the sport context where many of the psychological skills are also applicable (Tremayne & Tremayne, 2004).

PST programmes are not all the same. Some sport psychologists such as Shambrook and Bull (1996) and Johnson *et al.* (2004) focused on single psychological dimension (e.g., self-talk), while others (e.g., Thelwell & Maynard, 2003; Thelwell *et al.,* 2006) prefer a multi-modal PST package approach of a variety of mental skills. Some (e.g., Thelwell & Greenlees, 2003) go even further by incorporating physical skills in their PST programmes.

Rogerson and Hrycaiko (2002) have argued that, research examining the effectiveness of PST interventions in relation to specific performance skills (e.g., tackling, passing of the ball and inter-positional play in soccer) may provide a better insight into the specific demands of different playing positions. Birrer and Morgan (2010) also suggest that PST should be tailored to specific psychological and physiological needs in order to facilitate familiarity and automacity of skill execution. Accordingly, the development and implementation of PST intervention should be systematic, goal oriented, planned, controlled and consistently evaluated (Seiler & Stock, 1994). Weinberg and Gould (2011) recommend that PST interventions, in order to be theoretically sound, need to be cognisant of areas relating to behaviour modification, cognitive therapy, and rational emotive therapy.

A number of studies have attested to the effectiveness of PST in, for example, tennis (Daw & Burton, 1994), cricket (Spittle & Morris, 1997) and gymnastics (Kazemi *et al.*, 2003). Tremayne and Tremayne (2004) highlighted the effectiveness of PST intervention programmes for young athletes. They reported that the incorporation of psychological skills such as goal setting, imagery, relaxation and stress management significantly improved young athletes' physical fitness, self-confidence, and self-esteem. Additionally, psychological skills testing before implementing a PST programme identify the psychological strengths and weaknesses of athletes. This information should have a bearing on the content and method of the PST intervention (Leffingwell *et al.,* 2005).

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The psychological skills-performance relationship

Different sports seem to require distinctively different PST programmes with specific emphasis on the development of certain skills concomitant to the positions in the sport. The psychological requirement for maximal efficiency in sports such golf and martial arts, for example, are appreciably different (McCaffery & Orlick, 1989; d'Arripe-Longeville *et al.*, 1998). However, there are general psychological attributes inherent in all sport that are deemed essential to high-level performance. For instance a high level of motivation is a basic prerequisite for success (Singer & Orbach, 1999; Baker & Horton, 2004). Additionally, studies have alluded to significant motivational differences between elite and non-elite Olympic weightlifters (Mahoney, 1989), greater anxiety management skills and self-confidence among more successful than less successful equestrian athletes (Meyers *et al.,* 1994). Coetzee *et al.* (2006) identified psychological skills such as concentration, goal orientation, performing optimally under pressure, achievement motivation, arousal control and goal setting as important discriminating factors between successful and less successful soccer teams.

Williams and Krane's (2001) overview of studies on psychological skills alluded that, higher levels of self-confidence and concentration are cardinal in facilitating successful performance. Moreover, Smith *et al.* (1995) found that specific psychological skills (e.g., goal setting, mental preparation, coping with adversity, peaking under pressure, concentration, confidence, and achievement motivation, freedom from worry and coachability) distinguished between more and less successful professional baseball players. Correspondingly, Gould *et al.* (2002) indicated that successful teams exhibit a greater ability to rebound from mistakes than less successful teams. Mahoney *et al.* (1987) pointed out that attributes such as arousal control, self-confidence, concentration, and mental preparation are pertinent in the psychological profile of successful athletes and teams. Kruger (2010) substantiated this observation with her findings on the differences between successful and less successful field hockey players regarding their achievement motivation, goal setting, self-confidence, imagery, and mental preparation.

Despite the popular belief in the positive influence of psychological skills there are some contrasting findings (Smith *et al.*, 1988). For instance, studies have reported no correlation between psychological skills and increased training volume of elite judo athletes (Murphy *et al.,* 1990), and no significant difference in psychological skills between elite, sub-elite, and non-elite female tennis players (Meyers *et al.,* 1994). Janelle (1999) is of the opinion that behavioural disorders and intransigence in psychosocial adjustments (e.g., social loafing) will result in unsatisfactory output.

Group cohesion

Coaches, sport psychologists and commentators are often baffled by the phenomenon of a team enjoying considerable success one year and then performing miserably in the year thereafter. Also how do teams with less-able and less-skilful players defy the odds to beat some of the greatest teams to win a competitive championship? Babe Ruth (the famed baseball player) once said "the way a team plays as a whole determines its success. You might have the greatest bunch of individual stars in the world but if they don't play as a unit the club won't be worth a dime" (Babe Ruth, n.d.).

A meta-analysis of team cohesion by Mullen and Copper (1994) revealed a positive relationship between cohesion and performance. Soccer, as a team sport, relies on harmony, synergy and cooperative team work in order to achieve good results. This is the ideal, but the so-called "super ego" syndrome and self-centred individual play are nevertheless evident among certain players (Matheson *et al.,* 1997).

Early perspectives

The early proposition of cohesion forwarded by Festinger *et al.* (1950) envisaged cohesion as a collection of many factors that keeps the members of a group together. Bollen and Hoyle (1990: 482) defined cohesion as "an individual's sense of belonging to a particular group and his or her feelings of morale associated with membership in groups."

Others have highlighted commitment to the task (goals) of the group (Goodman *et al.*, 1987), while others also included the attraction of the group as a dimension of cohesion

(Schachter *et al.,* 1951). Cartwright (1968) contended that attraction to the group becomes operational based on four interacting variables: (1) the motive for such attraction (e.g., need for affiliation and recognition); (2) group goals involving prestige and positive attributes of the team that are vicariously shared by individual members; (3) expectancy of benefits that membership might provide; and (4) favourable comparison with other groups regarding membership.

Carron (1982) is of the opinion that early conceptions of cohesion lacked sound theoretical underpinnings. In addition, Carron (1982: 126) pointed out that, the over-emphasis of early perceptions of cohesion as just delineated to the attraction of group to members "underrepresented the concept and it is neither a necessary nor sufficient condition for group formation". He further reiterated that, the early perception regarded cohesion as a static, one-dimensional condition. However, this perception changed in the 1980s to a multidimensional approach, but was confined to individual and group attraction without reference to the task and social dynamics of cohesion (Boone *et al.*, 1997). Mudrack (1989: 45) suggest that the early conceptualisation of the construct of cohesion had been "dominated by confusion, contrariety and virtually untenable structuring of the concept."

More recent definitions and concepts

The definition of group cohesion deemed to be grounded on a sound theoretical foundation was forwarded by Carron (1982) and later modified by Carron *et al.* (1998). Carron *et al.,* (1998: 213) defined cohesion as "the dynamic process which is reflected in the tendency of a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs". This definition delineates the understanding of cohesion as (1) multidimensional (variety of factors underlie the unity and consistency of a group); (2) dynamic (the degree of unity and consistency can change over time); (3) instrumental (intended purpose that underlies group formation); and (4) affectivity (social implications of staying together).

Carron *et al.* (1998) emphasized the multidimensional nature of cohesion by including the task and social dimensions of cohesion. Task cohesion expresses the degree of

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influence that involvement by group members contributes to attaining a common goal or objective. The task also represents the purpose of the formation of the group (Carron *et al.*, 1998). Carron *et al.* (1985) contends that the nature of the group task is a strong mediator of group cohesion. For instance, in an interactive sport (e.g., soccer) which requires interdependence, commitment, and self-sacrifice of personal aggrandisement, is seen to foster cohesion more than in a coactive sport (e.g., golf), which usually relies on personal mastery of skills. Kozub and McDonnell (2000) reported that highly cohesive teams demonstrate strong levels of group efficacy and such observation is stronger for task cohesion than for social cohesion. Moreover, task cohesion is seen as a triggering factor in boosting perceived psychological momentum (Eisler & Spink, 1998). This attribution of task cohesion (i.e., boosting psychological momentum) is fundamental to success in a team sport such as soccer.

Social cohesion, on the other hand, reflects team members' perception of personal involvement, affiliations, and the collective ability to build harmonious interpersonal relationships (Carron *et al.*, 1998). Smith *et al.* (2001) highlight individual connections with their teammates and feelings of friendship as factors consistently identified with the concept of affiliation in sport. Coaches' interaction with group members together with open communication encourages members' input when formulating team goals. This fosters a sense of belonging among team members. It also leads to enhanced member satisfaction and commitment to the group's task. Carron *et al.* (1998) observed that a strong social cohesion limits negative behaviour, such as tardiness and absenteeism, among team members.

The multidimensional model of group cohesion outlined by Carron *et al.* (1998) also includes individual and group aspects of cohesion. The group integration (GI) reflects the beliefs and perceptions (e.g., similarity) that the group holds true and promote closeness, similarity, and bonding as an integrated unit.

The individual attraction to the group (ATG) pertains to the attractiveness of the group to the individual, and the motives that influence his/her commitment to the group.

In summary: the multidimensional concept of cohesion with its central beliefs forwarded by Carron *et al.* (1985) comprises the following: how a team functions at a social level

(Group Integration-Social, GI-S); how the team functions as a unit to achieve team goals (Group Integration-Task, GI-T); the degree to which a member is attracted to the team by its social milieu (Individual Attraction to the Group-Social, ATG-S); and the extent to which members are attracted to the team to achieve important goals (Individual Attraction to the Group-Task, ATG-T).

Carron *et al.* (1985) used the concept of the individual and group dimension of cohesion, anchored by both task and social components to develop the *Group Environmental Questionnaire* (GEQ).

Factors that influence cohesion

Cohesion is subject to numerous moderating factors. For instance, the nature of the task (Landers & Lueschen, 1974), the quality of the coach-athlete relationship (Bird, 1977), the ability of team members (Widmeyer & Martens, 1978) and the collective motivation of the group (Ball & Carron, 1976) might impact on the cohesion of a team.

Carron *et al.* (1998) outlined four factors that influence cohesion in sport and exercise settings: (1) environmental factors; (2) personal factors; (3) team factors; and (4) leadership factors.

Environmental factors include proximity (when athletes spend a lot of time in each other's company, such as, when they are accommodated in the same living quarters). Commonality (e.g., similar age, values, language) is also a cohesion-enhancing factor because it fosters good communication (Weinberg & Gould, 2011). The size of the group is also an important environmental factor. Smaller groups generally enjoy stronger cohesion than large groups (Mullen & Copper, 1994; Carron & Spink, 1995).

Personal factors involve the similarity in attitudes, aspirations, commitment and expectations of team members (Weinberg & Gould, 2011). Factors such as autonomy, mutual trust among the coach and athlete, equality among teammates, opportunities to make an input, and the absence of social loafing, influence team cohesion (Papanikolaou *et al.*, 2003). Carron and Dennis (2001) revealed that the most significant personal factor related to the progression of both task and social cohesion on sport teams is individual satisfaction. The satisfaction seen in the coordinated efforts of group

members provokes individual relentlessness, effort and contribution towards achieving team objectives which results in greater cohesiveness.

Team factors refer to group task characteristics and dynamics, group productivity, norms, success driven inclinations, group roles, group position and team stability (Carron *et al.,* 1998). Teams will find it difficult to survive and function effectively without a definite purpose (Robbins & Finley, 1997). Clear, achievable goals and strategies to achieve them are important for team cohesion. Ideally, team members should be part of the goal setting process (Potgieter, 2006). Additionally, Brawley *et al.* (1987) suggested that greater team cohesion empowers members to withstand the negative consequence of disruptive events (such as poor performance) and encourage sensitivity to share responsibility in the face of failure. The concept of teamwork, closeness, sense of belonging, team identity and value of membership have been found to discriminate between successful and less successful teams (Melnick & Chemers, 1974; Widmeyer & Martens, 1978).

The stability of the composition of a team over an extended period maintains cohesion (Carron, 1982). Success is also associated with team cohesion. However, the question arises: are teams successful because of their strong cohesion or does cohesion makes them successful. What comes first? (Mach *et al.,* 2010).

In their work among intercollegiate field hockey players, Williams and Hacker (1982) concluded that performance precedes cohesion. Mullen and Copper (1994) in their meta-analysis also concluded that performance precedes cohesion. Mullen and Copper (1994: 222) further declared that, "cohesiveness may indeed lead the group to perform better but the tendency for the group to experience greater cohesiveness after successful performance may be even stronger". This was affirmed by Grieve *et al.'s* (2000) research which also suggested performance excellence precedes cohesion.

Peterson and Martens (1972) described the relationship between cohesion and performance as circular: performance influences cohesion and the ensuing changes in cohesion in turn, affect subsequent performance.

Leadership factors entail leadership styles and behaviours, especially their communication with the members of the team (Westre & Weiss, 1991; Brawley *et al.,* 1993). Decision-making style is also relevant. In critical situations an autocratic style and a task-oriented rather than an interpersonal-oriented focus is required from the leader (Foder, 1976; Schriesheim & Murphy, 1976). Cohesion is not a self-enduring phenomenon, thus it needs consistent effort, commitment and the manipulation of individual and group proclivities (e.g., goals, norms, conflicts) inherent in the team dynamics to maintain its viability in team performance (Carron *et al.,* 1998).

Cohesion and performance

The relationship between cohesion and sport performance in sport teams has been comprehensively investigated within sport psychology. The general conclusion is that cohesion has a definite positive effect on performance outcomes (Carron & Chelladurai, 1981; Carron, 1986; Williams & Widmeyer, 1991; Carron *et al.,* 2002). These findings apply to a variety of sports, for example soccer (Veit, 1973), basketball (Nixon, 1976), and volleyball (Bird, 1977). In a review of 30 studies on team cohesion, Widmeyer *et al.* (1993) established that 83% of them reported a positive relationship between cohesion and performance. Carron *et al.*'s (2002) study on the cohesion-performance relationship reported a moderate to large cohesion-performance effect. Research also indicated that postseason cohesion is higher among successful teams than among unsuccessful teams (Landers & Crum, 1971; Peterson & Martens, 1972; Nixon, 1976). Bray and Whaley's (2001) study revealed that high levels of cohesion increased performance by producing higher levels of effort.

There are, however, some studies that have reported inconsistencies regarding the cohesion-performance relationship. Melnick and Chemers (1974) found no correlation between cohesion and performance, while others even found a negative correlation (McGrath, 1962; Lenk, 1969; Landers & Lueschen, 1974). Similarly, the research of Martens and Peterson (1971) and Gray (1975) revealed no significant relationship between cohesion and performance outcome at the end of a competitive season. Podsakoff *et al.* (1997) also reported insignificant relationships between cohesiveness and performance and declared the research on this topic inconclusive.

Finally, Casey-Campbell and Martens (2009) ascribe the inconsistent findings with regard to team cohesion on a lack of consensus on a definition, conceptualisation, and measurement of the construct. Notably, studies have highlighted that moderating variables that predict cohesion are generally different from those that influence performance outcomes and that the cohesion-performance relationship might sometimes be weak (Littlepage *et al.,* 1989).

Psychological demands of different playing positions

It is speculated that there are different anthropometric and physiological requirements for players in different playing positions in sport. It is also highly likely that there are also different psychological dimensions required for competitors in different sports in general and specifically for different positions within specific sports.

However, not a great deal of research has been conducted on the psychological demands of different playing positions in team sport (Cox & Yoo, 1995). Some research in this area has been conducted in American sport such as basketball, volleyball, and American football (Nation & LeUnes, 1983; Cox, 1987; Cox & McManama, 1988).

Schurr *et al.* (1984) researched personality dimensions and playing positions of American footballers and found differences between playing positions and personality dispositions regarding extroversion-introversion; impractical-realistic; calculative-intuitive, and judging-perceiving. Similarly, Cox (1987) found that setters in volleyball displayed a stronger ability to broaden their internal attentional focus than middle blockers and side hitters.

In a study of 199 team-sport athletes, Kirkcaldy (1982) revealed that offensive players are more tough-minded, aggressive and extroverted than their defensive teammates. Cox and Yoo (1995) reported significant differences for anxiety control, concentration, and confidence between linesmen and backfield players in American football. They also found a significant difference between offensive and defensive players in relation to their anxiety control with offensive players recording higher scores.

Recent South African studies (e.g., Kruger, 2005; Grobbelaar & Eloff, 2011; Eloff *et al.,* 2011) have shed some light on this issue, but there is a dearth of knowledge about this

matter in the game of soccer. Grobbelaar and Eloff (2011) researched netball players and found differences between the players' on-court positions and their level of psychological skills. For example, goal shooters recorded the lowest psychological skill levels. Similarly, Eloff *et al.'s* (2011) also reported significant positional differences in the mental skill levels of field hockey players. The goalkeepers showed the lowest scores for seven (self-confidence, commitment, stress control, relaxation, activation, focusing and refocusing) of the 12 mental skills, whereas the midfielders outperformed the other positional groups in four (self-confidence, stress control, focusing, refocusing) of the 12 mental skills tested in the study.

It is expected that each sport has its own unique demands and that differences in psychological dispositions in both interactive and coactive sports do not necessarily apply to all sports.

To summarize, studies examining the importance of psychological constructs influencing performance excellence have been quite extensive in the sport psychology literature. Against this backdrop, it is surprising that no study has endeavoured to examine the integrative role of psychological constructs (i.e., mental toughness, psychological skills) and team factors in the achievement of successful performance.

Sambolec *et al.* (2007) point out that the context in which psychological dimensions are investigated can affect the findings of such studies. It could be concluded from the review of the literature that the overwhelming majority of investigations on mental toughness, psychological skills and team cohesion have been conducted within the context of elite sport. Subsequently, there is a need for more research within the context of young, developing sportspersons (including soccer players) to examine the psychological and team antecedents of overall performance to provide a strong theoretical foundation for applied psychological intervention programmes.

Chapter Three

Research Methodology

This study was approved by the Ethics Committee of
Stellenbosch University (Reference number: HS841/2012).

Procedure

The researcher approached the governing body of the 2012 USSA Soccer
Championship to obtain permission to conduct this study. The purpose, aims, and
potential benefits of the study were explained to the council for their approval. The
contact details of the coaches and managers of the participating teams were also
secured.

The coaches were contacted and briefed about the study one month prior to the
tournament. A day before the tournament the respective teams were met separately,
during which the study and procedures were explained and their voluntary participation
requested.

The players were assured of confidentiality and were informed about their right to
withdraw from the study at any time and without prejudice. All the participants provided
written informed consent before data collection began. All data obtained during the
study were treated with stringent confidentiality and anonymity.

Questionnaires were administered at a convenient time in a comfortable classroom
setting, in order to limit competition-specific biases of participants' responses. The
author/researcher supervised these sessions. Participants were required to complete
the questionnaires on their own without interaction with teammates. Instructions aimed
at reducing socially desirable answers were also given.

Participants

The target population for the study was subject to a sampling frame permissible by the USSA Council's rule regarding the number of players for each representing team in the tournament.

The USSA 2012 Soccer Championship was chosen for this study, because of its highly competitive nature. In addition, the participating teams qualified for the tournament by emerging victorious in various regional leagues during 2012, thereby giving variance to the sample. Correspondingly, the participants of the study were expected to provide rich perspectives on the role of the different psychological constructs owing to the diversity of their background, experiences, and mental aptitudes. A total of 263 male soccer players aged between 17.43 and 32.01 years (M = 22.64, SD = 2.28) from 16 South African tertiary institutions participated in the study. The size of the teams ranged from 11 to 21 players. With reference to the participants' experience at this particular level, 66.2% (n = 174) of the players indicated that the 2012 USSA Soccer Championship was their first USSA championship, whilst 22.8% (n = 60) participated in their second championship. Eight percent (n = 21) of the participants recounted the 2012 USSA Soccer Championship as their third championship, with the remaining 3% (n = 8) attending their fourth championship.

Inclusion/exclusion criteria

Participants were included if they were…

1. enrolled as students at any one of the 16 tertiary institutions taking part in the tournament.
2. representing one of the 16 tertiary institution teams taking part in the tournament.

Participants were excluded from the study if they did not comply with the instructions given prior to the administering of the questionnaires.

Measuring instruments

The following demographic information was gathered by means of a questionnaire: Age, experience at this level (previous number of USSA tournaments), the number of months they had been part of their team, the team they represented and their primary playing position.

Three valid and reliable questionnaires were employed to assess the mental toughness, psychological skills and group cohesion of the participants:

The Sports Mental Toughness Questionnaire (SMTQ)

The SMTQ (Sheard *et al.*, 2009) was used to evaluate the participants' mental toughness. The 14-item SMTQ provides a global measure of mental toughness (i.e., the sum of the subscales scores), as well as three subscales encapsulating confidence, constancy, and control. The participants had to respond to items on a four-point Likert-type scale ranging from "not at all true" [1] to "very true" [4]. Sample items included "I interpret threats as positive opportunities" (confidence); "I give up in difficult situations" (constancy); and "I am overcome by self-doubt" (control). Confirmatory factor analysis (CFA) has provided support for the three subscales and the global measure of mental toughness. Additionally, Sheard *et al.* (2009) revealed support for the internal reliability of the SMTQ subscales with Cronbach $α$'s of greater than 0.72.

The Athletic Coping Skills Inventory-28 (ACSI-28)

The ACSI-28 of Smith *et al.* (1995) was employed to assess the psychological skills of the participants. The ACSI-28 is a popular multidimensional assessment that provides a trait-like measure of psychological skills. It consists of seven sport-specific subscales, i.e., coping with adversity, peaking under pressure, goal setting/mental preparation, concentration, freedom from worry, confidence, achievement motivation, and coachability. Four items contributed to each subscale and the items were measured on a four-point Likert-type scale ranging from "almost never" [0] to "almost always" [3]. Each of the seven subscales scores can range from 0 to 12, and summed and averaged to provide a total personal coping resource score, which is assumed to reflect a multi-faceted psychological skill construct indicating an athlete's overall coping ability.

A goodness of fit psychometric analysis has been done on the ACSI-28 to assess its reliability and validity. Specifically, the test-retest reliability (over a period of one week for a group of 1000 high-level athletes) ranged from 0.47 (coachability) to 0.87 (peaking under pressure), and five of the seven subscales had coefficients above 0.70. Internal consistency statistics (Cronbach alpha) ranged from 0.62 (concentration) to 0.78 (peaking under pressure), indicating adequate reliability (Smith *et al.*, 1995). Initial validity testing indicated that the respective subscales correlated well with existing sport-psychological questionnaires (Smith *et al.*, 1995).

The Group Environment Questionnaire (GEQ)

The GEQ of Carron *et al.* (1985) was used to measure the athletes' perceptions of their team's cohesion. The GEQ is a self-report questionnaire that comprises 18 items. They are categorized into four cohesion subscales: individual attraction to the group-task (ATG-T, four items), individual attraction to group-social (ATG-S, five items), group integration-task (GI-T, five items) and group integration social (GI-S, four items). The items are measured on a nine-point Likert-type scale anchored at the extremes by "strongly disagree" [1] and "strongly agree" [9]. Higher scores reflect stronger perceptions of cohesiveness. Carron *et al.* (1985) originally reported internal consistencies for the four subscales ranging from 0.64 to 0.76 across two independent athlete samples. The validity and internal consistency of the GEQ were supported by subsequent research (e.g. Brawley *et al.*, 1987; Li & Harmer, 1996).

Descriptive statistics of the questionnaires

The descriptive statistics and alpha coefficients for the SMTQ, ACSI-28 and GEQ subscales are presented in Table 3.1. The overall internal consistency of the ACSI-28 and GEQ measures were adequate. However, there were problems with three of the subscales. Two of the SMTQ subscales (total mental toughness, and control) were found to have inadequate internal consistency ($\alpha \leq 0.50$). Likewise, the internal consistency of the individual attraction to group-task subscale of the GEQ was inadequate ($\alpha \leq 0.50$).

Table 3.1: **Descriptive Statistics and Alpha Coefficients for the SMTQ, ACSI-28 and GEQ Subscales**

Subscales	Mean	Standard Deviation	Standard Error	Cronbach Alpha (α)
Sports Mental Toughness Questionnaire (SMTQ) (Sheard *et al.,* 2009)				
Total Mental Toughness	2.99	0.35	0.02	0.42
Confidence	3.13	0.50	0.03	0.67
Constancy	3.44	0.48	0.03	0.50
Control	2.39	0.55	0.03	0.41
Athletic Coping Skills Inventory-28 (ACSI-28) (Smith *et al.,* 1995)				
Composite Psychological Skills	1.97	0.37	0.02	0.76
Confidence and achievement motivation	2.25	0.50	0.03	0.56
Coachability	2.35	0.53	0.03	0.64
Goal setting/mental preparation	1.95	0.58	0.04	0.59
Concentration	1.94	0.51	0.03	0.50
Coping with adversity	1.98	0.56	0.03	0.61
Peaking under pressure	1.98	0.63	0.04	0.76
Freedom from worry	1.31	0.67	0.04	0.67
Group Environmental Questionnaire (GEQ) (Carron *et al.,* 1985)				
Individual attraction to group-social	6.77	1.46	0.09	0.62
Individual attraction to group-task	6.87	1.73	0.11	0.48
Group integration-task	6.19	1.58	0.10	0.69
Group integration-social	5.48	1.60	0.10	0.57

It must be emphasised that the size of the sample used in the present study was considerably smaller than those used in the development of the three questionnaires, and this may have accounted for the inadequate internal consistencies.

The three questionnaires have also not been standardized within the South African context.

Measurement of performance

The primary measures of team performance were the teams' log positions at the end of the tournament. The 16 teams were divided into four pools of four teams each. Three round-robin matches were played followed by play-offs on days four and five depending on their placing in the respective pools. This ultimately yielded a final ranking from 1 to 16. Teams were used as the units of analysis rather than individual players, which is in accordance with Rousseau's (1985) recommendation to adjust the analysis level to the focus of the unit under investigation, in this instance the team.

Statistical analysis

Microsoft Office Excel (2010) and *STATISTICA 10* were used to analyse the data. Descriptive statistics (mean, standard deviation, and standard error of the mean) were calculated for all subscale measures, whilst Cronbach's alpha coefficients were determined to evaluate the internal consistencies of the SMTQ, ACSI-28, and the GEQ subscales.

The teams were divided into different groups (based on their final position on the log) and compared by means of a one-way analysis of variance (ANOVA) to determine differences between the groups. To determine between which groups these differences exist, post-hoc comparisons were conducted using the Least-Significant-Difference (LSD) procedure, which already has inbuilt protection against type-1 errors (Kepple, 1982).

One-way ANOVAs were conducted to examine differences in mental toughness, psychological skills, and team cohesion as a function of the different playing positions.

Post-hoc analysis (LSD) was conducted to determine the differences between the positional groups. Statistical significance was set as $p \leq 0.05$ throughout.

Additionally, effect sizes (ES) were used to determine practical significant differences between the various positional groups for each of the different subscales. ES was calculated by means of the formula described by Thomas *et al.* (2005), that is: ES = (M_1 – M_2)/s. Here, M_1 = the mean value of the first positional group in the comparison, M_2 = the mean value of the second positional group in the comparison and s = the standard deviation. The pooled standard deviation (Sp) was used; calculated by means of the following formula:

$$Sp = \sqrt{\frac{s_1^2(n_1-1) + s_2^2(n_2-1)}{n_1 + n_2 - 2}}$$

Here, S_1^2 = the variance of the participants in the first positional group; S_2^2 = the variance of the participants in the second positional group; n_1 = the number of participants in the first positional group; n_2 = the number of participants in the second positional group.

Effect sizes are expressed as Cohen's *d*-value and can be interpreted as follows: an ES of more or less 0.8 is large; an ES of more or less 0.5 is moderate; and an ES of more or less 0.2 is small (Thomas e*t al.,* 2005).

Chapter Four

Results

The purpose of this study was to investigate the role of mental toughness, psychological skills and team cohesion in the performance of soccer teams. More specifically, it aimed to determine the extent to which these factors differentiate between successful and less successful teams. Also, the role of age, tournament experience and the time period players had been members of a team were investigated. A third aim of the study was to determine whether the mental toughness, psychological skills and team cohesion scores of soccer players in different playing positions differed from one another.

Tables 4.1 to 4.19 report on the comparisons between the different variables (player demographics, mental toughness, psychological skills, and team cohesion) and team performance. These comparisons were conducted at three levels. Firstly, all 16 teams were compared with each other based on their final log positions at the end of the USSA Soccer Championship. The descriptive statistics of these comparisons are reported in the left-hand column of each table.

Thereafter, the 16 teams were grouped to form four cluster groups consisting of four teams each, i.e., the top four teams, the teams placed 5–8 on the log, those in positions 9-12, and lastly the teams who ended in positions 13-16. Their descriptive statistics are presented in middle column of each table.

Lastly, the top eight and bottom eight teams were compared, with their descriptive statistics reported in the right-hand column of each table.

Figures 4.1 to 4.7 depict those variables for which significant differences existed.

Age

Table 4.1 shows that no significant ($F_{15, 247}$ = 1.352; p = 0.17) effect was found for age and performance (teams' final log placing). Post-hoc analysis revealed differences between the following teams: 2 and 10; 5 and 10. The following nine teams (1, 2, 3, 4, 5, 6, 7, 8, 9) also differed from team 15.

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Table 4.1: **Between-group comparisons of age**

	Log position (1-16)			4 x 4 groupings (1-4, 5-8, 9-12 & 13-16)				Top eight versus bottom eight teams			
	Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error
1	22.29	2.19	0.53								
2	21.86	2.06	0.46								
3	22.27	2.09	0.52	1-4	22.29	2.05	0.24				
4	22.74	1.93	0.44								
5	21.92	1.70	0.42					1-8	22.37	2.18	0.19
6	23.35	3.60	0.93								
7	22.19	1.71	0.43	5-8	22.47	2.33	0.30				
8	22.51	1.64	0.47								
9	22.45	2.34	0.63					*			
10	23.56	2.32	0.58								
11	22.74	2.50	0.62	9-12	22.82	2.23	0.28				
12	22.55	1.85	0.42								
13	22.62	2.33	0.51					9-16	22.92	2.35	0.21
14	22.38	1.99	0.53								
15	24.61	3.84	1.16	13-16	23.02	2.48	0.31				
16	22.31	1.61	0.36								

* Statistically significant difference ($p \leq 0.05$)

An analysis of the four cluster groups (based on their final log positions) also did not reveal any significant difference ($F_{3, 259}$ = 1.449; p = 0.23) regarding mean age.

A significant difference ($F_{1, 261}$ = 3.910; p = 0.05) was found between the mean age of the top eight and bottom eight teams with the top eight teams being significantly younger (see Figure 4.1).
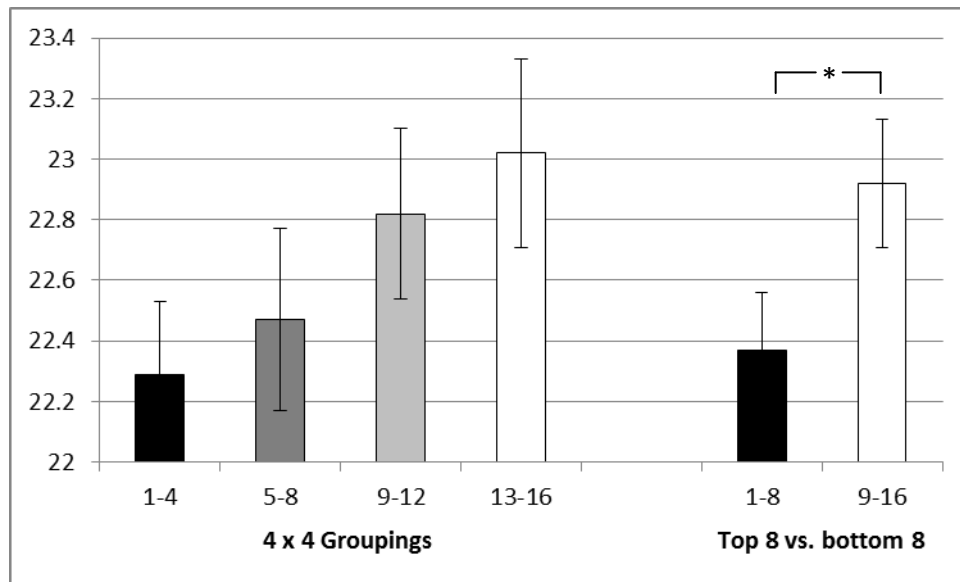
* Statistically significant difference ($p ≤ 0.05$)

Figure 4.1: **Between-group comparisons of age**

USSA tournament experience

A significant effect ($F_{15, 247}$ = 5.404; $p ≤ 0.01$) was found for previous USSA tournament experience on performance (teams' eventual log standings). A post-hoc analysis revealed significant differences between multiple teams (Table 4.2).
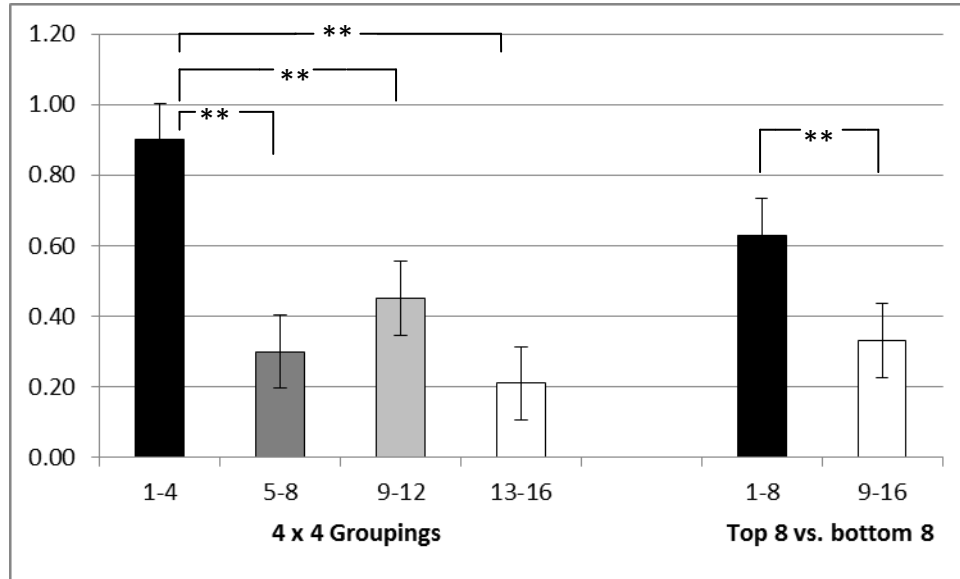
The analysis between the four cluster groups revealed a significant effect for previous USSA tournament experience in differentiating between teams with regard to their eventual log placement ($F_{3, 259}$ = 12.456; $p ≤ 0.01$). Post-hoc analysis revealed differences between cluster groups 1-4 and 5-8; 1-4 and 9-12; 1-4 and 13-16 (see Figure 4.2).

Table 4.2: **Between-group comparisons of USSA tournament experience**

	Log position (1-16)			4 x 4 groupings (1-4, 5-8, 9-12 & 13-16)				Top eight versus bottom eight teams			
	Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error
1	0.82	0.95	0.23								
2	1.20	1.15	0.26								
3	1.06	1.00	0.25	1-4	0.90	0.98	0.12				
4	0.53	0.70	0.16								
5	0.00	0.00	0.00					1-8	0.63	0.89	0.08
6	0.60	0.63	0.16								
7	0.06	0.25	0.06	5-8	0.30	0.62	0.08				
8	0.67	0.98	0.28								
9	0.00	0.00	0.00								
10	0.63	0.72	1.18								
11	0.63	0.50	0.13	9-12	0.45	0.66	0.08				
12	0.47	0.84	0.19								
13	0.05	0.22	0.05					9-16	0.33	0.60	0.05
14	0.71	0.83	0.22								
15	0.18	0.40	0.12	13-16	0.21	0.51	0.06				
16	0.05	0.22	0.05								

** Statistically significant difference (*p* ≤ 0.01)

A significant difference ($F_{1, 261}$ = 10.355; $p \leq 0.01$) was found between the top eight and bottom eight teams for previous USSA tournament experience with the top eight teams showing greater experience levels (see Figure 4.2).

** Statistically significant difference ($p \leq 0.01$)

Figure 4.2: **Between-group comparisons of USSA tournament experience**

Period players had been part of a team

Table 4.3 indicates that, a significant effect ($F_{15, 247}$ = 2.969; $p \leq 0.01$) was found for the number of months being part of a specific team on performance (teams' eventual log positions). Post-hoc analysis revealed significant differences between multiple teams.
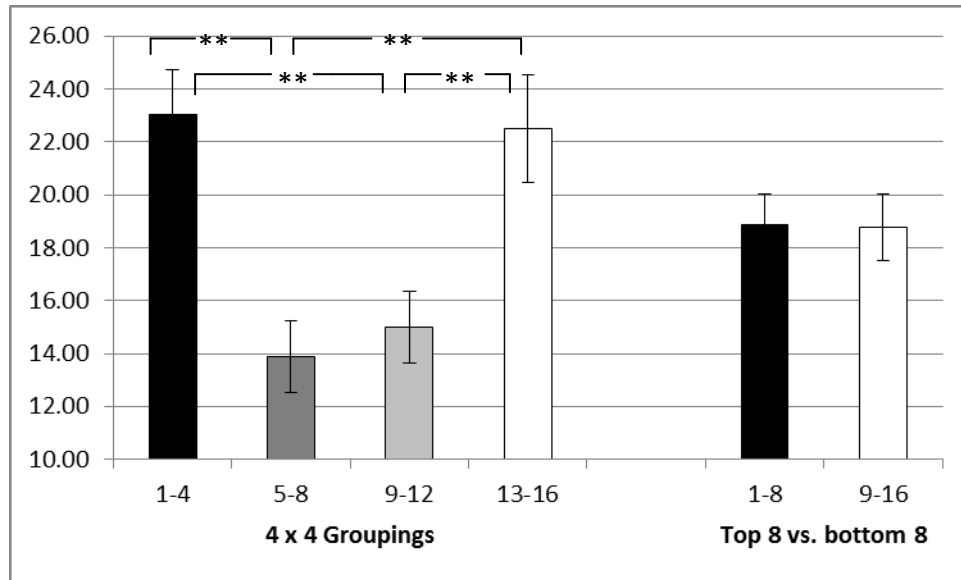
The analysis between the four cluster groups revealed a significant effect for the number of months being part of a team on team performance ($F_{3, 259}$ = 8.634; $p \leq 0.01$). Post-hoc analysis revealed differences between cluster groups 1-4 and 5-8; 1-4 and 9-12; 5-8 and 13-16; 9-12 and 13-16 (see Figure 4.3).

There was no significant difference between the top eight and bottom eight teams for the number of months players had been part of their respective teams ($F_{1, 261}$ = 0.003; p = 0.95).

Table 4.3: **Between-group comparisons for the period players had been part of a team**

	Log position (1-16)			4 x 4 groupings (1-4, 5-8, 9-12 & 13-16)				Top eight versus bottom eight teams			
	Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error
1	17.88	13.81	3.35								
2	25.35	13.51	3.02								
3	24.50	16.15	4.04	1-4	23.04	14.17	1.67				
4	24.00	13.36	3.07								
5	21.06	12.87	3.12					1-8	18.87	13.40	1.17
6	10.47	7.78	2.01								
7	11.69	9.65	2.41	5-8	13.87	10.51	1.36				
8	10.83	5.95	1.72								
9	10.29	3.58	0.96								
10	12.69	12.74	3.18								
11	18.25	10.06	2.52	9-12	14.98	10.97	1.36				
12	17.63	12.66	2.90								
13	21.86	14.75	3.22					9-16	18.77	14.44	1.26
14	27.00	26.44	7.07								
15	17.36	8.61	2.59	13-16	22.50	16.44	2.02				
16	22.85	12.16	2.72								

** Statistically significant difference ($p \leq 0.01$)

** Statistically significant difference ($p \leq 0.01$)

Figure 4.3: **Between-group comparisons for the
period players had been part of a team**

Total mental toughness

Table 4.4 shows that there was no significant effect for total mental toughness on team performance ($F_{15, 247} = 0.453$; $p = 0.96$).

The analysis of the four cluster groups revealed no significant effect for total mental toughness in differentiating between teams' performance ($F_{3, 259} = 0.139$; $p = 0.94$).

There was no significant difference between the top eight and bottom eight teams for total mental toughness ($F_{1, 261} = 0.010$; $p = 0.92$).

Confidence

Table 4.5 reveals that, there was no significant ($F_{15, 247} = 0.875$; $p = 0.593$) effect for confidence on team performance. A post-hoc analysis yielded differences between the following teams: 11 and 12; 11 and 15; 12 and 14; 14 and 15.

The analysis of the four cluster groups revealed no significant effect for confidence in differentiating between teams' tournament performance ($F_{3, 259} = 0.381$; $p = 0.99$).

There was no significant difference between the top eight and bottom eight teams for confidence ($F_{1, 261} = 0.70$; $p = 0.79$).

Table 4.4: **Between-group comparisons of total mental toughness scores**

	Log position (1-16)			4 x 4 groupings (1-4, 5-8, 9-12 & 13-16)				Top eight versus bottom eight teams			
	Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error
1	3.00	0.36	0.09								
2	2.94	0.38	0.08								
3	3.01	0.30	0.07	1-4	2.99	0.34	0.04				
4	3.04	0.32	0.07								
5	3.02	0.45	0.11					1-8	2.98	0.35	0.03
6	2.96	0.38	0.10								
7	2.88	0.27	0.07	5-8	2.97	0.37	0.05				
8	3.05	0.38	0.11								
9	3.05	0.28	0.08								
10	3.00	0.30	0.08								
11	3.07	0.30	0.07	9-12	3.01	0.29	0.03				
12	2.93	0.27	0.06								
13	3.01	0.32	0.07					9-16	2.99	0.34	0.03
14	3.06	0.48	0.13								
15	2.88	0.44	0.13	13-16	2.97	0.39	0.05				
16	2.93	0.36	0.08								

Table 4.5: **Between-group comparisons of confidence scores**

	Log position (1-16)			4 x 4 groupings (1-4, 5-8, 9-12 & 13-16)				Top eight versus bottom eight teams			
	Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error
1	3.13	0.55	0.13								
2	3.18	0.47	0.10								
3	3.05	0.45	0.11	1-4	3.11	0.50	0.06				
4	3.07	0.51	0.12								
5	3.21	0.42	0.10					1-8	3.12	0.51	0.04
6	3.04	0.66	0.17								
7	3.05	0.61	0.15	5-8	3.13	0.53	0.07				
8	3.22	0.44	0.13								
9	3.07	0.49	0.13								
10	3.24	0.46	0.11								
11	3.29	0.43	0.11	9-12	3.13	0.46	0.06				
12	2.95	0.43	0.10								
13	3.21	0.39	0.08					9-16	3.13	0.49	0.04
14	3.31	0.59	0.16								
15	2.88	0.50	0.15	13-16	3.14	0.51	0.06				
16	3.08	0.55	0.12								

Constancy

Table 4.6 shows that there was no statistically significant effect for constancy on team performance ($F_{15, 247} = 0.484$; $p = 0.95$).

The ANOVA analysis of the four cluster groups yielded no significant effect for constancy in differentiating between teams with regard to their eventual tournament log positions ($F_{3, 259} = 0.106$; $p = 0.96$).

There was no significant difference between the top eight and bottom eight teams for constancy in relation to the teams' performance ($F_{1, 261} = 0.260$; $p = 0.61$).

Control

Table 4.7 shows that, there was no significant effect for control on team performance ($F_{15, 247} = 0.590$; $p= 0.88$).

An analysis on the four cluster groups did not reveal any significant difference ($F_{3, 259} = 0.734$; $p = 0.53$) with regard to the construct of control.

There was no significant difference between the top eight and bottom eight teams for control ($F_{1, 261} = 0.241$; $p = 0.62$).

Composite psychological skills

There was no significant effect ($F_{15, 247} = 0.974$; $p = 0.48$) for composite psychological skills on performance. A post-hoc analysis revealed differences between the following teams: 2 and 7; 4 and 7; 7 and 8; 7 and 10; 7 and 13; 7 and 14; 7 and 16 (Table 4.8).

The ANOVA analysis of the four cluster groups indicated no significant effect for composite psychological skills in differentiating between teams with regard to their final tournament log positions ($F_{3, 259} = 0.996$; $p = 0.40$).

Further analysis of the differences between the top eight and bottom eight teams revealed no significant effect for their composite psychological skills score ($F_{1, 261} = 0.879$; $p = 0.35$).

Table 4.6: **Between-group comparisons of constancy scores**

	Log position (1-16)			4 x 4 groupings (1-4, 5-8, 9-12 & 13-16)				Top eight versus bottom eight teams			
	Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error
1	3.46	0.54	0.13								
2	3.30	0.52	0.12								
3	3.53	0.53	0.13	1-4	3.44	0.51	0.06				
4	3.49	0.46	0.10								
5	3.38	0.48	0.11					1-8	3.43	0.49	0.04
6	3.42	0.52	0.14								
7	3.36	0.40	0.10	5-8	3.42	0.46	0.06				
8	3.56	0.45	0.13								
9	3.57	0.32	0.08								
10	3.45	0.55	0.14								
11	3.44	0.44	0.11	9-12	3.45	0.48	0.06				
12	3.38	0.57	0.13								
13	3.54	0.40	0.09					9-16	3.46	0.47	0.04
14	3.46	0.58	0.15								
15	3.30	0.40	0.12	13-16	3.47	0.46	0.06				
16	3.49	0.46	0.10								

Table 4.7: **Between-group comparisons of control scores**

	Log position (1-16)			4 x 4 groupings (1-4, 5-8, 9-12 & 13-16)				Top eight versus bottom eight teams			
	Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error
1	2.41	0.56	0.14								
2	2.33	0.51	0.11								
3	2.45	0.48	0.12	1-4	2.43	0.53	0.06				
4	2.55	0.59	0.13								
5	2.47	0.67	0.16					1-8	2.41	0.53	0.05
6	2.42	0.44	0.11								
7	2.23	0.37	0.09	5-8	2.38	0.54	0.07				
8	2.38	0.65	0.19								
9	2.50	0.55	0.15								
10	2.30	0.54	0.14								
11	2.47	0.57	0.14	9-12	2.44	0.56	0.07				
12	2.47	0.59	0.14								
13	2.27	0.44	0.10					9-16	2.37	0.56	0.05
14	2.39	0.86	0.23								
15	2.48	0.60	0.18	13-16	2.31	0.56	0.07				
16	2.21	0.39	0.09								

Table 4.8: **Between-group comparisons of composite psychological skills scores**

	Log position (1-16)			4 x 4 groupings (1-4, 5-8, 9-12 & 13-16)				Top eight versus bottom eight teams			
	Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error
1	1.95	0.50	0.12								
2	1.98	0.37	0.08								
3	1.90	0.31	0.08	1-4	1.98	0.37	0.04				
4	2.08	0.27	0.06								
5	1.91	0.40	0.10					1-8	1.94	0.38	0.03
6	1.91	0.39	0.10								
7	1.73	0.36	0.09	5-8	1.90	0.40	0.05				
8	2.09	0.40	0.12								
9	1.86	0.25	0.07								
10	2.02	0.35	0.09								
11	2.01	0.29	0.07	9-12	1.97	0.33	0.04				
12	1.96	0.41	0.09								
13	2.01	0.31	0.07					9-16	1.99	0.35	0.03
14	2.01	0.41	0.11								
15	1.91	0.35	0.11	13-16	2.01	0.36	0.04				
16	2.05	0.41	0.09								

Confidence and achievement motivation

Table 4.9 indicates that no significant effect ($F_{15, 247}$ = 1.148; p = 0.31) was found for confidence and achievement motivation on performance. Post-hoc analysis revealed differences between the following teams: 2 and 5; 4 and 5; 5 and 16; 7 and 16; 9 and 16; 14 and 16.

There was no significant effect for confidence and achievement motivation in differentiating between the respective cluster team groups after the tournament ($F_{3, 259}$ = 1.644; p = 0.18).

There was no significant difference between the top eight and bottom eight teams for confidence and achievement motivation ($F_{1, 261}$ = 0.059; p = 0.81).

Coachability

Table 4.10 reveals that there was no significant effect for coachability on performance ($F_{15, 247}$ = 1.230; p = 0.25). Post-hoc analysis showed differences between the following teams: 1 and 4; 1 and 10; 1 and 13; 4 and 7; 7 and 8; 7 and 10; 7 and 12; 7 and 13; 7 and 16.

An analysis of the four cluster positional groups did not indicate any significant difference ($F_{3, 259}$ = 1.099; p = 0.35) with regards to coachability.

Further analysis done to examine the differences between the top eight and bottom eight teams revealed no significant effect of coachability on the eventual log standings of the teams ($F_{1, 261}$ = 3.070; p = 0.11).

Table 4.9: **Between-group comparisons of confidence and achievement motivation scores**

Log position (1-16)				4 x 4 groupings (1-4, 5-8, 9-12 & 13-16)				Top eight versus bottom eight teams			
	Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error
1	2.26	0.70	0.17								
2	2.41	0.61	0.14								
3	2.20	0.48	0.12	1-4	2.33	0.55	0.06				
4	2.42	0.37	0.09								
5	2.03	0.54	0.13					1-8	2.26	0.52	0.05
6	2.17	0.40	0.10								
7	2.14	0.50	0.12	5-8	2.17	0.48	0.06				
8	2.40	0.39	0.11								
9	2.09	0.36	0.10								
10	2.17	0.48	0.12								
11	2.22	0.46	0.11	9-12	2.19	0.46	0.06				
12	2.26	0.53	0.12								
13	2.30	0.50	0.11					9-16	2.24	0.49	0.04
14	2.13	0.50	0.13								
15	2.16	0.58	0.18	13-16	2.29	0.51	0.06				
16	2.48	0.47	0.10								

Table 4.10: **Between-group comparisons of coachability scores**

	Log position (1-16)			4 x 4 groupings (1-4, 5-8, 9-12 & 13-16)				Top eight versus bottom eight teams			
	Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error
1	2.10	0.71	0.17								
2	2.31	0.47	0.11								
3	2.38	0.43	0.11	1-4	2.32	0.54	0.06				
4	2.46	0.50	0.11								
5	2.32	0.59	0.14					1-8	2.30	0.55	0.05
6	2.33	0.46	0.12								
7	2.02	0.54	0.14	5-8	2.28	0.56	0.07				
8	2.48	0.60	0.17								
9	2.38	0.46	0.12								
10	2.52	0.39	0.10								
11	2.34	0.69	0.17	9-12	2.42	0.52	0.07				
12	2.45	0.54	0.12								
13	2.54	0.46	0.10					9-16	2.41	0.51	0.04
14	2.18	0.65	0.17								
15	2.41	0.45	0.14	13-16	2.40	0.51	0.06				
16	2.41	0.46	0.10								

Goal setting

There was no significant effect ($F_{15, 247}$ = 1.535; p = 0.09) observed for goal setting on performance with regard to teams' eventual log positions as indicated in Table 4.11. A post-hoc analysis revealed differences between the following teams: 1 and 9; 2 and 9; 3 and 9; 4 and 9; 5 and 9; 7and 9; 8 and 9; 9 and 10; 9 and 11; 9 and 12; 9 and 13; 9 and 14; 9 and 16; 10 and 15; 15 and 16.

The analysis of the four cluster groups revealed no significant effect for goal setting in differentiating between teams with regard to their eventual tournament log placement ($F_{3, 259}$ = 0.884; p = 0.45).

There was no significant difference between the top eight and bottom eight teams for goal setting ($F_{1, 261}$ = 0.133; p = 0.72).

Concentration

Table 4.12 shows that, there was no significant effect for concentration on performance with regard to the teams' tournament log positions ($F_{15, 247}$ = 0.940; p = 0.52). A post-hoc analysis indicated differences between the following teams: 2 and 4; 3 and 4; 4 and 5; 4 and 6; 4 and 7; 4 and 12; 4 and 13; 4 and 16.

An analysis of the four cluster groups (based on their final log positions) did not reveal any significant difference ($F_{3, 259}$ = 0.576; p = 0.63) regarding concentration.

Further analysis done to examine the differences between the top eight and bottom eight teams revealed no significant effect for concentration on the eventual log positions of the teams ($F_{1, 261}$ = 0.078; p = 0.78).

Table 4.11: **Between-group comparisons of goal setting scores**

	Log position (1-16)				4 x 4 groupings (1-4, 5-8, 9-12 & 13-16)				Top eight versus bottom eight teams		
	Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error
1	1.91	0.68	0.16								
2	1.94	0.68	0.15								
3	1.97	0.51	0.13	1-4	1.93	0.60	0.07				
4	1.91	0.57	0.13								
5	1.91	0.50	0.12					1-8	1.94	0.55	0.05
6	1.83	0.44	0.11								
7	2.09	0.55	0.14	5-8	1.95	0.48	0.06				
8	1.96	0.41	0.12								
9	1.43	0.65	0.17								
10	2.16	0.45	0.11								
11	2.03	0.55	0.14	9-12	1.88	0.65	0.08				
12	1.87	0.73	0.17								
13	2.12	0.59	0.13					9-16	1.97	0.62	0.05
14	2.04	0.47	0.13								
15	1.70	0.52	0.16	13-16	2.05	0.58	0.07				
16	2.16	0.63	0.14								

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Table 4.12: **Between-group comparisons of concentration scores**

	Log position (1-16)			4 x 4 groupings (1-4, 5-8, 9-12 & 13-16)				Top eight versus bottom eight teams			
	Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error
1	1.97	0.62	0.15								
2	1.88	0.52	0.12								
3	1.84	0.52	0.13	1-4	1.99	0.55	0.06				
4	2.26	0.47	0.11								
5	1.90	0.29	0.07					1-8	1.95	0.50	0.04
6	1.85	0.42	0.11								
7	1.80	0.59	0.15	5-8	1.90	0.44	0.06				
8	2.08	0.40	0.12								
9	1.96	0.32	0.09								
10	1.95	0.53	0.13								
11	2.03	0.34	0.09	9-12	1.96	0.46	0.06				
12	1.91	0.59	0.14								
13	1.85	0.56	0.12					9-16	1.93	0.51	0.04
14	2.05	0.53	0.14								
15	1.89	0.53	0.16	13-16	1.90	0.56	0.07				
16	1.86	0.63	0.14								

Coping with adversity

Table 4.13 indicates that no significant effect ($F_{15, 247} = 1.319$; $p = 0.19$) was found for coping with adversity on performance with regard to the teams' eventual log placements. Post-hoc analysis revealed differences between teams in the following positions: 1 and 8; 3 and 8; 5 and 8; 6 and 8; 7 and 8; 7 and 10; 8 and 9; 8 and 12; 9 and 10.

The analysis of the four cluster groups revealed no significant effect for coping with adversity in differentiating between the teams' final log placing ($F_{3, 259} = 0.534$; $p = 0.66$).

There was no significant difference between the top eight and bottom eight teams for coping with adversity ($F_{1, 261} = 0.302$; $p = 0.58$).

Peaking under pressure

Table 4.14 shows that there was no significant effect for peaking under pressure on performance with regard to the teams' final log standings ($F_{15, 247} = 1.410$; $p = 0.14$). Post-hoc analysis indicated differences between the team that ended seventh on the log and all other teams.

The analysis between the four cluster groups revealed no significant effect for peaking under pressure in differentiating between teams with regard to their eventual log positions ($F_{3, 259} = 1.611$; $p = 0.19$). However, post-hoc analysis showed differences between cluster groups 5-8 and 13-16.

There was no significant difference between the top eight and bottom eight teams for peaking under pressure ($F_{1, 261} = 1.013$; $p = 0.32$).

Table 4.13: **Between-group comparisons of coping with adversity scores**

	Log position (1-16)			4 x 4 groupings (1-4, 5-8, 9-12 & 13-16)				Top eight versus bottom eight teams			
	Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error
1	1.97	0.65	0.16								
2	2.00	0.51	0.11								
3	1.81	0.69	0.17	1-4	1.96	0.58	0.07				
4	2.04	0.50	0.12								
5	1.85	0.47	0.11					1-8	1.96	0.59	0.05
6	1.93	0.56	0.15								
7	1.73	0.64	0.16	5-8	1.95	0.60	0.08				
8	2.40	0.59	0.17								
9	1.71	0.40	0.11								
10	2.13	0.53	0.13								
11	2.06	0.45	0.11	9-12	1.94	0.53	0.07				
12	1.84	0.61	0.14								
13	2.05	0.42	0.09					9-16	1.99	0.53	0.05
14	2.02	0.49	0.13								
15	2.11	0.48	0.14	13-16	2.05	0.52	0.06				
16	2.04	0.68	0.15								

Table 4.14: **Between-group comparisons of peaking under pressure scores**

	Log position (1-16)			4 x 4 groupings (1-4, 5-8, 9-12 & 13-16)				Top eight versus bottom eight teams			
	Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error
1	2.00	0.68	0.17								
2	2.01	0.59	0.13								
3	1.98	0.54	0.13	1-4	2.03	0.61	0.07				
4	2.11	0.67	0.15								
5	1.90	0.65	0.16					1-8	1.94	0.68	0.06
6	2.07	0.68	0.18								
7	1.36	0.69	0.17	5-8	1.83	0.74	0.10				
8	2.08	0.77	0.22								
9	1.98	0.62	0.17								
10	1.95	0.56	0.14								
11	2.05	0.47	0.12	9-12	1.97	0.57	0.07				
12	1.92	0.65	0.15								
13	2.08	0.56	0.12					9-16	2.02	0.57	0.05
14	2.16	0.55	0.15								
15	1.84	0.66	0.20	13-16	2.06	0.58	0.07				
16	2.09	0.58	0.13								

Freedom from worry

There was no significant effect ($F_{15, 247}$ = 0.775; p = 0.71) observed for freedom from worry on performance with regard to teams' eventual log positions. A post-hoc analysis revealed differences between log positional teams 7 and 14 (Table 4.15).

An analysis of the four cluster groups (based on their final log positions) did not reveal any significant difference ($F_{3, 259}$ = 0.765; p = 0.38) regarding freedom from worry.

Further analysis to examine the differences between the top eight and bottom eight teams revealed no significant effect for freedom from worry on the eventual log standings of the teams ($F_{1, 261}$ = 0.753; p = 0.52).

Individual attraction to group-social

A significant effect for individual attraction to group-social ($F_{15, 247}$ = 3.463; $p \leq 0.01$) was observed on performance with regard to the teams' eventual log positions. Post-hoc analysis revealed differences between multiple teams (Table 4.16).

The analysis of the four cluster groups indicated a significant effect for individual attraction to group-social in differentiating between teams with regard to their final log positions ($F_{3, 259}$ = 5.389; $p \leq 0.01$). Post-hoc analysis revealed differences between cluster groups 1-4 and 5-8; 1-4 and 9-12; as well as between groups 5-8 and 13-16 (see Figure 4.4).

There was no significant difference between the top eight and bottom eight teams for individual attraction to group-social ($F_{1, 261}$ = 0.001; p = 0.98).

Table 4.15: **Between-group comparisons of freedom from worry scores**

	Log position (1-16)			4 x 4 groupings (1-4, 5-8, 9-12 & 13-16)				Top eight versus bottom eight teams			
	Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error
1	1.44	0.75	0.18								
2	1.31	0.63	0.14								
3	1.11	0.63	0.16	1-4	1.32	0.66	0.08				
4	1.38	0.64	0.15								
5	1.46	0.81	0.20					1-8	1.27	0.69	0.06
6	1.18	0.66	0.17								
7	1.00	0.67	0.17	5-8	1.22	0.72	0.09				
8	1.21	0.70	0.20								
9	1.48	0.55	0.15								
10	1.30	0.77	0.19								
11	1.36	0.65	0.16	9-12	1.40	0.61	0.08				
12	1.45	0.51	0.12								
13	1.14	0.72	0.16					9-16	1.34	0.66	0.06
14	1.52	0.80	0.21								
15	1.25	0.72	0.22	13-16	1.29	0.71	0.09				
16	1.31	0.62	0.14								

Table 4.16: **Between-group comparisons of individual attraction to group–social scores**

	Log position (1-16)			4 x 4 groupings (1-4, 5-8, 9-12 & 13-16)				Top eight versus bottom eight teams			
	Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error
1	6.64	1.63	0.39								
2	7.61	1.29	0.29								
3	7.31	1.04	0.26	1-4	7.18	1.33	0.16				
4	7.08	1.22	0.28								
5	5.59	1.41	0.34					1-8	6.77	1.47	0.13
6	6.60	1.24	0.32								
7	7.09	1.22	0.30	5-8	6.29	1.49	0.19				
8	5.83	1.72	0.50								
9	7.10	1.12	0.30								
10	6.14	1.63	0.41								
11	7.03	1.35	0.34	9-12	6.54	1.49	0.18				
12	6.05	1.55	0.36								
13	7.72	0.99	0.22					9-16	6.78	1.46	0.13
14	6.44	1.50	0.40								
15	6.56	1.46	0.44	13-16	7.01	1.41	0.17				
16	6.91	1.47	0.33								

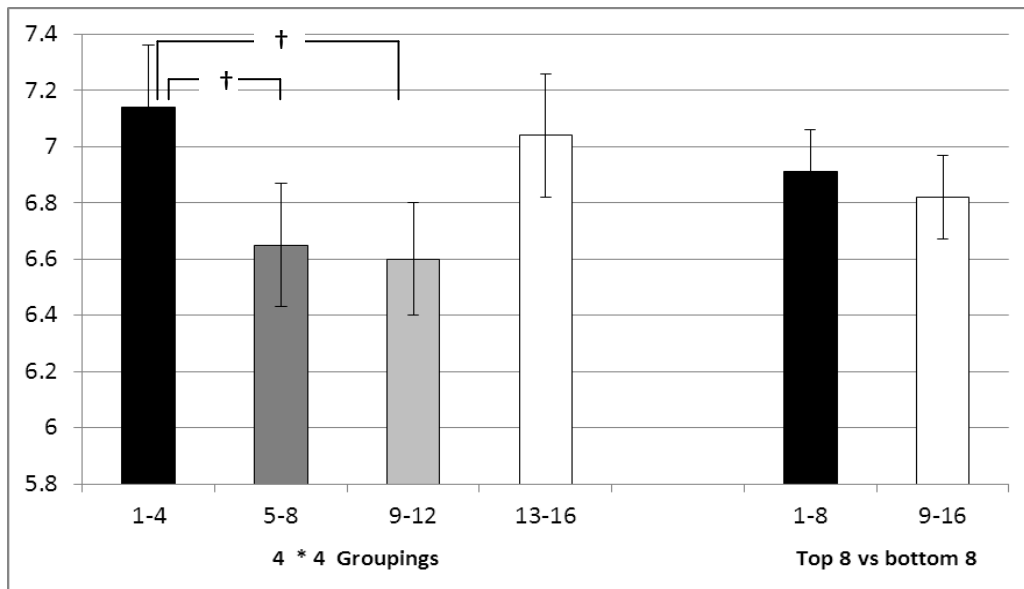** Statistically significant difference ($p \leq 0.01$)
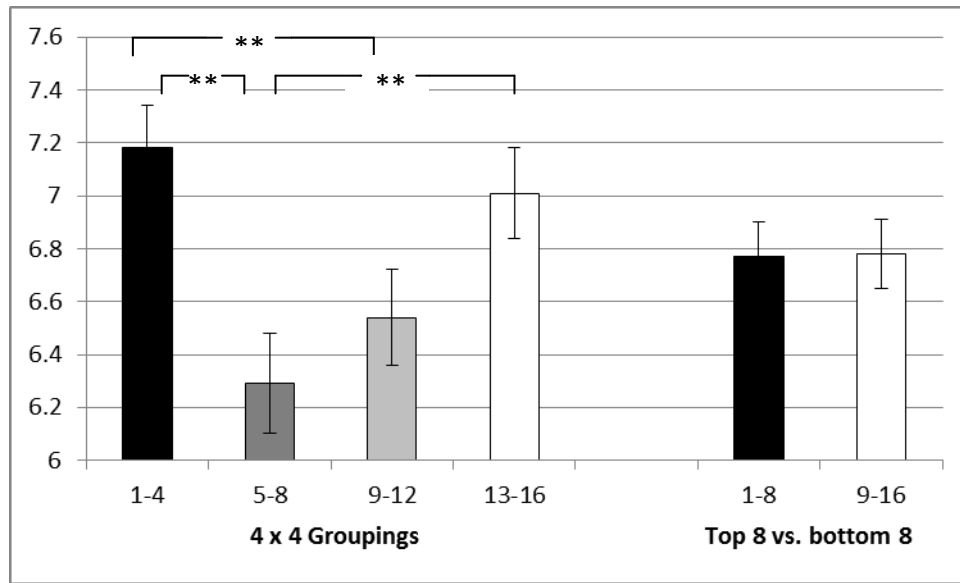
** Statistically significant difference ($p \leq 0.01$)

Figure 4.4: **Between-group comparisons of individual attraction to group–social scores**

Individual attraction to group-task

A significant effect ($F_{15, 247} = 2.699$; $p \leq 0.01$) was found for individual attraction to group-task on performance with regard to the teams' eventual log standings. A post-hoc analysis revealed significant differences between multiple teams (Table 4.17).

The analysis between the four cluster groups revealed a borderline significant effect for individual attraction to group-task in differentiating between teams with regards to their final log positions after the tournament ($F_{3, 259} = 1.636$; $p = 0.10$). Post-hoc analysis revealed differences between cluster groups 1-4 and 5-8; as well as between groups 1-4 and 9-12 (see Figure 4.5).

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† Borderline statistical significance ($p \leq 0.10$)

Figure 4.5: **Between-group comparisons of individual attraction to group–task scores**

There were no significant differences between the top eight and bottom eight teams for individual attraction to group-task ($F_{1,261} = 0.194$; $p = 0.66$) as indicated in Table 4.17.

Group integration-task

A significant effect was found for group integration-task ($F_{15, 247} = 3.347$; $p \leq 0.01$) on performance with regard to the teams' eventual log placements (Table 4.18). A post-hoc analysis revealed differences between multiple teams.

An analysis of the four cluster groups (based on their final log positions) revealed a significant effect for group integration-task in differentiating between teams after the tournament ($F_{3, 259} = 3.598$; $p = 0.01$). Post-hoc analysis revealed differences between cluster groups 5-8 and 13-16; as well as between groups 9-12 and 13-16 (see Figure 4.6).

Table 4.17: **Between-group comparisons of individual attraction to group-task scores**

Log position (1-16)				4 x 4 groupings (1-4, 5-8, 9-12 & 13-16)				Top eight versus bottom eight teams			
	Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error
1	5.94	1.90	0.46								
2	7.31	1.60	0.36								
3	7.53	1.72	0.43	1-4	7.14	1.83	0.22				
4	7.68	1.73	0.40					1-8	6.91	1.77	0.15
5	5.97	1.83	0.44								
6	6.33	1.62	0.42								
7	7.45	1.20	0.30	5-8	6.65	1.67	0.22				
8	6.92	1.70	0.49								
9	6.79	1.35	0.36								
10	6.77	1.63	0.41								
11	7.52	1.35	0.34	9-12	6.60	1.60	0.20				
12	5.55	1.44	0.33					9-16	6.82	1.69	0.15
13	7.25	1.52	0.33								
14	6.50	2.43	0.65								
15	6.86	0.10	0.30	13-16	7.04	1.77	0.22				
16	7.29	1.83	0.41								

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Table 4.18: **Between-group comparisons of group integration–task scores**

	Log position (1-16)				4 x 4 groupings (1-4, 5-8, 9-12 & 13-16)				Top eight versus bottom eight teams		
	Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error
1	6.02	1.26	0.31								
2	6.33	1.33	0.30								
3	7.03	1.27	0.32	1-4	6.31	1.40	0.17				
4	5.93	1.56	0.36					1-8	6.08	1.53	0.13
5	4.65	1.37	0.33								
6	6.41	0.98	0.25								
7	6.05	1.54	0.39	5-8	5.81	1.65	0.21				
8	6.37	2.09	0.60								
9	6.43	1.40	0.37								
10	5.25	1.68	0.42								
11	7.03	1.32	0.33	9-12	5.96	1.73	0.21				
12	5.33	1.83	0.42					9-16	6.30	1.63	0.14
13	6.88	1.40	0.31	**							
14	6.63	1.57	0.42	**							
15	6.35	1.46	0.44	13-16	6.64	1.47	0.18				
16	6.55	1.54	0.34								

** Statistically significant difference ($p \leq 0.01$)
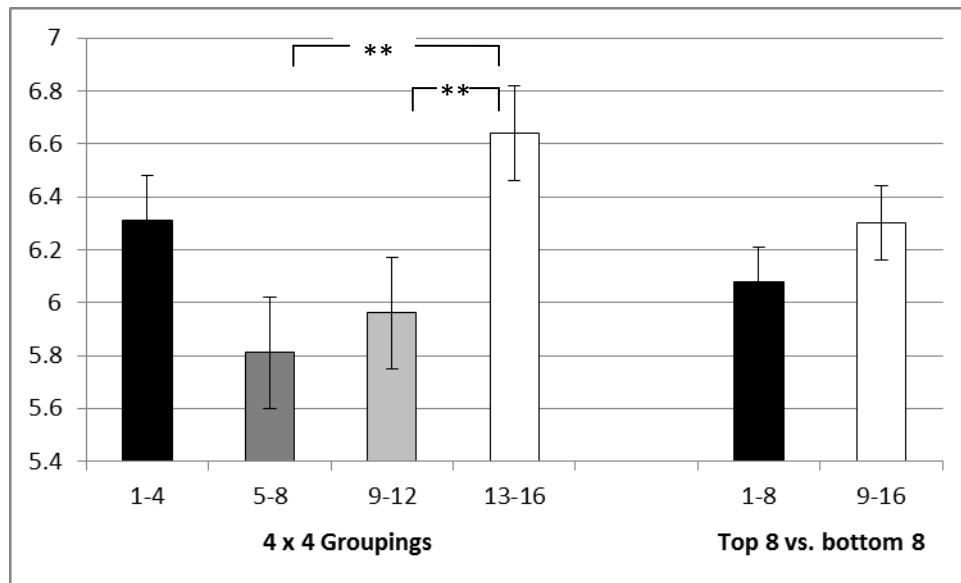
** Statistically significant difference ($p \leq 0.01$)

Figure 4.6: **Between-group comparisons of group integration–task scores**

Further analysis to examine the differences between the top eight and bottom eight teams revealed no significant effect for group integration-task on the eventual log standings of the teams ($F_{1, 261}$ = 1.312; p = 0.25).

Group integration-social

There was a significant effect ($F_{15, 247}$ = 3.229; $p \leq .01$) for group integration-social on performance with regard to the teams' eventual log positions (Table 4.19). A post-hoc analysis revealed significant differences between multiple log positional teams.

An analysis of the four cluster groups revealed a significant effect for group integration-social in differentiating between teams with regard to their eventual log placements after the tournament ($F_{3, 259}$ = 5.502; $p \leq 0.01$). Follow-up post-hoc analysis revealed significant differences between cluster groups 1-4 and 13-16; 5-8 and 9-12; as well as between groups 5-8 and 13-16 (see Figure 4.7).

There was a significant difference between the top eight and bottom eight teams for group integration-social ($F_{1, 261}$ = 12.013; $p \leq 0.01$) (see Figure 4.7).

Table 4.19: **Between-group Comparisons of group integration–social scores**

	Log position (1-16)			4 x 4 groupings (1-4, 5-8, 9-12 & 13-16)				Top eight versus bottom eight teams			
	Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error		Mean	Standard deviation	Standard error
1	5.63	1.55	0.38								
2	5.40	1.72	0.38								
3	5.89	1.44	0.36	1-4	5.31	1.57	0.19				
4	4.45	1.27	0.29					1-8	5.15	1.50	0.13
5	4.49	1.01	0.24								
6	5.20	1.43	0.37								
7	5.30	1.28	0.32	5-8	4.95	1.40	0.18				
8	4.85	1.91	0.55								
9	6.84	1.36	0.36	**				**			
10	5.00	1.72	0.43								
11	5.47	1.60	0.40	9-12	5.60	1.61	0.20				
12	5.29	1.30	0.30					9-16	5.82	1.63	0.14
13	6.54	1.19	0.26								
14	6.04	1.69	0.45								
15	5.23	1.58	0.47	13-16	6.04	1.63	0.20				
16	5.98	1.93	0.43								

** Statistically significant difference ($p \leq 0.01$)
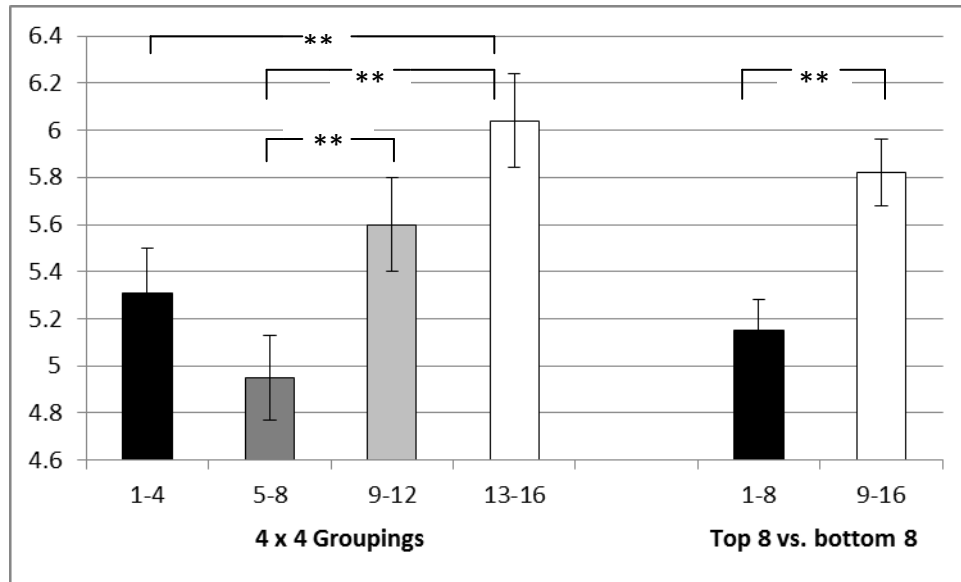
** Statistically significant difference ($p \leq 0.01$)

*Figure 4.7:* **Between-group comparisons of group integration–social scores**

Positional comparisons

Tables 4.20 to 4.22 report on the positional comparisons for each of the different variables (mental toughness, psychological skills, and team cohesion). The players were grouped into four positional groups, i.e., goalkeepers (n = 29), defenders (n = 85), midfielders (n = 103) and forwards (n = 46), based on their primary playing position. It should be noted that players are often rotated into different playing positions depending on the match situation and team strategy. One-way analysis of variance was utilized to ascertain whether statistically significant differences exist between the different playing positions for the different mental toughness, psychological skills and group cohesion variables. Results of the analysis of each of the variables yielded no statistically significant differences between the positional groups. Follow-up LSD tests were used to develop the four possible pair-wise comparisons between the groups' positional means for each measured subscale. Statistically significant and a trend of borderline significant differences were found for five of the positional comparison analysed in relation to the SMTQ subscale of control and constancy and the GEQ subscale of group integration-task. Effect sizes (ES) were also calculated to determine practical significant differences between the various positional groups for each subscale. These significant differences are graphically illustrated in Figures 4.8 to 4.10.

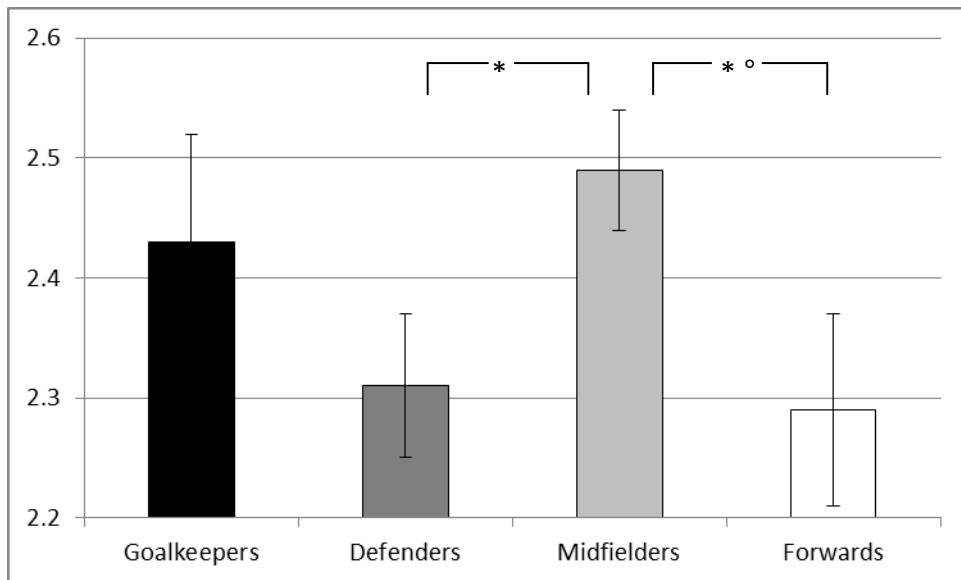*Table 4.20:* **Comparisons between player positional groups (SMTQ)**

Mean ± *SD*	Positional group	Statistical significance (*p*-value) Practical significance (*d*-value)			
		Goalkeepers (n = 29)	Defenders (n = 85)	Midfielders (n = 103)	Forwards (n = 46)
Total Mental Toughness subscale: ($F_{3, 259}$ = 0.235; *p* = 0.87)					
3.00 ± 0.35	Goalkeepers	-	*p* = 0.98	*p* = 0.90	*p* = 0.55
3.00 ± 0.34	Defenders	*d* = 0.00	-	*p* = 0.83	*p* = 0.42
2.99 ± 0.33	Midfielders	*d* = 0.03	*d* = 0.03	-	*p* = 0.52
2.95 ± 0.39	Forwards	*d* = 0.13	*d* = 0.14	*d* = 0.11	-
Confidence subscale: ($F_{3, 259}$ = 0.522; *p* = 0.67)					
3.13 ± 0.40	Goalkeepers	-	*p* = 0.72	*p* = 0.66	*p* = 0.78
3.16 ± 0.48	Defenders	*d* = 0.07	-	*p* = 0.25	*p* = 0.95
3.08 ± 0.50	Midfielders	*d* = 0.10	*d* = 0.16	-	*p* = 0.37
3.16 ± 0.58	Forwards	*d* = 0.06	*d* = 0.00	*d* = 0.15	-
Constancy subscale: ($F_{3, 259}$ = 1.388; *p* = 0.25)					
3.44 ± 0.49	Goalkeepers	-	*p* = 0.38	*p* = 0.68	*p* = 0.70
3.53 ± 0.44	Defenders	*d* = 0.20	-	*p* = 0.06†	*p* = 0.13
3.40 ± 0.51	Midfielders	*d* = 0.08	*d* = 0.27	-	*p* = 0.99
3.40 ± 0.46	Forwards	*d* = 0.08	*d* = 0.29	*d* = 0.00	-
Control subscale: ($F_{3, 259}$ = 2.349; *p* = 0.07)					
2.43 ± 0.50	Goalkeepers	-	*p* = 0.30	*p* = 0.60	*p* = 0.29
2.31 ± 0.55	Defenders	*d* = 0.22	-	*p* = 0.02*	*p* = 0.88
2.49 ± 0.54	Midfielders	*d* = 0.11	*d* = 0.33	-	*p* = 0.04*
2.29 ± 0.56	Forwards	*d* = 0.26	*d* = 0.04	*d* = 0.37°	-

* Statistical significance (*p* ≤ 0.05)   † borderline statistical significance (*p* ≤ 0.1)

° Moderate practical significance (*d* = more or less 0.5)
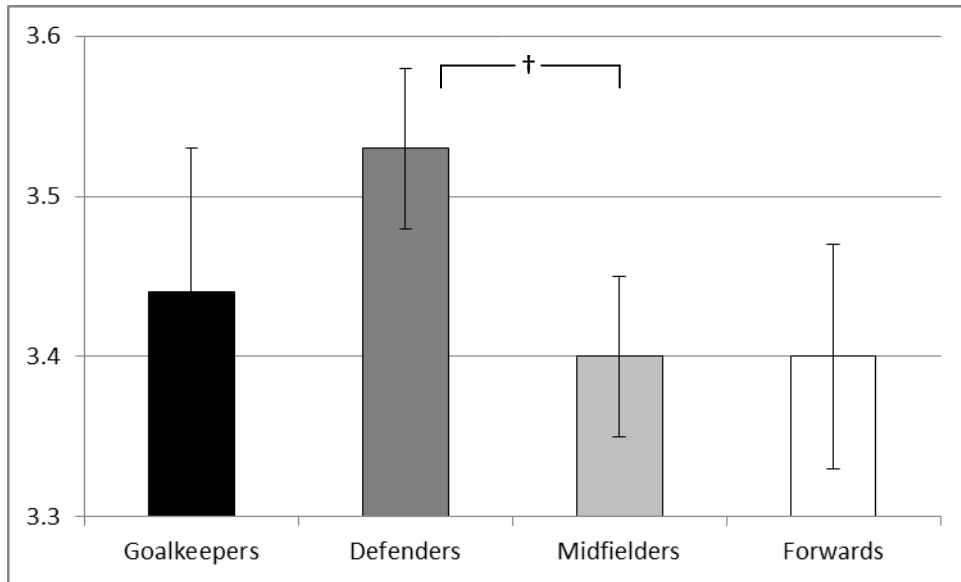
† Borderline statistical significance ($p \leq 0.1$)

Figure 4.8: **Comparisons between player positional groups
for the constancy subscale**

* Statistically significant difference ($p \leq 0.05$)

° Moderate practical significance (d = more or less 0.5)

Figure 4.9: **Comparisons between player positional groups
for the control subscale**

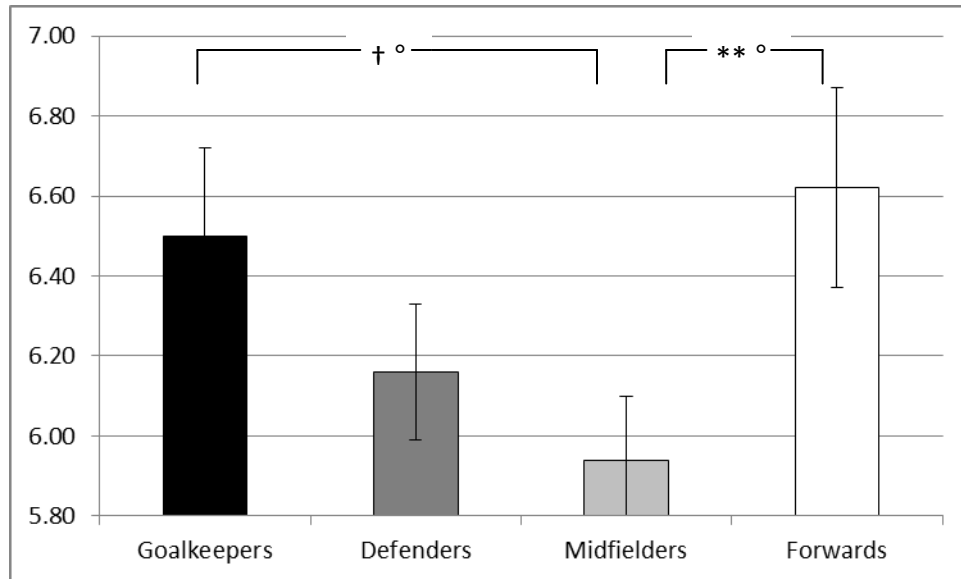*Table 4.21:* **Comparisons between player positional groups (ACSI-28)**

Mean ± *SD*	Positional group	Goalkeepers (n = 29)	Defenders (n = 85)	Midfielders (n = 103)	Forwards (n = 46)
		Statistical significance (*p*-value)			
		Practical significance (*d*-value)			
Composite psychological skills subscale: ($F_{3, 259}$ = 0.296; *p* = 0.83)					
1.91 ± 0.39	Goalkeepers	-	*p* = 0.39	*p* = 0.40	*p* = 0.41
1.97 ± 0.32	Defenders	*d* = 0.18	-	*p* = 0.95	*p* = 0.95
1.97 ± 0.38	Midfielders	*d* = 0.16	*d* = 0.00	-	*p* = 0.91
1.98 ± 0.41	Forwards	*d* = 0.17	*d* = 0.03	*d* = 0.03	-
Confidence and achievement motivation subscale: ($F_{3, 259}$ = 0.230; *p* = 0.88)					
2.22 ± 0.49	Goalkeepers	-	*p* = 0.69	*p* = 0.60	*p* = 0.94
2.26 ± 0.49	Defenders	*d* = 0.08	-	*p* = 0.86	*p* = 0.57
2.27 ± 0.51	Midfielders	*d* = 0.10	*d* = 0.02	-	*p* = 0.47
2.21 ± 0.55	Forwards	*d* = 0.02	*d* = 0.10	*d* = 0.11	-
Coachability subscale: ($F_{3, 259}$ = 0.525; *p* = 0.67)					
2.25 ± 0.47	Goalkeepers	-	*p* = 0.33	*p* = 0.35	*p* = 0.22
2.36 ± 0.50	Defenders	*d* = 0.22	-	*p* = 0.92	*p* = 0.64
2.35 ± 0.57	Midfielders	*d* = 0.18	*d* = 0.02	-	*p* = 0.58
2.41 ± 0.56	Forwards	*d* = 0.30	*d* = 0.10	*d* = 0.11	-
Goal setting and mental preparation subscale: ($F_{3, 259}$ = 0.220; *p* = 0.88)					
1.87 ± 0.65	Goalkeepers	-	*p* = 0.50	*p* = 0.45	*p* = 0.46
1.96 ± 0.59	Defenders	*d* = 0.15	-	*p* = 0.93	*p* = 0.87
1.96 ± 0.58	Midfielders	*d* = 0.15	*d* = 0.00	-	*p* = 0.93
1.97 ± 0.55	Forwards	*d* = 0.17	*d* = 0.02	*d* = 0.02	-

Mean ± *SD*	Positional group	Statistical significance (*p*-value) Practical significance (*d*-value)			
		Goalkeepers (n = 29)	Defenders (n = 85)	Midfielders (n = 103)	Forwards (n = 46)
Concentration subscale: ($F_{3, 259}$ = 0.353; *p* = 0.79)					
1.91 ± 0.46	Goalkeepers	-	*p* = 0.62	*p* = 0.60	*p* = 0.84
1.96 ± 0.53	Defenders	*d* = 0.10	-	*p* = 0.98	*p* = 0.40
1.96 ± 0.50	Midfielders	*d* = 0.10	*d* = 0.00	-	*p* = 0.37
1.88 ± 0.52	Forwards	*d* = 0.06	*d* = 0.15	*d* = 0.16	-
Coping with adversity subscale: ($F_{3, 259}$ = 0.651; *p* = 0.58)					
1.89 ± 0.63	Goalkeepers	-	p = 0.49	*p* = 0.52	*p* = 0.18
1.97 ± 0.52	Defenders	*d* = 0.15	-	*p* = 0.93	*p* = 0.36
1.96 ± 0.57	Midfielders	*d* = 0.12	*d* = 0.02	-	*p* = 0.31
2.07 ± 0.57	Forwards	*d* = 0.30	*d* = 0.19	*d* = 0.19	-
Peaking under pressure subscale: ($F_{3, 259}$ = 0.494; *p* = 0.69)					
1.95 ± 0.62	Goalkeepers	-	*p* = 0.83	*p* = 0.98	*p* = 0.39
1.98 ± 0.60	Defenders	*d* = 0.05	-	*p* = 0.73	*p* = 0.39
1.94 ± 0.64	Midfielders	*d* = 0.02	*d* = 0.06	-	*p* = 0.24
2.08 ± 0.66	Forwards	*d* = 0.20	*d* = 0.16	*d* = 0.22	-
Freedom from worry subscale: ($F_{3, 259}$ = 0.318; *p* = 0.81)					
1.26 ± 0.70	Goalkeepers	-	*p* = 0.61	*p* = 0.60	*p* = 0.88
1.33 ± 0.68	Defenders	*d* = 0.10	-	*p* = 0.10	*p* = 0.43
1.33 ± 0.65	Midfielders	*d* = 0.11	*d* = 0.00	-	*p* = 0.41
1.23 ± 0.70	Forwards	*d* = 0.04	*d* = 0.15	*d* = 0.15	-

Table 4.22: **Comparisons between player positional groups (GEQ)**

Mean ± *SD*	Positional group	Statistical significance (*p*-value) Practical significance (*d*-value)			
		Goalkeepers (n = 29)	Defenders (n = 85)	Midfielders (n = 103)	Forwards (n = 46)
Individual attraction to group-social subscale: ($F_{3, 259}$ = 0.348; *p* = 0.79)					
6.92 ± 1.52	Goalkeepers	-	*p* =0.87	*p* = 0.46	*p* = 0.56
6.87 ± 1.40	Defenders	*d* = 0.03	-	*p* = 0.41	*p* = 0.57
6.89 ± 1.46	Midfielders	*d* = 0.02	*d* = 0.01	-	*p* = 0.92
6.71 ± 1.58	Forwards	*d* = 0.13	*d* = 0.11	*d* = 0.12	-
Individual attraction to group-task subscale: ($F_{3, 259}$ = 0.40; *p* = 0.75)					
6.77 ± 1.82	Goalkeepers	-	*p* = 0.89	*p* = 0.87	*p* = 0.39
6.82 ± 1.77	Defenders	*d* = 0.03	-	*p* = 0.98	*p* = 0.34
6.83 ± 1.78	Midfielders	*d* = 0.03	*d* = 0.01	-	*p* = 0.34
7.12 ± 1.50	Forwards	*d* = 0.21	*d* = 0.18	*d* = 0.17	-
Group integration-task subscale: ($F_{3, 259}$ = 2.443; *p* = 0.06)					
6.50 ± 1.20	Goalkeepers	-	*p* = 0.30	*p* = 0.09†	*p* = 0.75
6.16 ± 1.57	Defenders	*d* = 0.23	-	*p* = 0.35	*p* = 0.11
5.94 ± 1.61	Midfielders	*d* = 0.37°	*d* = 0.14	-	*p* = 0.01**
6.62 ± 1.68	Forwards	*d* = 0.08	*d* = 0.29	*d* = 0.42°	-
Group integration-social subscale: ($F_{3, 259}$ = 0.647; *p* = 0.59)					
5.34 ± 1.85	Goalkeepers	-	*p* = 0.40	*p* = 0.97	*p* = 0.47
5.63 ± 1.58	Defenders	*d* = 0.18	-	*p* = 0.24	*p* = 0.97
5.35 ± 1.49	Midfielders	*d* = 0.01	*d* = 0.18	-	*p* = 0.35
5.61 ± 1.74	Forwards	*d* = 0.15	*d* = 0.01	*d* = 0.17	-

**p* ≤ 0.01   ° Moderate practical significance (*d* = more or less 0.5) † borderline significance

† Borderline statistically significant difference ($p ≤ 0.1$)

* Statistically significant difference ($p ≤ 0.05$)

° Moderate practical significance (d = more or less 0.5)

Figure 4.10: **Comparisons between player positional groups
for the group integration-task subscale**

Chapter Five

Discussion

The findings of this study will be discussed in relation to the three objectives outlined in Chapter One, namely …

- To investigate the role of age, experience level and the period of time players had been part of a team on team performance, by determining how each of these constructs differentiate between more and less successful soccer teams.

- To investigate the role of mental toughness, psychological skills and team cohesion scores on team performance, by determining how each of these constructs differentiate between more and less successful soccer teams.

- To determine whether the mental toughness, psychological skills and team cohesion scores of soccer players in different playing positions differ.

This study is novel in the sense that it is, as far as it is known, the first investigation to employ the SMTQ, ACSI-28 and GEQ in a composite form to examine the role of mental toughness, psychological skills and team cohesion among soccer players. The sample were student soccer players and therefore, comparisons with other student samples cannot be made.

Research of this nature calls for circumspection when interpreting the results because they are based on a fairly small sample (263 players from 16 teams).

Player demographics

Age

Physical fitness is critical when players are confronted with the physical demands (e.g., agility and fast tempo) of the modern game of soccer. Increasing age might have a potentially negative effect on players' ability to cope with the physiological demands of

competitive sport (Castagna *et al.,* 2005). This may be a plausible reason for the age difference favouring the top eight teams in this study, where significant differences emerged between the performance of the top eight and bottom eight teams.

Tournament experience

Previous USSA tournament experience appeared to have contributed to the differences observed between the more and less successful soccer teams. The top four teams clearly had more previous experience at this particular level than the remainder of the categorized log positional teams. These results are in line with the findings of Perry and Williams (1998) and Lazarus (2000) who indicated that previous experience is a strong indicator of playing ability, psychological dynamics, and perceived cognitions in a competitive environment. In addition, the familiarity and prior experience within a competitive setting is thought to facilitate coping resources and the perceived possibilities for success (Salvador, 2005). This could be a possible reason why the successful teams (log positions 1-4) who had more USSA tournament experience, performed better than the less successful teams.

Time period being a member of a team

The results revealed significant differences between the top four teams and the rest of the categorized teams regarding the average number of months players had been part of their respective teams. The top four teams had spent more time playing together as a team which appeared to have influenced their performance. These findings are in line with those of Widmeyer *et al.* (1985) who concluded that long-term familiarity among players creates synergy, cooperative teamwork, interdependence, commitment and self-sacrifice of personal considerations in order to accomplish team tasks. Mach *et al.* (2010) concur with this by stating that the months or years shared playing together as a team are deemed to be important in the cohesion-performance relationship.

Mental toughness and psychological skills

Mental toughness

With reference to the mental toughness measures used in the study, no significant differences were found between the different teams' performance levels as a function of

their tournament log placement. These findings run contrary to those of Jones *et al.'s* (2002) and Gucciardi *et al.'s* (2008) proposition that mental toughness influences performance, nor do they support Starkes and Ericsson's (2003) contention that psychological factors distinguish between successful and less successful athletes.

The failure of the findings of the present study to concur with previous investigations may have stemmed from the fact that the attributes, development, maintenance and measurement of mental toughness, have generally been sourced from Westernized countries where the competitive environment and social cultural practices are essentially different from the African or more specifically, the South African context. Gucciardi *et al.* (2009e) proposed that one's environment has a direct influence in the manner in which mental toughness is conceptualised and developed. In reference to this observation, Gucciardi and Gordon (2011) speculate that mental toughness might be a cultural-specific construct (emic) as opposed to one that is universal (etic).

Moreover, the concepts, attributes and measuring of mental toughness are usually based on the perceptions and experiences of elite and super-elite athletes (e.g., Clough *et al.,* 2002; Jones *et al.,* 2002; Thelwell *et al.,* 2005). In line with the above observation, Jones *et al.* (2007) argue that the facets of mental toughness are better applicable among athletes who have achieved success. The findings of this study are only partially in line with Crust's (2007) and Gucciardi *et al.'s* (2009d) assertion that mental toughness differentiates athletes from different competitive levels. Thus at the same competitive level of play, the psychological competitive edge might not always be visible.

Crust and Azadi (2010) are of the opinion that the differentiating nature of the mental toughness construct often espoused in the literature (e.g., Clough *et al.,* 2002; Jones *et al.,* 2002; Thelwell *et al.,* 2005) has not been rigorously tested by research. Therefore, one cannot confidently claim that mental toughness differentiates between successful and less successful soccer players.

Psychological skills

One would expect that, the pressure on soccer players to represent their respective institutions at the USSA Championship and attain success require a mindset that might differentiate between the respective teams. However, no significant differences were

found regarding the contribution of psychological skills to successful performance. This is contrary to the findings of Smith and Christensen (1994) in their study of basketball players.

The findings of this study could be attributed in part to the nature of the game of soccer. As evident in literature the type of sport is seen to influence the peculiar psychological skills relevant to it (Hodge & McKenzie, 1999; Junge *et al.,* 2000; Weinberg & Gould, 2011). However, the high scores on the confidence and concentration subscales of the ACSI-28 by the successful teams (log positions 1-8), as well as the less successful teams (log positions 9-16) might be indicative that some psychological skills may be mutually inclusive across different competitive levels and different sports.

Other studies such as that of Smith and Christensen (1994) used athletes from different competitive levels. However, in the current study participants were from the same competitive levels.

Thus at the developmental stages of competitive play such as the USSA tournament, certain distinguishing features (e.g., psychological skills) required for performance excellence might not be fully developed and might therefore not be able differentiate between successful and less successful teams. This observation reasserts Ericsson's (1996) suggestion that, the process of acquiring psychological skills is analogous with the process of acquiring physical skills, entailing understanding, consistent training and practice which systematically develops, stabilises and maturates at the elite and super-elite levels. Also, the absence of significant differences in the current study might simply reflect the variability within the groups (Meyers *et al.,* 1994).

From the results, it appears that the players have problems with anxiety. This is reflected in the low scores recorded on the "freedom from worry" subscale. The rather unexpected finding of teams in log positions 9-12 recording better scores than the top performing teams on this subscale could be attributed to these teams having moderate perceptions about their ability to either win or end among the bottom tier teams. In essence these teams (log positions 9-12) possibly experienced less anxiety owing to low or moderate efficacy expectations. On the other hand, the top four and bottom four

teams might have been burdened with either high expectations placed on them to win the championship or by the fear of ending at the very bottom of the log.

Team cohesion

Individual attraction to group-social (ATG-S)

The successful teams (log positions 1-4) recorded significantly higher scores on the ATG-S subscale than the less successful teams (log positions 5-8 and 9-12). This lends support to Prapavessis and Carron's (1996) contention that ATG-S enhances commitment, interdependency, member satisfaction and eventual team performance. A possible explanation for this finding could be that a player's appraisal of socially oriented aspects of cohesion occurs both in a cognitive and an affective sense. This creates a feeling of identity, belongingness and satisfaction within the group. The interactions between the cognitive and affective elements inherent within a team precipitate collaborative interdependence that enhances team performance. Such interactions not only generate an atmosphere conducive to open communication, but also create the fundamental processes for conferring socially desirable rewards, including positive feedback and encouragement (Brawley *et al.,* 1993).

Individual attraction to group-task (ATG-T)

The successful teams (log positions 1-4) obtained higher scores on the ATG-T subscale than the less successful teams (log positions, 5-8, 9-12, and 13-16). The high score on the ATG-T cohesion of the successful teams is indicative of its members' strong commitment to and involvement with the process of achieving goals of the group. This observation is in line with Zaccaro and McCoy's (1988) results which showed that, a high interpersonal attraction and commitment to group task is critical to the cohesion-performance effect.

Group integration-task (GI-T)

There were significant differences regarding the GI-T scores between log positional teams 13-16 and cluster log positional teams 5-8 and 9-12. Grieve *et al.'s* (2000) and Senecal *et al.'s* (2008) studies reported that GI-T discriminates between successful and less successful teams. Contrary to these findings and surprisingly so, the current study

found that the bottom teams (log positions 13-16) recorded significantly higher scores on the GI-T subscale than the top successful teams. This could possibly be ascribed to their prior performance successes, as these teams may have built some level of cohesion in relation to their task integration as a result of their qualifying matches for the USSA Championship at the provincial league level. Moreover, Littlepage *et al.* (1989) underscored that, the moderating variables that predict successful performance are essentially different from those that influence cohesion. Thus if the other moderating variables relative to performance (e.g., physical, mental skills, technical) are not strengthened to augment cohesion, the general performance of the team would suffer irrespective of strong task cohesion.

Group integration-social (GI-S)

There were significant differences between the four cluster groups regarding the group integration-social cohesion subscale. Here again, the bottom teams (log positions 13-16) obtained higher scores than their more successful counterparts. Studies (e.g., Chang & Bordia, 2001; Paskevich *et al.,* 2001) have reported increases in social cohesion as influencing performance outcomes. On the other hand, there are indications that strong social tendencies might also be detrimental for group functioning in a competitive environment where performance outcomes are critical (Hardy *et al.,* 2005). In addition, high social inclination in a team could lead to conformism in group thinking, group polarization and alienation of diversity both in the way these athletes think and play (Rovio *et al.,* 2009). Soccer is a game that relies on unity in diversity. In essence, it requires interdependency and coordinated effort, but despite this, there is room for individual brilliance and diversity in member's skills and play.

Casey-Campbell and Martens (2009) intimated that exceptionally strong social cohesiveness hinders performance excellence, as excessive social interactions might interfere with the task objectives. This may be a plausible reason for the high GI-S scores obtained by the bottom-tier teams in the current study, which affected their performance negatively.

Despite the potential danger of social cohesion (GI-S) having a negative impact on a team's performance, coaches and athletes should not exclusively promote and

concentrate on enhancing task cohesion at the expense of the social needs of the team (Zaccaro & McCoy, 1988).

Player position comparisons

Mental toughness

The SMTQ's control subscale yielded statistically significant differences with the midfielders (2.49 ± 0.54) scoring higher than the defenders (2.31 ± 0.55) and forwards (2.29 ± 0.56). The concept of control as reflected on the SMTQ relates to the perception that one is personally influential and can achieve desired outcomes with special emphasis on controlling emotions.

The better control scores of the midfielders may be due to the intricate and unique demands of their playing position: they act as the unit between the defenders and forwards in ball distribution. Midfielders are required to create space when the team is attacking and compressing space and putting pressure on the ball when defending. Such dexterity in skills becomes increasingly difficult as the level of competition progresses (Taylor, 1995). Therefore, the concept of control often mentioned in the mental toughness literature (e.g., Clough *et al.,* 2002; Thelwell *et al.,* 2005) enables these players to appraise stressful events with lower levels of stress and with strong perceptions of control over a situation. In essence, a strong sense of control allows the midfielders to manage both internal and external states in a less stressful manner when achieving optimal performance. Consequently, since most of the battle for ball possession happens in the midfield position, these players are exposed to many opportunities to exert control.

There was also a trend towards significance for the SMTQ subscale of constancy ($p = 0.06$) in that the defenders (3.53 ± 0.44) scored higher than the midfielders (3.40 ± 0.51). The concept of constancy indicates determination, personal responsibility, an unrelenting attitude and the ability to concentrate on the task (Sheard *et al.,* 2009). Thus, a high score on this subscale indicates the avoidance of preoccupation with negative outcomes, considering that preoccupation has been highlighted to influence decreased effort and psychological momentum (Williams & Krane, 2001). Defenders are required to prevent the incursions from opposing teams, keeping track of the movement

patterns of the ball and shielding the goalkeeper so as not to leave the goal area exposed. The role demands of the defenders necessitate anticipatory skills, determination and ability to maintain focus on various task related cues (Hardy *et al.,* 1996). These players (i.e., defenders) have to block out both internal and external construed distractions inherent to the demands of their playing position. Thus, a high score on the constancy concept is in line with demands of their position. With this in mind, coaches and athletes should be encouraged to highlight a task oriented focus and the positive outcomes accompanying performance processes (i.e. outcomes or subcomponents) instead of duelling on the negativities of mistakes and poor performances. This observation is in line with Andrew *et al.'s* (2007) proposition that, periods in which an athlete is inactive actuate the tendency to contemplate on past mistakes and match proceedings in general, thereby increasing the prevalence of negative thoughts and worries which could decrease confidence.

Psychological skills

No significant psychological skills differences were evident among the players in the various playing positions. This finding is in contrast with the results of other investigations (Kirkcaldy, 1982; Cox & Yoo, 1995). For instance Kirkcaldy reported that players in defensive positions in soccer exhibited stronger emotional stability than players in attacking positions. He employed personality characteristics to examine differences between player positions, however, personality traits are believed to be relatively stable (Spielberger, 1971), while psychological skills are subject to improvement (Boutcher & Rotella, 1987; Ericsson, 1996).

The absence of differences could be attributed to the fact that contemporary soccer has evolved over the years with the progression and emphasis moving from one-dimensional specialisation to more multi-skilled positional players. Many soccer players have developed the skills and adaptability to assume other positional responsibilities to seal any weakness in the team. The players are thus evolving more towards developing and assuming multiple physical and psychological skills consistent with the different roles of the positions that they have to deal with. This could be a plausible reason why

this study did not produce statistically significant differences regarding psychological skills between players in different positions.

Team cohesion

A statistically significant difference was found between the forwards (6.62 ± 1.68) and midfielders (5.94 ± 1.61) regarding their group integration-task (GI-T) scores, with the forwards recording the highest scores. Forwards act as the specialised strikers of the team with the main responsibility of scoring goals. Consistent with their role demands, forwards need to have solid perceptual and decision-making skills to be in the right range and position for a scoring opportunity. Such perceptual and decision-making skills are augmented by closeness, similarity, and integrating with the group as a whole around its tasks.

Similarly, there was a moderate practical (d = 0.37) and borderline statistically significant trend (p = 0.09) between the goalkeepers (6.50 ± 1.20) and midfielders (5.94 ± 1.61) on the cohesion subscale of GI-T with the goalkeepers scoring the highest scores. GI-T reflects how a team functions as a unit to achieve important team goals. Therefore, a high score on the GI-T by the goalkeepers is indicative of their commitment and responsibility in ensuring and arranging the defenders in a more compact, uniform and cohesive unit with the collective efficacy around its tasks to counter any threat posed by opposing teams making incursions within the penalty area. The result is a more coordinated and unified team both in spirit, purpose and shape consistent with the modern demands of defence and goalkeeping in facilitating team cohesion and performance.

In summary, there was a general lack of significant differences in 14 of the 16 different subscale measures analysed in relation to the positional comparison of the soccer players. A possible explanation for this occurrence may be due to the fact that within the specific playing positions distinct roles exist related to the demands of that specific position. For instance within the midfield position are: central midfielders, attacking midfielders and defensive midfielders. Each of these positions deals with distinct role demands and tactical play. For example, the role of a defensive midfielder is to compress space and put pressure on the ball when the team is on the defensive. On the

other hand, attacking midfielders (often referred to as "box-to-box" players) are the link between the midfield and the attackers and must be quick, flexible, have stamina, and, above all, be very skilful on the ball. The physical and psychological skills needed for maximal dexterity in these positions are different although collectively they are referred as midfielders (Thelwell & Greenless, 2003; Thelwell *et al.,* 2006). Within the current study, the participants were not classified into the various types of midfielders or defenders (central midfielders, defensive midfielders). This may have had a confounding effect on the lack of differences in the results observed in this study.

Practitioners need to be knowledgeable about the role-specific requirements of players in different playing positions to identify and implement appropriate psychological, and physical training skills and interventions aimed at developing and building competent, cohesive teams.

Chapter Six

Conclusions and Recommendations

Conclusions

The role of age, experience and team membership

The results of this study reveal a significant effect for age, previous tournament experience and the time period that players were part of their respective teams on soccer performance. The findings indicate that external, internal, controllable and uncontrollable performance variables might significantly influence the success of a team. This shows a need for coaches to avoid a skewed focus on physical and physiological factors when preparing players for contests.

Mental toughness and psychological skills

The results of this study do not unequivocally confirm the established research findings of mental toughness and psychological skills being essential for performance excellence. The findings, however, support the proposition that mental factors differentiate between athletes of different competitive levels and that accumulative competitive experience is a critical factor in the development and stabilisation of mental skills. Thus, at the same competitive level of play and the amateur status of the players in the study sample, mental toughness and psychological skills may not have fully developed to distinguish between the players. It is concluded that mental skills may only mature and stabilise at the elite and super-elite levels of competitive play.

Team cohesion

The findings of this study conclude that cohesion is the only factor that differentiates between successful and less successful soccer teams at this level of play. However, the unexpected findings relating to cohesion with reference to the less successful soccer teams recording higher scores on GI-T and GI-S give indication that, cohesion is not a natural phenomenon that automatically activates with the formation of a group to facilitate performance. Rather efficient cohesion necessitates the balancing integration of both individual proclivities (e.g. goals, egos, objectives) and team dynamics (both task

and social) into a proficient team structure through effective leadership, vicarious experiences, interdependency and satisfaction among group members to guarantee success. It is speculated that due to the low level of mental skills development of the sample, that team dynamics might stand out as a significant factor that discriminate between successful and less successful teams.

Playing position comparisons

The results of this study partially provide support for the general research findings in the literature that, a relationship exist between various mental constructs and playing positions in team sports. Particularly, the findings did indicate that soccer players in different positions could be differentiated as a function of their mental toughness characteristics (i.e., control and constancy) and team dynamics dispositions (i.e., group integration-task).

Moreover, the findings of this study yielded no statistically or practical significant differences in the psychological skills among the players in different playing positions. A possible explanation for this conclusion might be the evolution of soccer from single-dimensional play to so-called "total soccer" where players have acquired multi-skills (both physical and psychological) related to the different positional demands of the game. Moreover, the discrepancy with regard to the players' psychological skills again indicates the relatively poor sport psychological skill level of the study sample.

It is important to note that the participants in this study were not a representative sample from all the tertiary institutions in the country. Therefore, caution should be exercised in generalizing the results to South African student soccer players in general.

Limitations

- A limitation of many similar studies involves the shortcomings of self-report questionnaires that rely on respondents' retrospective accounts. This, together with the phenomenon of social desirability, might also have been factors that affected the conclusions drawn from this study.

- Without knowledge of the participants' prior exposure to psychological skills and team-building strategies, it is difficult to discern whether the players were

knowledgeable about the positive effects and use (i.e., why, when and how) of these skills to complement their performance.

- The study design was cross-sectional and consequently participants' responses were gathered at a single point in time. This might not have concisely captured the extant effect of mental toughness, psychological skills and team cohesion on the performance dynamics of a team as these constructs may have evolved as the tournament progressed.

- It is possible that the absence of significant effects of mental toughness and psychological skills on performance outcome in this study could be due to the masking effect that group analysis has on individual weaknesses and strengths. In addition, within-group variances may have contributed to the lack of differences.

Recommendations

Research

1. Future research among student soccer players should examine their prior exposure to PST programmes to determine their proficiency in using these skills for self-improvement and performance in soccer.

2. Future research needs to implement more comprehensive methods of data gathering. Ideally, both qualitative and quantitative data should be collected.

3. The current study was cross-sectional and so the conclusions were based on responses from a single point in time. Future research should examine the predictive validity of mental toughness, psychological skills and team cohesion by examining the role of these constructs on performance over an extended period of time.

4. There is a need for studies to focus on mental toughness, and mental skills usage among student athletes, to supplement the customary studies that tend to focus only on elite players.

5. Future research should establish whether mental toughness and the associated positive effects on performance are cultural-specific. The Western cultural

dominance of mental toughness knowledge and research (Gucciardi & Gordon, 2011) necessitates the need for cross-cultural studies.

Applied practice

1. Sport psychology practitioners and coaches should attend to the individual differences as well as the specific physical, technical, tactical and psychological necessities of a specific sport. An appreciable knowledge of the antecedents, characteristics and the playing demands in the specific sport is essential.

2. An awareness of the prevalent thoughts, and behaviours pre-, during, and post-competition should form the foundation on which intervention programmes are structured.

3. There is no exclusivity with regard to the psychological skills inherent in different playing positions. Therefore, coaches should not instinctively or solely depend on the use of psychometric tests to determine the demands of different playing positions. Physical, strength, speed, technical and biomechanical abilities should get preferential treatment when players adapt to and mature in the role-specific demands of a specific playing position.

4. In the developmental stages of competitive play, team dynamics and performance moderating variables may be the key to discriminate between successful and less successful teams. Thus, sport psychology consultants and coaches should consider the integration of team building strategies into their intervention programmes. These should emphasise both task and social dimensions of cohesion.

Summary

The findings of this study provide a glimpse of student soccer players' strengths and weaknesses regarding psychological and team variables pertinent to the game. A review of the literature failed to identify another study that presents a composite report of psychological and team variables inherent to soccer. This study will hopefully contribute to an increased interest in and research into these dimensions in soccer.

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The role of mental toughness, psychological skills and team cohesion in soccer performance.

Information Sheet

Purpose of the study

The purpose of the study is to determine the role of mental toughness, psychological skills and team cohesion in soccer performance. In addition, the study aims to determine if there are differences between successful and less-successful soccer teams with regard to their mental toughness, psychological skills and team cohesion.

Procedure

You are invited to participate in a research project by completing some questionnaires during the 2012 University Sports South Africa (USSA) Soccer Championship, taking place at the University of the Western Cape. Upon receipt of your consent to participate in the study, you will be given a general overview of the study and its potential benefits.

After this, players' mental toughness levels will be assessed by means of the *Sport Mental Toughness Questionnaire (SMTQ)*; their psychological skills by means of the *Athletic Coping Skills Inventory-2 (ACSI-28)*; and their team cohesion by the *Group Environmental Questionnaire (GEQ).*

Potential Benefits for Soccer and/or Society

Exploring the role of psychological constructs in soccer might facilitate the effective selection of good players, and more importantly the development of training methods that advantage of psychological and team attributes considered important for optimal performance. Furthermore, identifying the relationship between mental toughness, psychological skills, and team cohesion and how it discriminates between successful and less-successful teams will increase awareness about the importance of psychological constructs and its application within youth academies and professional soccer clubs.

Rights of Research Subjects

You may choose to be included in this study or not. You may withdraw from it any time without penalty or any consequence to your position in your team. You do not need to justify your decision If you withdraw from the study the researcher retain your data, but only if you agree, otherwise your records will be destroyed.

You are not waiving any legal claims and rights because of your participation in this research study. If you have questions regarding your rights as a research subject, please contact Ms Maléne Fouché at the Division for Research Development (contact number: (021) 808 46 22 or mfouche@sun.ac.za).

Rights of the Researcher

The researcher reserves the right to exclude a player from the research project should the participant fail to adhere to the instructions given during data collection.

Confidentiality

Any information about you that is obtained in connection with this study will remain confidential and will be disclosed only with your written permission. However, the results of the study may be published or disclosed to other people in a way that will not identify you. All questions and data sheets will be numerically coded and no names will be included in the data collection or analysis. All questionnaire-based information will be used for data analysis then safely and securely stored in the Department of Sport Science at Stellenbosch University. No one, except the researcher and project supervisor will be able to access the raw data.

Further Information

If you have any questions regarding this study you can contact any of the researchers detailed below. You will be given a copy of this information sheet and a consent form to read and keep prior to indicating your consent to participate by signing the consent form.

Master's student:	Benjamin Asamoah	Supervisor: Dr. H.W. Grobbelaar
Email:	16251741@sun.ac.za	Email: HGrobbelaar@sun.ac.za
Cell number:	+27 71 992 3369	Cell number: +27 82 923 7305

The Human Research Ethics Committee at the Stellenbosch University requires that all participants are informed that, if they have any complaint regarding the manner, in which a research project is conducted, it may be given to the researcher or, alternatively to the Administrative Officer, Human Research Ethics Committee, Division of Research Development, Stellenbosch University, Private Bag X1, Matieland, 7602

Department of Sport Science

Stellenbosch University

MATIELAND

7602

The role of mental toughness, psychological skills and team cohesion in soccer performance.

Consent Form (Participant)

I _____ have read the information provided and any questions I have asked have been answered to my satisfaction. I agree to participate in this project, realising that I may withdraw at any time without having to provide a reason and without prejudice and that any record of my participation will be destroyed unless I give permission for the researcher to use my data.

The information was explained to me by Benjamin Asamoah and/or Oscar Nauhaus in English and I am in command of the language.

I understand that all information provided is treated as strictly confidential and will not be released by the researcher unless required to by law. I have been advised as to what data are being collected, what the purpose is, and what will be done with the data upon completion of the research.

1. I understand that my participation is entirely voluntary and that I may withdraw my participation at any time and without prejudice.

2. The raw data on which the results of the project depend will be retained in secure storage for five years, after which it will be destroyed.

3. I understand that, at my request, I can receive additional explanation of the study at any time.

4. I was informed that there are no costs involved for my participation in this project.

5. I am aware that the assessments include the completion of the Sport Mental Toughness Questionnaire (SMTQ), the Athletic Coping Skills Inventory-2 (ACSI-28), and the Group Environmental Questionnaire (GEQ).

6. I am aware that if I have any complaints or if I am not treated with respect, I may phone the human research committee contact person at the University, Ms. Maléne Fouché at (021) 808 46 22; mfouche@sun.ac.za

7. I may keep a copy of the participant information sheet for my own records.

8. I agree that research data gathered for the study may be published provided that my name or other identifying information are not used.

Signature of the Player

The above information was given to me by Benjamin Asamoah and/or Oscar Nauhaus in English and I am in command of the language. I was given the opportunity to ask questions and these questions were answered to my satisfaction.

I hereby consent to participate voluntarily in this study.

_____

Name player

_____   _____

Signature of player   **Date**

<div style="border:1px solid; padding:10px; text-align:center; background:#eee;">

Signature of the Researcher

</div>

I declare that I explained the information given in this document to the research participant. He was encouraged and given ample time to ask me any questions. This conversation was conducted in English.

_____

Name of the Researcher

_____   _____

Signature of the Researcher   **Date**

Research will be conducted according to the declaration of Helsinki, Medical Research Council (MRC) guidelines and SA Good Clinical Practice (GCP). The researcher conducting this study supports the principles governing both ethical conduct of research and the protection at all times of the interest, comfort and safety of the participants. The form and the accompanying information sheet are given to you for your own protection. They contain a detailed outline of the project procedures.

Department of Sport Science
Stellenbosch University
MATIELAND
7602
1 October, 2012

Dear Members of the Executive Committee USSA Football,

Permission to conduct research

I am currently pursuing a course of study leading to a Master's degree in Sport Science.

I would like to request your permission to conduct research at the 2012 USSA Soccer Championship.

I plan to do a quantitative study in which I will explore the perspectives of players' regarding the role of mental toughness, psychological skills, and team cohesion in soccer performance. My data collection entails the administering of questionnaires to the sampled participants of the respective teams prior to the commencement of the tournament.

My objectives in this study generally encapsulate the role of different psychological constructs and the extent to which they discriminate between successful and less-successful teams.

I have obtained permission from the Ethical Committee of Stellenbosch University to conduct this research. I have attached a copy of the clearance form for your attention. I guarantee total confidentiality of information pertaining to the participating players and teams and will only report information that is in the public domain and permissible within the law.

Please find attached a copy of the consent and information sheet which further explains the whole concept of my proposed study. It includes my contact details as well as that of my supervisor, to which any inquires and concerns could be forwarded.

I would be grateful for your approval and support of my study.

Yours faithfully,

Benjamin Asamoah.

DEMOGRAPHIC AND SOCCER INFORMATION										

1	Name:									
	Surname:									

		y	y	y	y	M	m	d	d
2	Your birth date:	1	9						

3	Your age:	Years		
		Months		

4	What is your preferred language?	

5	What is your primary playing position for this tournament?	Goal keeper	1
		Defender/ back	2
		Midfielder	3
		Forward/striker	4

6	For how many years have you been playing soccer?			Years

7	Which University are you representing during the 2012 USSA tournament?	

8	For how many months have you been playing with your current team?			Months

9	In how many USSA soccer tournaments have you taken part? (Your answer should include the 2012 tournament)	

10	Contact details	Cell number	
		E-mail address	

SPORTS MENTAL TOUGHNESS QUESTIONNAIRE (SMTQ)

Please indicate your response to the following items by **circling one** of the numbers, which have the following meaning;

1 = Not at all true	2 = A little true	3 = Mostly true	4 = Very true

Please answer these items carefully, **thinking about how they relate to your main sport specifically**. Do not spend too much time on any one item. Please answer each question by circling the letter that best describes how you are generally. Please answer the questions honestly. Thank you.

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

ATHLETIC COPING SKILLS INVENTORY (ACSI-28)

Below you'll find a few statements which sportpersons use to describe their sporting experiences. Read through each statement very carefully and try to indicate how often you tend to experience these experiences. Please answer each question truthfully. There are no right or wrong answers, only the answer that is the most applicable to your current situation. Do not dwell on any one question for too long. Please cross out the applicable answer and make sure that you answer all the questions.

1. On a daily or weekly basis, I set very specific goals for myself that guide what I do.

a. almost never	b. sometimes	c. often	d. almost always

2. I get the most out of my talents and skills.

a. almost never	b. sometimes	c. often	d. almost always

3. When a coach or manager tells me how to correct a mistake I've made, I tend to take it personally and feel upset.

a. almost never	b. sometimes	c. often	d. almost always

4. When I participate in sport, I can focus my attention and block out distractions.

a. almost never	b. sometimes	c. often	d. almost always

5. I remain positive and enthusiastic during competition, no matter how badly things are going.

a. almost never	b. sometimes	c. often	d. almost always

6. I tend to perform better under pressure because I think more clearly.

a. almost never	b. sometimes	c. often	d. almost always

7. I worry quite a bit about what others think about my performance.

a. almost never	b. sometimes	c. often	d. almost always

8. I tend to do lots of planning about how to reach my goals.

a. almost never	b. sometimes	c. often	d. almost always

9. I feel confident that I will perform.

a. almost never	b. sometimes	c. often	d. almost always

10. When a coach or manager criticizes me, I become upset rather than helped.

a. almost never	b. sometimes	c. often	d. almost always

11. It is easy for me to keep distracting thoughts from interfering with something I am watching or listening to.

a. almost never	b. sometimes	c. often	d. almost always

12. I put a lot of pressure on myself by worrying how I will perform.

a. almost never	b. sometimes	c. often	d. almost always

13. I set my own performance goals for each practice.

a. almost never	b. sometimes	c. often	d. almost always

14. I don't have to be pushed to practice or compete hard; I give 100%.

a. almost never	b. sometimes	c. often	d. almost always

15. If a coach criticizes or yells at me, I tell myself to keep calm, and this works for me.

a. almost never	b. sometimes	c. often	d. almost always

16. I handle unexpected situations in my sport very well.

a. almost never	b. sometimes	c. often	d. almost always

17. When things are going badly, I tell myself to keep calm, and this works for me.

a. almost never	b. sometimes	c. often	d. almost always

18. The more pressure there is during a competition, the more I enjoy it.

a. almost never	b. sometimes	c. often	d. almost always

19. While competing, I worry about making mistakes or failing to come through.

a. almost never	b. sometimes	c. often	d. almost always

20. I have my own game plan worked out in my head long before the competition begins.

a. almost never	b. sometimes	c. often	d. almost always

21. When I feel myself getting too tense, I can quickly relax my body and calm myself.

a. almost never	b. sometimes	c. often	d. almost always

22. To me, pressure situations are challenges that I welcome.

a. almost never	b. sometimes	c. often	d. almost always

23. I think about and imagine what will happen if I fail or screw up.

a. almost never	b. sometimes	c. often	d. almost always

24. I maintain emotional control no matter how things are going for me.

a. almost never	b. sometimes	c. often	d. almost always

25. It is easy for me to direct my attention and focus on a single object or person.

a. almost never	b. sometimes	c. often	d. almost always

26. When I fail to reach my goals, it makes me even try harder.

a. almost never	b. sometimes	c. often	d. almost always

27. I improve my skills by listening carefully to advice and instruction from coaches and managers.

a. almost never	b. sometimes	c. often	d. almost always

28. I make fewer mistakes when the pressure's on because I concentrate better.

a. almost never	b. sometimes	c. often	d. almost always

GROUP ENVIRNOMENT QUESTIONNAIRE (GEQ)

This questionnaire is designed to assess your perceptions of your team. There are no wrong or right answers, so please give your immediate reaction. Some of the questions may seem repetitive, but please answer ALL questions. Your personal responses will be kept in strictest confidence.

The following statements are designed to assess your feelings about YOUR PERSONAL INVOLVEMENT with this team. Please CIRCLE a number from 1 to 9 to indicate your level of agreement with each of these statements.

1.	I do not enjoy being a part of the social activities of this team.
	1 2 3 4 5 6 7 8 9
	Strongly disagree Strongly agree

2.	I'm not happy with the amount of playing time I get.
	1 2 3 4 5 6 7 8 9
	Strongly disagree Strongly agree

3.	I am not going to miss the members of this team when the season ends.
	1 2 3 4 5 6 7 8 9
	Strongly disagree Strongly agree

4.	I'm unhappy with my team's level of desire to win.
	1 2 3 4 5 6 7 8 9
	Strongly disagree Strongly agree

5.	Some of my best friends are on this team.
	1 2 3 4 5 6 7 8 9
	Strongly disagree Strongly agree

6.	This team does not give me enough opportunities to improve my personal performance.
	1 2 3 4 5 6 7 8 9
	Strongly disagree Strongly agree

7.	I enjoy other parties rather than team parties
	1 2 3 4 5 6 7 8 9
	Strongly disagree Strongly agree

8.	I do not like the style of play on this team
	1 2 3 4 5 6 7 8 9
	Strongly disagree Strongly agree

9.	For me, this team is one of the most important social groups to which I belong.
	1 2 3 4 5 6 7 8 9
	Strongly disagree Strongly agree

The following statements are designed to assess your perceptions of YOUR TEAM AS A WHOLE. Please CIRCLE a number from 1 to 9 to indicate your level of agreement with each of these statements.

10.	Our team is united in trying to reach its goals for performance.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

Strongly disagree   Strongly agree

11.	Members of our team would rather go out on their own than get together as a team.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

Strongly disagree   Strongly agree

12.	We all take responsibility for any loss or poor performance by our team.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

Strongly disagree   Strongly agree

13.	Our team members rarely party together.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

Strongly disagree   Strongly agree

14.	Our team members have conflicting aspirations for the team's performance.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

Strongly disagree   Strongly agree

15.	Our team would like to spend time together in the off season.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

Strongly disagree   Strongly agree

16.	If members of our team have problems in practice, everyone wants to help them so we can get back together again.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

Strongly disagree   Strongly agree

17.	Members of our team do not stick together outside of practice and games.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

Strongly disagree   Strongly agree

18.	Our team members do not communicate freely about each player's responsibilities during competition or practice.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

Strongly disagree   Strongly agree

THANK YOU FOR YOUR TIME.
BEST WISHES FOR THE TOURNAMENT.