ACHIEVEMENT GOALS AND EMOTIONS IN COMPETITIVE SPORT

by

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ABSTRACT

The main aim of this thesis was to investigate the relationships between goal involvement and emotions and potential mediators and moderators of these relationships; a secondary aim was to examine the link between goal involvement and sport performance. The relationships between goal involvement and emotions experienced before, during, and after competition were examined in Studies 1, 2, and 3, respectively. Cognitive appraisals (Study 1) and perceived performance (Studies 2 & 3) were examined as mediators of the links between task involvement and emotions. Also, perceived competence (Study 1), perceived performance (Studies 2 & 3), and outcome of the match (Study 3) were investigated as moderators of the relationships between ego involvement and emotions. Finally, the effects of achievement goals on emotions and performance were experimentally tested in a speed-agility task (Study 4). Overall, task involvement was positively related to positive, and negatively associated with negative, emotions; challenge appraisal and perceived performance helped explain the majority of these links. Also, some relationships between ego involvement and emotions were moderated by perceived performance and outcome. These findings suggest athletes should be task involved before or during competition and that ego involvement can be beneficial for emotions when perceived performance is high.

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LIST OF PAPERS

This thesis is comprised of four papers. Study design, data collection, statistical analysis, and writing were conducted by Andrew Dewar. Assistance with study design, data analysis, and paper editing was provided by Dr Maria Kavussanu. Prof Christopher Ring also advised on study design, data analysis, and paper editing.

1. Dewar, A. J., & Kavussanu, M. (2012). *Trial by fire: Achievement goals and emotions before team trials*. Manuscript in preparation.
2. Dewar, A. J., & Kavussanu, M. (2011). Achievement goals and emotions in golf: The mediating and moderating role of perceived performance. *Psychology of Sport and Exercise, 12*, 525-532.
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While studying within the School of Sport and Exercise Sciences at the University of Birmingham, the following conference presentations were delivered.

5. Dewar, A. J., Kavussanu, M., & Ring, C. (2011). Effects of achievement goals on emotions and performance on an agility task. Paper presented at the *European Congress of Sport Psychology,* Madeira, Portugal.

6. Dewar, A. J., & Kavussanu, M. (2011). Achievement goals, perceived performance, and motivational climate as predictors of emotions in team sport athletes. Poster presented at the *European Congress of Sport Psychology*, Madeira, Portugal.

7. Dewar, A. J., & Kavussanu, M. (2010). Achievement goals and discrete emotions: The mediating and moderating role of subjective performance. Paper presented at the *British Psychological Society* conference, Division of Sport and Exercise Psychology, London.

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CHAPTER 1

General Introduction

Sport competition is an environment which can elicit intense emotions (Kerr & Males, 2010). Players who lose a match may feel varying degrees of negative emotions, such as dejection, depending on how they view ability and success. Despite losing, athletes who recognise that they exerted maximum effort and improved might feel partially successful; they may take solace in their improvement and feel less dejected. However, individuals who focus most on outperforming their opponents may feel dejected after a loss. Therefore, understanding how these different views of ability are related to emotions is important because it may play a part in creating a more fulfilling experience (i.e., more positive, and less negative, emotions) in sport competition.

For over twenty years, researchers have attempted to comprehend individuals' motivation in achievement settings by investigating Achievement Goal Theory (Nicholls, 1984, 1989). Although there are a number of achievement goal theorists (Ames, 1992; Dweck, 1986; Elliot, 1999; Nicholls, 1989), the current research is based on work by Nicholls (1984, 1989), who developed a social-cognitive theory of motivation that attempts to understand individuals' cognition, affect, and behaviour. I will now examine achievement goals in more depth.

Achievement Goals

A basic assumption of Achievement Goal Theory (Nicholls, 1984, 1989) is that individuals try to develop or demonstrate competence in achievement settings (Nicholls, 1984). Depending on whether the undifferentiated or differentiated conception of ability is adopted, ability can be construed as effortful accomplishment or as capacity (Nicholls, 1989). In the undifferentiated conception of ability, higher effort leads to greater learning, so more effort indicates higher ability. Conversely, in the differentiated conception of ability, learning through effort does not indicate ability, which is displayed when people outperform others while exerting equal effort or perform as well as others and apply less effort (Nicholls, 1984, 1989).

The two conceptions of ability are embedded within two achievement goals: task and ego involvement (collectively known as goal involvement). When individuals are task-involved, they employ the undifferentiated conception of ability, evaluate ability using self-referenced criteria, seek to improve or master a task, and feel competent when they do so. When people are ego-involved they adopt the differentiated conception of ability, judge ability using other-referenced criteria, their goal is to perform better than others, and they feel competent when they do so (Nicholls, 1984, 1989).

The terms task involvement and ego involvement are used by Nicholls (1984) to describe states in which an individual's goal is to demonstrate ability in the undifferentiated or differentiated sense, respectively. The extent to which individuals are task or ego involved can change from one situation to the next and people can experience different levels of these goal states. Indeed, goal involvement may change as individuals' purpose changes (Nicholls, 1989). People may experience greater task involvement is settings which offer the opportunity to increase ability and higher ego involvement in competitive situations (Nicholls, 1989). The tendency to be task or ego involved is known as task orientation and ego orientation (together referred to as goal orientation). A difference between goal involvement and goal orientation highlighted by Nicholls (1989) was that ""task orientation" and "ego orientation" are applied to individual differences in proneness to the two types of involvement, and "task involvement" and "ego involvement" refer to the states that people experience in a given situation" (p. 95). Therefore, goal involvement and goal orientation are conceptually similar.

Task and ego involvement have received relatively little attention in the extant literature. Some researchers (Gernigon, d'Arripe-Longueville, Delignières, & Ninot, 2004; Smith & Harwood, 2002) have investigated changes in goal involvement during competition. For example, a retrospective video recall method was used to investigate the importance of, or desire to, adopt goal

states during a tennis match (Smith & Harwood, 2002) and practice judo combat (Gernigon et al., 2004), respectively. These measures assess goal states after each point (Smith & Harwood, 2002) or continuously throughout combat (Gernigon et al., 2004) and provide data with a lot of depth; therefore, these methods are useful for investigating changes in goal states throughout competition in a small number of participants. However, the practicalities of videoing participants are such that this method is not well suited to investigating a large number of participants, so the external validity of retrospective video recall is limited.

If researchers are not interested in changes goal involvement and instead want to investigate overall goal involvement associated with a situation, questionnaires can be used to assess task and ego involvement in a large number of people. Given that Nicholls (1989) refers to feelings of success when assessing goal orientation, and that goal involvement and goal orientation are similar (Nicholls, 1989), I suggest that when one is measuring goal involvement before and during a competition athletes should be asked about their anticipated, or actual, feelings of success. This position is supported by researchers who have adapted goal orientation measures to assess goal involvement (Vansteenkiste, Matos, Lens, & Soenens, 2007; Williams, 1998). Specifically, female softball players and individuals participating in tae bo were asked about the feelings of success they anticipate in the upcoming (Williams, 1998), or felt during the (Vansteenkiste et al., 2007), activity, respectively.

Task involvement has implications for expectancies of success and the subjective experience of a task[1]. Specifically, when a task-involved individual is faced with a task that is close to their level of competence and requires high effort to demonstrate their highest possible level of ability, these people will have moderate expectancies of success (Nicholls, 1984). Also, in task

[1] As well as subjective experience, Nicholls (1984, 1989) uses terms such as affect, interest, enjoyment, and intrinsic satisfaction, which seem to describe the emotions associated with an activity.

involvement, learning or mastery leads to feelings of competence; therefore, the activity is an end in itself and is intrinsically satisfying (Nicholls, 1989).

Ego-involved individuals may have different expectations of success and experience different emotions based on their perceived competence, which is the perception of one's *ability* to perform a task. Indeed, ego-involved people with low perceived ability (which is used interchangeably with perceived competence, see Nicholls, 1984, p. 333) may expect to perform badly and demonstrate low ability, which could result in individuals experiencing anxiety (Jagacinski & Nicholls, 1984; Roberts, 1986) and negative affect (Nicholls, 1984). Conversely, ego-involved individuals with high perceived ability may think they will perform well and display high ability, so may be less likely to feel anxious (see Roberts, 1986) or negative affect. Moreover, ego-involved students who reported high competence also experienced high pride (Jagacinski & Nicholls, 1984). Although this does not directly support moderation, it may point to a link between competence and a positive emotion, namely pride; when this finding is considered with proposition for negative affect (Jagacinski & Nicholls, 1984; Nicholls, 1984), it can be suggested that the relationship between ego involvement and positive emotions may also be moderated by perceived competence. Specifically, ego-involved individuals with high perceived competence may expect to perform well (Jagacinski & Nicholls, 1984), so they might experience positive emotions. Conversely, ego involvement may be unrelated to positive emotions when perceived competence is low because these people do not expect to perform well. Therefore, ego-involved individuals may experience different emotions based on their perceived competence.

Emotions

Before discussing how achievement goals are related to emotions, it is pertinent to define, and clarify the differences between, emotions and affect in order to alleviate any possible confusion between these two terms. Emotions are "relatively brief but intense experiences activated by

cognitive appraisal of situational factors" (Lane & Terry, 2000, p. 17) whereas affect is a "broad rubric that refers to all things emotional" (Rosenberg, 1998, p. 247). A difference between these variables is that each emotion has an antecedent that is specific to that emotion (Lazarus, 1991, 2000), as opposed affect which has no specific referent.

Measuring a range of emotions may be superior to assessing affect because this may capture the variety of emotions experienced in competition (Jones, Lane, Bray, Uphill, & Catlin, 2005). Indeed, a number of studies have shown that a range of positive and negative emotions are associated with sport competition. For example, national level adolescent golfers (Nicholls, Hemmings, Clough, 2010) and elite table-tennis players (Martinent, Campo, & Ferrand, 2012) felt happy and anxious during competition. Japanese field hockey players experienced excitement, pride, shame, and anxiety before and after a number of world cup matches (Kerr, Wilson, Bowling, & Sheahan, 2005). Also, happiness, excitement, and dejection were reported before and after team sport (Allen, Jones, & Sheffield, 2009) and golf (Allen, Jones, & Sheffield, 2011) competitions. The definitions of emotions investigated in this thesis are presented in Table 1.1.

Table 1.1

Definitions of Emotions

Emotion	Definition
Excitement	A feeling of arousal that may be experienced when individuals in a challenging situation believe they will achieve a goal (Jones et al., 2005)
Happiness	"Making reasonable progress towards the realization of a goal" (Lazarus, 2000, p. 234).
Pride	"Perception of an individual achievement" (Uphill & Jones, 2007, p. 84)
Hope	"Believing the improvement is possible" (Lazarus, 2000, p. 234)
Dejection	"One does not believe he or she is making sufficient progress to achieve a meaningful goal, or following actual or perceived failure to achieve a meaningful goal" (Jones et al., 2005, p. 411)
Shame	"Failing to live up to an ego-ideal" (Lazarus, 2000, p. 234)
Anxiety	"Facing uncertain, existential threat" (Lazarus, 2000, p. 234)

Emotion	Definition
Cognitive anxiety	"Negative appraisals of situation and self, worry, and aversive mental imagery" (Smith, Smoll, & Passer, 2002, p. 504)
Somatic anxiety	"Reflected in increased physiological arousal as typified by rapid heart rate, shortness of breath, and increased muscle tension" (Smith et al., 2002, p. 504)
Concentration disruption	"Concentration problems in which distractions prevent appropriate attentional focus" (Burton, 1998, p. 131)
Worry	Negative thoughts about competition (see Burton, 1998).

Achievement Goals and Emotions

The link between goal involvement or orientation and subjective experience (Nicholls, 1984) has not often been investigated in competitive sport settings. An exception is research showing that task orientation was positively related to enjoyment experienced by tennis players (van de Pol & Kavussanu, 2011), individual and team sport athletes (van de Pol & Kavussanu, 2012), and football players (van de Pol, Kavussanu, & Ring, 2012) in competition. Ego orientation was unrelated to enjoyment in these studies (van de Pol & Kavussanu, 2011, 2012; van de Pol et al., 2012). Therefore, task orientation is consistently related to enjoyment in competition; however, few researchers have examined how achievement goals are related to other positive emotions in this setting.

Many researchers have examined how positive affective outcomes (e.g., enjoyment and positive affect) generally experienced in sport or Physical Education (PE) settings are related to goal orientation or involvement. Results from two comprehensive reviews of this literature (Biddle, Wang, Kavussanu, & Spray, 2003; Ntoumanis & Biddle, 1999) show that task orientation was positively related to positive affective outcomes, whereas ego orientation was unrelated to these outcomes. Moreover, task involvement during a running task completed as part of a PE class was positively related to positive affect experienced after the lesson and ego involvement was unrelated

to positive affect (Vlachopoulos, Biddle, & Fox, 1997). Thus, cross-sectional literature shows that task orientation or involvement are related to positive affective outcomes.

A recent study in PE (Mouratidis, Vansteenkiste, Lens, & Auweele, 2009) extended the existing literature (e.g., Biddle et al., 2003; Ntoumanis & Biddle, 1999) by showing that task orientation was positively associated with enjoyment, hope, and pride, and ego orientation was positively related to pride, but unrelated to enjoyment and hope. The authors suggested that these different relationships between ego orientation and positive emotions were revealed because a number of emotions were examined and this pattern of results may have also been observed if previous research had considered a range of emotions rather than positive affect (Mouratidis et al., 2009). Therefore, examining a number of emotions may shed light on the links between ego involvement and emotions.

Experimental literature examining the effect of goal involvement on positive affective outcomes is scarce. However, Standage, Duda, and Pensgaard (2005) investigated the effect of goal involvement on positive affect experienced by undergraduate students during a competitive dance task. Results showed that there was no difference in positive affect between the four groups (task-involving individual, task-involving two-person team, ego-involving individual, and ego-involving two-person team). Also, another experimental study (Kavussanu, Morris, & Ring, 2009) showed that there was no difference in enjoyment experienced during a non-competitive golf putting task between mastery and performance-approach groups, which are similar to, but not conceptually the same as, task and ego involvement (Papaioannou, Zourbanos, Krommidas, & Ampatzoglou, 2012). Previous research has shown that learning (Kavussanu et al., 2009) and competitive tasks (Tauer & Harackiewicz, 2004) are enjoyable, so enjoyment experienced during tasks may have a stronger influence on emotions measured during experiments than manipulated goal states. However, no researchers have considered the effect of achievement goals on emotions at different time points

throughout an experimental task; therefore, it is not clear whether these null effects are due to emotions being measured during the task or because experimentally manipulated achievement goals do not influence emotions in these settings.

Researchers investigating the relationships between goal orientation or involvement and emotions in competition have often examined anxiety; however, these studies reveal mixed findings. In a study of adolescent figure skaters (Vealey & Campbell, 1988), task orientation was negatively related to state anxiety, measured one week and 30 minutes before competition, respectively. Also, task orientation was negatively related to somatic anxiety and unrelated to cognitive anxiety in adolescent fencers (Hall & Kerr, 1997). Ego orientation was unrelated to state anxiety (Vealey & Campbell, 1988) and cognitive and somatic anxiety (Hall & Kerr, 1997). Moreover, somatic anxiety experienced by school pupils was lower during task-involving, than ego-involving, volleyball drills in a PE lesson (Papaioannou & Kouli, 1999). These studies point to a negative association between task involvement and somatic anxiety.

The negative relationship between task involvement and somatic anxiety has not been replicated in some studies. For example, in adolescent cross-country athletes (Hall, Kerr, & Matthews, 1998), ego orientation was positively related to cognitive anxiety and unrelated to somatic anxiety, whereas task orientation was unrelated to both anxiety subscales[2]. Furthermore, task orientation was negatively related to concentration disruption and unrelated to worry usually felt before or during competition in adolescent athletes (Morris & Kavussanu, 2009). Taken together, the existing anxiety literature (e.g., Hall & Kerr, 1997; Morris & Kavussanu, 2009; Vealey & Campbell, 1988) shows inconsistent findings between task orientation or involvement and anxiety, which could be due to differences in how this emotion is measured. Perhaps investigating anxiety in greater depth, such as investigating subscales of cognitive anxiety (e.g., concentration

[2] Hall and Kerr (1997) and Hall et al. (1998) measured goal orientation and anxiety 30 minutes before competition and these variables referred to the upcoming contest; thus, it could be argued that the achievement goals assessed were similar to goal involvement.

disruption and worry), may show relationships with task involvement and some subscales of anxiety but not others, and might help clarify the links between these variables.

Goal orientation and involvement have also been examined in relation to negative affective outcomes (e.g., boredom and negative affect). Specifically, in two meta-analyses (Biddle et al., 2003; Ntoumanis & Biddle, 1999), task orientation was negatively associated with negative affective outcomes and ego orientation was unrelated to these outcomes. Also, an experimental study examined negative affect experienced during a competitive dance task. Results showed that participants in the two ego groups reported negative affect more often during the task than those in the two task groups (Standage et al., 2005). Therefore, task orientation or involvement was negatively associated with negative affective outcomes.

Recently, researchers extended the literature (Biddle et al., 2003; Ntoumanis & Biddle, 1999) by examining a number of negative emotions experienced by school pupils in PE classes (Mouratidis et al., 2009). Task orientation was negatively related to anxiety, anger, shame, hopelessness, and boredom negatively, and ego orientation was positively associated with all of these emotions (Mouratidis et al., 2009). Thus, task and ego orientation were linked with a number of negative emotions.

The findings presented above show that task orientation has been positively related to enjoyment and positive affective outcomes and negatively associated with negative affective outcomes; conversely, ego orientation was unrelated to these variables (e.g., Biddle, et al., 2003; Ntoumanis & Biddle, 1999; van de Pol & Kavussanu, 2011). Researchers who examined the relationships between goal orientation or involvement and anxiety found mixed results (e.g., Hall & Kerr, 1997; Hall et al., 1998). However, no researchers have assessed the link between goal involvement and a range of emotions before (except anxiety, e.g., Hall & Kerr, 1997; Hall et al., 1998), during, or after, competition. Examining these links throughout competition is important

because it may allow researchers to advise athletes which goal state will result in a more fulfilling competition. Also, experimental studies show no effect of task involvement on enjoyment or positive affect (Kavussanu et al., 2009; Standage et al., 2005), but do show higher somatic anxiety and negative affect more often in the ego than the task group (Papaioannou & Kouli, 1999; Standage et al., 2005). Moreover, the effect of goal involvement on emotions experienced before or after competition has not been experimentally tested.

Achievement Goals and Performance

Task involvement might be related to perceived performance, which is defined as an individual's evaluation of how he or she has performed on a specific task and is informed by actual performance. This goal state may also be associated with actual performance, which is an objective measure of performance, such as time to complete a race. Specifically, there are two possible reasons why these relationships may occur. First, task-involved individuals employ self-referenced criteria when evaluating their competence (Nicholls, 1984, 1989) so may attend to, and feel competent as a result of, improvements in performance, which may result in high perceived performance. Second, by focusing on the task at hand and exerting effort, task-involved individuals might perform well (Jagacinski & Nicholls, 1984); as a result of achieving high actual performance, these individuals might have high perceptions of performance. Conversely, individuals who are ego-involved define competence relative to others, so are unlikely to recognise small improvements in performance. Also, the majority of these individuals are unlikely to outperform others, so may not judge their performance favourably relative to others. Therefore, ego involvement may not be related to perceived performance. Also, for ego-involved individuals, high effort alone does not always result in demonstration of ability; therefore, these people may not exert effort and achieve high actual performance (Jagacinski & Nicholls, 1984).

Recent literature supports the proposed relationship between task involvement and perceived performance. Specifically, task orientation was positively related to tennis players' perceptions of performance during a match (Cervelló, Rosa, Calvo, Jimenez, & Iglesias, 2007) and in competitions over a year (van de Pol & Kavussanu, 2011). Also, results from a study in PE showed that task involvement was positively associated with perceived success, which is similar to perceived performance (Vlachopoulos et al., 1997). However, researchers have not examined the link between task involvement and perceived performance in competition or experimentally tested this relationship.

Researchers have also investigated the effect of goal involvement on actual performance. A comprehensive review (Utman, 1997) found that participants in learning goal groups (similar to task involvement) showed higher actual performance than those in performance goal groups (similar to ego involvement) on academic tasks, such as reading comprehension, anagrams, and psychology exams. The positive effect for learning goals was greater in complex, rather than simple, tasks (Utman, 1997). Conversely, mastery (task) and competitive (ego) groups showed no difference in performance on a basketball shooting task (Giannini, Weinberg, & Jackson, 1988). Therefore, the literature (Giannini et al., 1988; Utman, 1997) does not consistently show an effect of task or ego involvement on actual performance in sport based tasks, which may be the case because researchers have employed simple tasks (e.g., Giannini et al., 1988).

Recently, researchers have investigated the relationship between achievement goals and performance using the trichotomous or 2 x 2 achievement goal frameworks (Elliot, 1999). In the 2 x 2 framework (Elliot, 1999), achievement goals differ based on how competence is defined (i.e., self- and other-referenced) and valenced (i.e., approach and avoidance), which results in four goal constructs (i.e., mastery-approach, mastery-avoidance, performance-approach, and performance-avoidance). Results from experimental studies show that there is no difference in actual

performance between mastery-approach and performance-approach groups on basketball dribbling (Elliot, Cury, Fryer, & Huguet, 2006), dart throwing (Ntoumanis, Thøgersen-Ntoumani, & Smith, 2009), or golf putting (Kavussanu et al., 2009) tasks. A limitation of these studies (Elliot et al., 2006; Kavussanu et al., 2009; Ntoumanis et al., 2009) is that there was no control group; therefore, the size of the effects for mastery-approach and performance-approach groups on performance, compared to the effect observed for a no-goal group, is not clear. Thus, the effect of achievement goals on actual performance in sports tasks remains unclear.

In summary, task orientation and involvement have been positively related to perceived performance (Cervelló et al., 2007; van de Pol & Kavussanu, 2011; Vlachopoulos et al., 1997) but this link has not been tested experimentally. Also, compared to performance goal groups, learning goal groups showed higher actual performance on academic tasks (Utman, 1997). However, there was no difference between mastery and competitive (Giannini et al., 1988) or mastery and performance-approach groups on sports-based tasks (Elliot et al., 2006; Kavussanu et al., 2009; Ntoumanis et al., 2009), so the effect of task and ego involvement on actual performance on sports tasks should be investigated.

Task Involvement and Emotions: Mediation

Task orientation has been related to affective outcomes and enjoyment (Biddle et al., 2003; Ntoumanis & Biddle, 1999; van de Pol & Kavussanu, 2011, 2012). However, few researchers (Adie, Duda, Ntoumanis, 2008, 2010, Vlachopoulos et al., 1997) have examined possible mechanisms to explain these relationships. Examining mediating variables, which can be described as the mechanism through which the independent variable is related to the dependent variable (Baron & Kenny, 1986), may help understand why task involvement is related to emotions.

The relationships between task involvement and emotions may be mediated by challenge appraisal, defined as a "focus on the potential for gain or growth inherent in an encounter" (Lazarus

& Folkman, 1984, p. 33), and threat appraisal, which "concerns harms or losses that have not yet taken place but are anticipated" (Lazarus & Folkman, 1984, p. 32). Indeed, task-involved individuals' goal in achievement settings is to improve or master the task (Nicholls, 1984) and they feel competent when they achieve effortful accomplishment (Nicholls, 1989); therefore, they may appraise the situation as an opportunity to improve and might be more likely to view the situation as a challenge. Also, task-involved athletes may be less likely to expect a negative outcome from the event. Research (Ewing, 1981, as cited in Roberts, 1986) found that task orientated children did not perceive stress in competition because they were focused on the task at hand. So, task-involved individuals may be less likely to judge the situation as threatening. Therefore, task involvement may be positively associated with challenge appraisal and negatively linked with threat appraisal.

Challenge and threat appraisals (known collectively as cognitive appraisals) may be related to the emotions individuals' experience. Individuals who appraise the situation as a challenge may have a positive expectation for the competition and may experience positive emotions. Indeed, challenge appraisal is associated with positive emotions, such as hope and excitement (Lazarus & Folkman, 1984). Conversely, negative emotions, such as worry and anxiety, might be experienced by those who make a threat appraisal (Lazarus & Folkman, 1984) because there is a negative expectation for the event. Indeed, in regional and national level athletes, challenge appraisal was positively related to interest/excitement and threat appraisal was positively associated with anxiety (Cerin, 2003).

Very few researchers have investigated whether the links between achievement goals and emotions are mediated by cognitive appraisals (e.g., Adie et al., 2008, 2010). In adult team sport athletes (Adie et al., 2008), a mastery-approach goal was positively related to challenge appraisal, which in turn was positively associated with positive affect. Moreover, a mastery-approach goal was negatively linked with threat appraisal, which was positively related to negative affect. Adie et

al. (2010) examined whether the relationships between achievement goals and positive and negative affect were mediated by cognitive appraisals in adolescent football players. All variables were measured on five occasions and the authors examined within-person changes of these variables. Results showed mastery-approach goal predicted challenge appraisal, which positively predicted positive affect and negatively predicted negative affect (Adie et al., 2010). Therefore, across two studies (Adie et al., 2008, 2010), challenge appraisal mediated the relationship between a mastery-approach goal and positive affect. However, no researchers have investigated whether cognitive appraisals mediate the relationships between task involvement and a range of emotions at the situation level, such as before competition.

Another variable which may help explain the relationships between task involvement and emotions is perceived performance. Indeed, task involvement was positively related to perceived performance in tennis players (Cervelló et al., 2007; van de Pol & Kavussanu, 2011). Also, perceived performance involves judgements of how an individual has performed, so we expect it to be related to emotions during and after competition. Research supports this proposition showing that elite table-tennis players experienced pleasure or displeasure and irritation during competition when they played well or poorly, respectively (Sève, Ria, Poizat, Saury, & Durand, 2007). Also, subjective outcome (i.e., whether participants believed they had a good or bad performance) positively predicted joviality and negatively predicted sadness (which is similar to dejection) experienced by adolescent swimmers and track and field athletes after a fitness test (Graham, Kowalski, & Crocker, 2002). Furthermore, elite male lacrosse players reported that dejection and frustration experienced in important competitive matches were caused by perceptions of inadequate team performance (Kerr & Males, 2010). Therefore, perceived performance may mediate the link between task involvement and emotions during or after competition; to date, no researchers have examined this relationship.

The findings presented above suggest that researchers may understand why task involvement is associated with emotions if they consider mediators of these relationships. Although few researchers have examined mediating variables, Adie and colleagues (2008, 2010) showed that challenge appraisals mediated the link between a mastery-approach goal and positive affect. However, no researchers have investigated cognitive appraisals as mediators of task involvement and emotions prior to competition. Moreover, perceived performance mediated the link between task involvement and affect after a PE lesson, but this mediation has not been examined in emotions experienced during or after competitive sport. Therefore, cognitive appraisals and perceived performance may be mechanisms to explain why task involvement is related to emotions.

Ego Involvement and Emotions: Moderation

Ego orientation is generally not related to emotions (e.g., van de Pol & Kavussanu, 2011; Vealey & Campbell, 1988). However, researchers (Jagacinski & Nicholls, 1984, Nicholls, 1984) have suggested that the relationship between ego involvement and expectations of success or affect may be different at different levels of perceived ability. Thus, perceived competence may moderate the relationships between ego involvement and emotions experienced on a task. Moderating variables can be defined as variables that affect the direction and strength of the relationship between the independent variable and the dependent variable, such that this relationship is different at different levels of the moderator (Baron & Kenny, 1986). Examining moderators of ego involvement and emotions may shed light on these relationships.

A study investigating the links between ego orientation and motivational regulation supported moderation of perceived competence. Specifically, in school children with low perceived competence, ego orientation was unrelated to intrinsic motivation to know (i.e., enjoying discovering new skills and techniques), whereas at high perceived competence, ego orientation was positively related to this variable (Standage, Duda, & Ntoumanis, 2003). Intrinsic motivation to

know is a motivational regulation, not an emotion; however, the items for intrinsic motivation to know (e.g., “For the fun of discovering new skills/techiques”, “For the enjoyment of discovering new performance strategies”) mention fun and enjoyment, so may be similar to enjoyment. Therefore, the results from this study suggest that the relationship between ego orientation and emotions may be moderated by perceived competence.

Perceived competence has been considered as a moderator of ego orientation and anxiety and enjoyment (e.g., Hall & Kerr, 1999; Hodge, Allen, & Smellie, 2008); however, findings from these studies have been inconsistent. Indeed, at low perceived ability (i.e. scores more than one standard deviation below the mean), ego orientation was positively related to cognitive anxiety experienced by adolescent fencers 30 minutes before competition. Conversely, at high perceived ability (i.e. scores greater than one standard deviation above the mean), ego orientation was unrelated to this emotion (Hall & Kerr, 1997). However, the relationship between ego orientation and enjoyment was not moderated by perceived competence in samples of Masters (Hodge et al., 2008) or adolescent athletes (Morris & Kavussanu, 2009). These results (Hodge et al., 2008; Morris & Kavussanu, 2009) do not support perceived competence as a moderator of ego involvement and emotions.

Recently, researchers (Mouratidis et al., 2009) showed that the relationships between ego orientation and a range of emotions were moderated by perceived competence in school children participating in PE lessons. Ego orientation was positively related to pride at low, and unrelated at high, perceived competence. Also, ego orientation was positively related to anger, shame, and anxiety at high, and unrelated at low, perceived competence. However, these simple slopes are contrary to expected relationships (Jagacinski & Nicholls, 1984, Nicholls, 1984; Roberts, 1986), so are in need of replication. Also, there was no moderation for hope or shame; therefore, these

findings suggest that perceived competence may moderate the relationship between ego orientation and some emotions but not others.

The relationships between ego involvement and emotions may be moderated by perceived performance. Perceived competence differs from perceived performance in that the former is a general judgement of ability and the latter refers to performance on a given occasion. Perceptions of performance may influence ego-involved individuals' judgement of whether they achieved, or failed to achieve, their goal of outperforming their opponent on that occasion. Moreover, emotions experienced at specific points in competition may be more closely related to how an individual performed on a given occasion than their general perception of competence.

Perceived performance may moderate the relationships between ego involvement and positive emotions experienced during and after competition (see Jagacinski & Nicholls, 1984; Nicholls, 1984). Specifically, when perceived performance is high, ego involvement may be positively related to positive emotions because ego-involved individuals may believe they have achieved their goal of displaying competence when they perform better than their opponents. For example, those who are highly ego-involved may seek to outperform others more than those who have low ego involvement, and when the former perform well they may believe they are making progress towards this goal (which is an antecedent of happiness, Lazarus, 2000), so they experience happiness. Indeed, Jones et al. (2005) state that a high score for happiness may reflect feelings of joy, which is similar to enjoyment; therefore, joy and enjoyment may be similar to happiness. Conversely, ego involvement should be unrelated to positive emotions at low perceived performance because these individuals may think they have not achieved their goal of displaying competence.

The link between ego involvement and negative emotions may also be moderated by perceived performance (Jagacinski & Nicholls, 1984; Nicholls, 1984; Roberts, 1986). For example, at high perceived performance, ego involvement may be unrelated to negative emotions because

these individuals have shown their competence. In contrast, at low perceived performance, ego-involved individuals may experience high negative emotions because they have displayed incompetence by performing worse than others. Indeed, those who are highly ego involved may seek to display their superiority and when they think they have performed poorly they may believe they have failed to make progress towards this goal (which is a reason for experiencing dejection, Jones et al., 2005), so they feel dejected. As yet, no researchers have investigated perceived performance as a moderator of ego involvement and emotions during or after competition.

Outcome of the match may also moderate the link between ego involvement and emotions. Ego-involved athletes will seek to demonstrate ability relative to others (Nicholls, 1984, 1989); another source that may inform these individuals whether they have achieved this goal is the outcome of the match. Therefore, ego involvement may be differently related to emotions experienced after the match when athletes win or lose. Ego-involved athletes may feel high positive emotions when they win and might not experience positive emotions when they lose. Moreover, ego involvement may be positively related to negative emotions when athletes lose the match, and might be unrelated to these emotions when they win. However, no researchers have considered outcome as a moderator of ego involvement and a number of emotions.

The results discussed above suggest that the relationship between ego involvement and emotions may be different based on individuals' perceived competence, perceived performance, or the outcome of the match. As yet, researchers have not examined perceived performance or outcome as moderators of these relationships. Examining these moderators may help researchers to understand the link between ego involvement and emotions.

Summary

Understanding how achievement motivation is related to emotions experienced in sport competition may help researchers make recommendations to athletes regarding how to create a

more fulfilling experience in competitive sport settings. Goal involvement, which is a state in which ability is construed as effortful accomplishment or capacity (Nicholls, 1989), might have implications for expectancies of success and the subjective experience of the task (Jagacinski & Nicholls, 1984; Nicholls, 1984, 1989). Indeed, results generally show that task orientation is positively related to positive emotions and negatively associated with negative emotions (e.g., Mouratidis et al., 2009; van de Pol & Kavussanu, 2011). Ego orientation is often unrelated to emotions (e.g., van de Pol & Kavussanu, 2011; Vealey & Campbell, 1988), but these relationships may be revealed if a range of emotions are examined (Mouratidis et al., 2009). Furthermore, with the exception of anxiety (Hall & Kerr, 1997; Hall et al., 1998), emotions experienced before, during, and after a competition have not been considered as outcomes of goal involvement.

Achievement goals have been related to performance (e.g., Cervelló et al., 2007; Utman, 1997). Specifically, task orientation has been positively related to perceived performance (Cervelló et al., 2007; van de Pol & Kavussanu, 2011), but no researchers have experimentally tested the effect of goal involvement on perceived performance. Also, a meta-analysis (Utman, 1997) showed that learning groups had higher actual performance on academic tasks than performance goal groups. However, research has shown no difference in actual performance on sports tasks between mastery and competitive groups (Giannini et al., 1988) or mastery-approach and performance-approach groups (Elliot et al., 2006; Kavussanu et al., 2009; Ntoumanis et al., 2009). Therefore, the effect of goal involvement on actual performance on sports based tasks is not clear.

Possible mechanisms to explain the relationships between task involvement and emotions have received very little attention in the literature. Research in adult team sport athletes (Adie et al., 2008) and adolescent football players (Adie et al., 2010) showed that challenge appraisal mediated the link between a mastery-approach goal and positive affect over two studies. Moreover, the relationships between task involvement and a range of emotions may be mediated by perceived

performance (e.g., Cervelló et al., 2007; Uphill & Jones, 2007). However, no researchers have examined whether mediating variables, such as cognitive appraisals or perceived performance, explain the link between task involvement and emotions. Examining mediators of these relationships may help researchers understand why these variables are linked and identify additional variables that may have a beneficial impact on emotions.

The relationship between ego involvement and emotions may be moderated by perceived competence (Jagacinski & Nicholls, 1984; Nicholls, 1984). Some studies (Hall & Kerr, 1997; Standage et al., 2003) have found support for this moderation. However, perceived competence has not consistently moderated the link between ego orientation and enjoyment (e.g., Hodge et al., 2008; Morris & Kavussanu, 2009). Furthermore, no researchers have considered whether perceived competence will moderate the relationship between ego involvement and emotions before competition, or whether other moderators, i.e. perceived performance and outcome of the match, reveal relationships between ego involvement and emotions during and after competition. Examining potential moderators is important because it may show the conditions under which ego involvement is related to emotions.

Thesis and Study Purposes

This thesis had three purposes. First, I examined whether goal involvement was related to emotions before, during, and after competition and performance during competition. Second, I investigated mediators of the relationship between task involvement and emotions. Third, I examined moderators of the links between ego involvement and emotions.

Study 1 had two purposes. The first purpose was to investigate whether task involvement was related to excitement, hope, concentration disruption, worry, and somatic anxiety experienced

before competition[3] and the extent to which these relationships were mediated by challenge and threat appraisals. The second purpose was to examine whether the relationships between ego involvement and emotions were moderated by perceived competence.

The second study extended the first study by investigating the relationships between goal involvement and emotions in a different timeframe. Also, the extent that perceived performance explained why, and under what conditions, goal involvement was related to emotions was also considered. Therefore, the purpose of Study 2 was to examine whether the links between goal involvement and happiness, excitement, dejection, and anxiety felt during competition were mediated and moderated by perceived performance.

The third study built upon the first and second study by again considering emotions at a different time point in competition and also investigating another possible moderator of ego involvement and emotions. Thus, this study had two purposes: Purpose one was to investigate whether task involvement during a match was related to happiness, pride, hope, dejection, and shame experienced after the match and the extent to which these relationships were mediated by perceived performance. Purpose two was to examine whether the links between ego involvement and emotions were moderated by perceived performance and match outcome.

The fourth and final study experimentally tested some relationships found in Studies 1, 2, and 3 and had two purposes: First, I experimentally investigated the effect of goal involvement on excitement and anxiety experienced before, and happiness and dejection felt after, competition. Second, I sought to examine the effect of goal involvement on perceived and actual performance.

[3] The team trials setting considered in this study is not a typical competition in the sense that one person or team wins and others lose. However, it could be considered a competitive environment because participants were being compared to each other by coaches and team captains, so were competing for a place on the team.

References

Adie, J. W., Duda, J. L., & Ntoumanis, N. (2008). Achievement goals, competition appraisals, and the psychological and emotional welfare of sport participants. *Journal of Sport & Exercise Psychology, 30*, 302-322.

Adie, J. W., Duda, J. L., & Ntoumanis, N. (2010). Achievement goals, competition appraisals, and the well- and ill-being of elite youth soccer players over two competitive seasons. *Journal of Sport & Exercise Psychology, 32*, 555-579.

Allen, M. S., Jones, M. V., & Sheffield, D. (2009). Attribution, emotion, and collective efficacy in sports teams. *Group Dynamics: Theory, Research, and Practice, 13,* 205-217. DOI: 10.1037/a0015149

Allen, M. S., Jones, M. V., & Sheffield, D. (2011). Are the causes assigned to unsatisfactory performance related to the intensity of emotions experienced after competition? *Sport and Exercise Psychology Review, 7*, 3-10.

Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology, 84,* 261-271.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51,* 1173-1182.

Biddle, S. J. H., Wang, C. K. J., Kavussanu, M., & Spray, C. M. (2003). Correlates of achievement goal orientations in physical activity: A systematic review of research. *European Journal of Sport Science, 3,* 1-20.

Burton, D. (1998). Measuring competitive state anxiety. In J. L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 129-148). Morgantown, WV: Fitness Information Technology, Inc.

Cerin, E. (2003). Anxiety versus fundamental emotions as predictors of perceived functionality of pre-competitive emotional states, threat, and challenge in individual sports. *Journal of Applied Sport Psychology, 15*, 223-238.

Cervelló, E., Rosa, F. J. S., Calvo, T. G., Jimenez, R., & Iglesias, D. (2007). Young tennis players' competitive task involvement and performance: The role of goal orientations, contextual motivational climate, and coach-initiated motivational climate. *Journal of Applied Sport Psychology, 19,* 304-321. DOI: 10.1080/10413200701329134

Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist, 41,* 1040-1048.

Elliot, A. J. (1999). Approach and avoidance motivation and achievement goals. *Educational Psychologist*, *34*, 169-189.

Elliot, A. J., Cury, F., Fryer, J. W., & Huguet, P. (2006). Achievement goals, self-handicapping, and performance attainment: A meditational analysis. *Journal of Sport & Exercise Psychology*, *28*, 344-361.

Gernigon, C., d'Arripe-Longueville, F., Delignières, D., & Ninot, G. (2004). A dynamical systems perspective on goal involvement states in sport. *Journal of Sport & Exercise Psychology*, *26*, 572-596.

Giannini, J. M., Weinberg, R. S., & Jackson, A. J. (1988). The effects of mastery, competitive, and cooperative goals on the performance of simple and complex basketball skills. *Journal of Sport & Exercise Psychology, 10*, 408-417.

Graham, T. R., Kowalski, K. C., & Crocker, P. R. E. (2002). The contributions of goal characteristics and causal attributions to emotional experience in youth sport participants. *Psychology of Sport and Exercise, 3,* 273-291. DOI: 10.1016/S1469-0292(01)00006-1

Hall, H. K. & Kerr, A. W. (1997). Motivational antecedents of precompetitive anxiety in youth sport. *The Sport Psychologist, 11,* 24-42.

Hall, H. K., Kerr, A. W., & Matthews, J. (1998). Precompetitive anxiety in sport: The contribution of achievement goals and perfectionism. *Journal of Sport & Exercise Psychology, 20*, 194-217.

Hodge, K., Allen, J. B., & Smellie, L. (2008). Motivation in Masters sport: Achievement and social goals. *Psychology of Sport and Exercise, 9,* 157-176. DOI:10.1016/j.psychsport.2007.03.002

Jagacinski, C. M., & Nicholls, J. G. (1984). Conceptions of ability and related affects in task involvement and ego involvement. *Journal of Educational Psychology, 76*, 909-919.

Jones, M. V., Lane, A. M., Bray, S. R., Uphill, M., & Catlin, J. (2005). Development and validation of the Sport Emotion Questionnaire. *Journal of Sport & Exercise Psychology, 27,* 407-431.

Kavussanu, M., Morris, R. L., & Ring, C. (2009). The effects of achievement goals on performance, enjoyment, and practice of a novel motor task. *Journal of Sports Sciences, 27,* 1281-1292.

Kerr, J. H., & Males, J. R. (2010). The experience of losing: Qualitative study of elite lacrosse athletes and team performance at a world championships. *Psychology of Sport and Exercise, 11*, 394-401. DOI:10.1016/j.psychsport.2010.04.014

Kerr, J. H., Wilson, G. V., Bowling, A., & Sheahan, J. P. (2005). Game outcome and elite Japanese women's field hockey player's experience of emotions and stress. *Psychology of Sport and Exercise, 6,* 251-263. DOI:10.1016/j.psychsport.2003.11.002

Lane, A. M., & Terry, P. C. (2000). The nature of mood: Development of a conceptual model with a focus on depression. *Journal of Applied Sport Psychology, 12,* 16-33.

Lazarus, R. S. (1991). *Emotion and adaptation.* New York: Oxford University Press.

Lazarus, R. S. (2000). How emotions influence performance in competitive sports. *The Sport Psychologist, 14,* 229-252.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York, New York: Springer Publishing Inc.

Martinent, G., Campo, M., & Ferrand, C. (2012). A descriptive study of emotional process during competition: Nature, frequency, direction, duration and co-occurrence of discrete emotions. *Psychology of Sport and Exercise, 13*, 142-151. DOI:10.1016/j.psychsport.2011.10.006

Morris, R. L., & Kavussanu, M. (2009). The role of approach-avoidance versus task and ego goals in enjoyment and cognitive anxiety in youth sport. *International Journal of Sport and Exercise Psychology, 7,* 185-202.

Mouratidis, A., Vansteenkiste, M., Lens, W., & Auweele, Y. V. (2009). Beyond positive and negative affect: Achievement goals and discrete emotions in the elementary physical education classroom. *Psychology of Sport and Exercise, 10*, 336-343. DOI:10.1016/j.psychsport.2008.11.004

Nicholls, A. R., Hemmings, B., & Clough, P. J. (2010). Stress appraisals, emotions, and coping among international adolescent golfers. *Scandinavian Journal of Medicine & Science in Sports, 20,* 346-355. DOI: 10.1111/j.1600-0838.2009.00894.x

Nicholls, J. G. (1984). Achievement motivation: Conceptions of ability, subjective experience, task choice, and performance. *Psychological Review, 91,* 328-346.

Nicholls, J. G. (1989). *The competitive ethos and democratic education*. Cambridge, Massachusetts: Harvard University Press.

Ntoumanis, N., & Biddle, S. J. H. (1999). Affect and achievement goals in physical activity: A meta-analysis. *Scandinavian Journal of Medicine & Science in Sports, 9,* 315-332.

Ntoumanis, N., Thogersen-Ntoumani, C., & Smith, A. L. (2009). Achievement goals, self-handicapping, and performance: A 2 x 2 achievement goal perspective. *Journal of Sports Sciences, 27,* 1471-1482.

Papaioannou, A., & Kouli, O. (1999). The effect of task structure, perceived motivational climate and goal orientations on students' task involvement and anxiety. *Journal of Applied Sport Psychology, 11*, 51-71.

Papaioannou, A. G., Zourbanos, N., Krommidas, C., & Ampatzoglou, G. (2012). The place of achievement goals in the social context of sport: A comparison of Nicholls' and Elliot's models. In G. C. Roberts and Treasure (Eds), *Advances in motivation in sport & exercise*, 3rd ed. (pp. 59-90). Champaign, IL: Human Kinetics.

Roberts, G. C. (1986). The Perception of Stress: A Potential Source and Its Development. In M.R.Weiss & D. Gould (Eds.), *Sport for Children and Youths* (pp. 119-127). Champaign, IL: Human Kinetics Publishers Inc.

Rosenberg, E. L. (1998). Levels of analysis and organization of affect. *Review of General Psychology, 2,* 247-270.

Sève, C., Ria, L., Poizat, G., Saury, J., & Durand, M. (2007). Performance-induced emotions experienced during high-stakes table tennis matches. *Psychology of Sport and Exercise, 8*, 25-46. DOI:10.1016/j.psychsport.2006.01.004

Smith, J. M. J., & Harwood, C. G. (2002). The transiency of goal involvement states within match-play: A case study of an elite player. *Journal of Sport Sciences, 20*, 71-72.

Smith, R. E., Smoll, F. L., & Passer, M. W. (2002). Sport performance anxiety in young athletes. In F. L. Smoll & R. E. Smith (Eds.), *Children and youth in sport: A biopsychosocial perspective* (pp. 501-536). Dubuque, IA: Kendall/Hunt Publishing Company.

Standage, M., Duda, J. L., & Ntoumanis, N. (2003). Predicting motivation regulations in physical education: The interplay between dispositional goal orientations, motivational climate, and perceived competence. *Journal of Sport Sciences, 21*, 631-647. DOI: 10.1080/0264041031000101962

Standage, M., Duda, J. L., & Pensgaard, A. M. (2005). The effect of competitive outcome and task-involving, ego-involving, and cooperative structures on the psychological well-being of individuals engaged in a co-ordination task: A self-determination approach. *Motivation & Emotion, 29,* 41-68.

Tauer, J. M., & Harackiewicz, J. M. (2004). The effects of cooperation and competition on intrinsic motivation and performance. *Journal of Personality & Social Psychology, 86*, 849-861.

Uphill, M. A., & Jones, M. V. (2007). Antecedents of emotions in elite athletes: A cognitive motivational relational theory perspective. *Research Quarterly for Exercise and Sport, 78,* 79-89.

Utman, C. H. (1997). Performance effects of motivational state: A meta-analysis. *Personality & Social Psychology Review, 1*, 170-182.

van de Pol, P. K. C., & Kavussanu, M. (2011). Achievement goals and motivational responses in tennis: Does the context matter? *Psychology of Sport and Exercise, 12,* 176-183. DOI: 10.1016/j.psychsport.2010.09.005

van de Pol, P. K. C., & Kavussanu, M. (2012). Achievement motivation across training and competition in individual and team sports. *Sport, Exercise, and Performance Psychology*. DOI: 10.1037/a0025967

van de Pol, P.K.C., Kavussanu, M., & Ring, C. (2012). Goal orientations, perceived motivational climate, and motivational responses in football: A comparison between training and

competition contexts. *Psychology of Sport and Exercise, 13,* 491-499. DOI:10.1016/j.psychsport.2011.12.002

Vansteenkiste, M., Matos, L., Lens, W., & Soenens, B. (2007). Understanding the impact of intrinsic versus extrinsic goal framing on exercise performance: The conflicting role of task and ego involvement. *Psychology of Sport and Exercise, 8,* 771-794. DOI: 10.1016/j.psychsport.2006.04.006

Vealey, R. S., & Campbell J. L. (1988). Achievement goals of adolescent figure skaters: Impact on self-confidence, anxiety, and performance. *Journal of Adolescent Research, 3*, 227-243.

Vlachopoulos, S., Biddle, S., & Fox, K. (1997). Determinants of emotion in children's physical activity: A test of goal perspectives and attribution theories. *Pediatric Exercise Science, 9*, 65-79.

Williams, L. (1998). Contextual influences and goal perspectives among female youth sport participants. *Research Quarterly for Exercise and Sport, 69,* 47-57.

CHAPTER 2

Study 1: Trial by Fire: Achievement Goals and Emotions Before Team Trials

Abstract

This study investigated whether task involvement was related to emotions experienced before competition and the extent to which these relationships were mediated by challenge and threat appraisals. Also, we examined whether the links between ego involvement and emotions were moderated by perceived competence. Before a team sport trial, undergraduate students ($N = 360$) completed a multi-section questionnaire assessing achievement goals, challenge and threat appraisals, perceived competence, hope, excitement, concentration disruption, worry, and somatic anxiety. Results showed that task involvement was positively related to excitement and hope and negatively associated with concentration disruption. The link between task involvement and hope was mediated by challenge and threat appraisals, and the task involvement and excitement relationship was mediated by challenge appraisals. Also, perceived competence moderated the link between ego involvement and hope; however, ego involvement was unrelated to this emotion at high and low perceived competence. Our findings suggest that task involvement may influence positive emotions through cognitive appraisals.

Keywords: competition, mediation, moderation, pre-competition

Introduction

For over twenty years researchers have investigated Achievement Goal Theory (Ames, 1992; Nicholls, 1989) in an attempt to understand achievement motivation in sport. At the centre of this theory is the assumption that individuals want to develop or demonstrate competence when participating in achievement contexts, such as sport competition. However, depending on whether the undifferentiated or differentiated conception of ability is employed, competence, or ability, is viewed as effortful accomplishment or capacity (Nicholls, 1989). When the undifferentiated conception of ability is used, individuals utilize self-referenced criteria to judge their competence and feel successful when they improve or master a task. When the differentiated conception of ability is employed, people utilize other-referenced criteria when assessing their competence and feel successful when they outperform others, or perform as well as others with less effort (Nicholls, 1984, 1989).

The two conceptions of ability are embedded within two achievement goals: task and ego involvement. When task-involved, an individual's goal is to improve or master a task, whereas when they are ego-involved their goal is to establish superiority by doing better than others. Individuals can fluctuate between the two states of involvement. Also, the tendency to be task or ego involved is known as task and ego orientation. Indeed, Nicholls (1989, p. 95) stated that ""task orientation" and "ego orientation" are applied to individual differences in proneness to the two types of involvement, and "task involvement" and "ego involvement" refer to the states that people experience in a given situation".

Achievement Goals and Emotions

Goal involvement may influence the emotions individuals' experience. Task-involved individuals may expect to exert effort, which will demonstrate high ability (Jagacinski & Nicholls, 1984), and view task mastery as an end in itself, so the activity should be intrinsically satisfying (Nicholls, 1989); thus, these individuals may experience positive

emotions in achievement settings. Also, task-oriented individuals may not perceive sport competition as highly stressful (Roberts, 1986), so these people may be less likely to experience negative emotions.

The emotions ego-involved individuals experience may depend on whether they think they will display ability relative to others (Jagacinski & Nicholls, 1984; Nicholls, 1984; Roberts, 1986). Specifically, ego-involved individuals with low perceived ability may think they will perform badly, so they might experience negative affect and anxiety (Jagacinski & Nicholls, 1984; Nicholls, 1984; Roberts, 1986). Conversely, those with high perceived ability may expect to perform well, and might be less likely to feel anxiety or negative affect (Jagacinski & Nicholls, 1984; Roberts, 1986). Therefore, perceived ability, or competence, may moderate the relationships between ego involvement and negative emotions. Moderation may also be observed for positive emotions. Indeed, ego-involved individuals felt higher pride when they experienced high, rather than low, competence (Jagacinski & Nicholls, 1984). So, at low perceived competence, ego involvement may be unrelated to positive emotions, whereas at high perceived competence, ego involvement may be positively associated with positive emotions. Thus, the links between ego involvement and emotions may be moderated by perceived competence (Jagacinski & Nicholls, 1984; Nicholls, 1984; Roberts, 1986).

Very few researchers have examined the relationships between goal involvement and positive emotions experienced before competition. An exception is an experimental study which showed that undergraduate students in the ego group reported higher pre-competitive excitement before a competitive agility task than those in task and control groups (Dewar, Kavussanu, & Ring, 2012). However, two meta-analyses (Biddle, Wang, Kavussanu, & Spray, 2003; Ntoumanis & Biddle, 1999) showed that task orientation was positively related to positive affective outcomes (e.g., satisfaction and positive affect). Also, recent research in

adult males (Dewar & Kavussanu, 2011) and team sport athletes (Dewar & Kavussanu, *in press*) showed that task involvement was positively associated with excitement during a competitive round of golf and hope after team sport competition, respectively (Dewar & Kavussanu, 2011; *in press*). Ego orientation and involvement were unrelated to affective outcomes or emotions in these studies (Biddle et al., 2003; Dewar & Kavussanu, 2011, *in press*; Ntoumanis & Biddle, 1999). Therefore, research has shown relationships between goal involvement and positive emotions during and after competition, but no cross-sectional research has examined these associations before competition.

Researchers who have investigated goal orientation or involvement and emotions before competition have predominantly focused on anxiety. This emotion can be separated into cognitive anxiety, which is "characterized by negative appraisals of situation and self, worry, and aversive mental imagery" (Smith, Smoll, & Passer, 2002, p. 504), and somatic anxiety, which is "reflected in increased physiological arousal as typified by rapid heart rate, shortness of breath, and increased muscle tension" (Smith et al., 2002, p. 504). However, research investigating achievement goals as predictors of cognitive and somatic anxiety, both measured 30 minutes before competition, has revealed mixed findings (Hall & Kerr, 1997; Hall, Kerr, & Matthews, 1998). Specifically, in adolescent fencers, task orientation was unrelated to cognitive, and negatively associated with somatic, anxiety, and ego orientation was unrelated to both anxiety subscales (Hall & Kerr, 1997). Conversely, ego orientation was positively related to cognitive, and unrelated to somatic, anxiety, and task orientation was unrelated to both types of anxiety in adolescent cross-country athletes (Hall et al., 1998). The researchers (Hall & Kerr, 1997; Hall et al., 1998) use the term task orientation; however, they measured what will make athletes feel successful in the upcoming competition, so we suggest that this is similar to goal involvement. Overall, the findings for goal involvement and cognitive and somatic anxiety are inconsistent.

Researchers (e.g., Smith, Smoll, Cumming, & Grossbard, 2006) have shown that cognitive anxiety is made up of two aspects: concentration disruption, defined as "concentration problems in which distractions prevent appropriate attentional focus" (Burton, 1998, p. 131) and worry, which is negative thoughts about competition (see Burton, 1998). Measuring these two subscales of cognitive anxiety may be a more accurate way to assess this construct and might reveal relationships with goal involvement. Indeed, task-involved athletes may seek to exert effort and improve, so might concentrate on the task at hand and be less likely to have their concentration disrupted. However, thinking about participating in competition may prime cognitive and somatic anxiety (Burton, 1998), so task involvement may not decrease worry or somatic anxiety, which may be experienced when athletes think about the upcoming competition. This suggestion is supported by research in adolescent athletes, which showed that task orientation was negatively related to concentration disruption and unrelated to worry generally associated with sport; ego orientation was unrelated to both anxiety subscales (Morris & Kavussanu, 2009). Also, during a competitive round of golf, task involvement was unrelated to anxiety (Dewar & Kavussanu, 2011), which was measured with items that are similar to worry and somatic anxiety. Therefore, task involvement may be related to concentration disruption[1] but not worry or somatic anxiety (Dewar & Kavussanu, 2011; Morris & Kavussanu, 2009). As yet, no researchers have examined these relationships before a competition.

Task Involvement and Emotions: Mediation

We may discover a possible reason why task involvement is related to emotions before competition if we consider cognitive appraisals as mediators of this relationship. A mediator can be described as a mechanism through which the independent variable influences the

[1] Although one could argue that concentration disruption is a mental consequence of cognitive anxiety and not an emotion (Burton, 1998), we believe investigating this subscale may add to our understanding of the relationship between task involvement and anxiety. Also, measuring worry and somatic anxiety, which are similar to cognitive and somatic anxiety, allows consistency with previous research (Hall & Kerr, 1997; Hall et al., 1998).

dependent variable (Baron & Kenny, 1986). Task involvement may be positively related to challenge appraisal, which is defined as a "focus on the potential for gain or growth inherent in an encounter" (Lazarus & Folkman, 1984, p. 33), because task-involved individuals may think sport competition is an opportunity to improve and gain competence, so appraise it as a challenge. Individuals who are task-involved may be less likely to make a threat appraisal, which "concerns harms or losses that have not yet taken place but are anticipated" (Lazarus & Folkman, 1984, p. 32), because they seek to improve. Also, task-oriented individuals may be unlikely to perceive the competition as stressful (Roberts, 1986), so they may be less likely to anticipate experiencing harm or loss. Therefore, we expect task involvement to be negatively related to threat appraisal. Given that ego-involved individuals' expectation of achieving their goal of outperforming others may depend on their perceived ability (Jagacinski & Nicholls, 1984), we do not expect ego involvement alone to be related to challenge or threat appraisal.

Cognitive appraisals may also be associated with emotions (Lazarus & Folkman, 1984). Indeed, challenge appraisal reflects a positive expectation for an event, so this appraisal is linked with positive emotions, such as hope and excitement. Conversely, those who appraise the competition as a threat may have a negative expectation for the event, so they might experience negative emotions, such as anxiety and worry (Lazarus & Folkman, 1984). Furthermore, challenge appraisal positively predicted excitement and threat appraisal positively predicted anxiety in athletes who compete in individual sports (Cerin, 2003).

Although very few researchers have examined the relationships between achievement goals, challenge and threat appraisals, and emotions, recent research in young adult athletes (Adie, Duda, Ntoumanis, 2008) and adolescent football players (Adie, Duda, Ntoumanis, 2010) support the suggested mediation. Results showed that a mastery-approach goal (similar, though not identical to task involvement, see Papaioannou, Zourbanos, Krommidas,

& Ampatzoglou, 2012) was positively associated with challenge appraisal, which was in turn positively related to positive affect. Also, a mastery-approach goal was negatively associated with threat appraisal, which was positively related to negative affect (Adie et al., 2008). Adie et al. (2010) examined achievement goals, cognitive appraisals, and affect experienced by adolescent footballers five times throughout two seasons. Findings revealed that within-person changes in mastery-approach goal positively predicted challenge appraisal, which predicted positive affect positively and negative affect negatively (Adie et al., 2010). Thus, challenge and threat appraisals may be mechanisms that explain why task involvement is related to emotions before competition.

Ego Involvement and Emotions: Moderation

The relationship between ego involvement and emotions may be moderated by perceived competence (see Jagacinski & Nicholls, 1984; Nicholls, 1984; Roberts, 1986). A moderating variable influences the direction and strength of the link between the independent variable and the dependent variable, meaning that this relationship is different at high and low values of the moderator (Baron & Kenny, 1986). Research in school children involved in physical education showed that when perceived competence was high, ego orientation was positively related to intrinsic motivation to know (e.g., individuals thought that discovering new skills and techniques was fun), and when perception of competence was low, ego orientation was unrelated to this variable (Standage, Duda, & Ntoumanis, 2003). Although intrinsic motivation to know is not an emotion, words used in the items (e.g., "For the fun of discovering new skills/techiques", "For the enjoyment of discovering new performance strategies") are similar to enjoyment. Also, research in adolescent fencers showed that for individuals with high perceived ability (i.e., scores more than one standard deviation above the mean), ego orientation was unrelated to cognitive anxiety. Conversely, for athletes with low perceived ability (i.e., scores more than one standard deviation below the mean), ego

orientation was positively related to cognitive anxiety (Hall & Kerr, 1997). Therefore, examining perceived competence as a moderator of the links between ego involvement and emotions experienced before competition may shed light on these relationships.

The Present Study

To date, very few researchers have examined the relationships between goal involvement and positive emotions before competition and no researchers have investigated whether cognitive appraisals mediate the relationships between task involvement and positive and negative emotions experienced before competition. Also, perceived competence has not often been examined as a moderator of the relationships between ego orientation and emotions (Morris & Kavussanu, 2009; Standage et al., 2003) and has not been investigated as a moderator of the link between ego involvement and emotions. Therefore, we sought to extend the literature by examining these issues. Emotions that are particularly relevant to our study purposes are excitement, hope (Lazarus & Folkman, 1984), concentration disruption, worry, and somatic anxiety (Morris & Kavussanu, 2009; Smith et al., 2006); thus, we will examine these emotions.

Our study had two purposes. First, we examined whether task involvement would be related to emotions experienced before competition and the extent to which these relationships were mediated by challenge and threat appraisals. We hypothesised that task involvement would be positively related to excitement and hope (Dewar & Kavussanu, 2011, *in press*), negatively associated with concentration disruption, and unrelated to worry and somatic anxiety (Dewar & Kavussanu, 2011; Morris & Kavussanu, 2009). Moreover, we hypothesised that task involvement would be positively related to challenge appraisal, which would be positively associated with excitement and hope, and unrelated to concentration disruption, worry, and somatic anxiety. We also suggested that task involvement would be negatively related to threat appraisal, which would be unrelated to positive emotions and

positively associated with all three anxiety subscales (Adie et al., 2008, 2010; Lazarus & Folkman, 1984).

The second purpose of our study was to assess whether the relationships between ego involvement and emotions were moderated by perceived competence; we expected this moderation for all emotions. Specifically, we hypothesised that ego involvement would be positively related to excitement and hope at high perceived competence, and unrelated to these emotions at low perceived competence (Standage et al., 2003). Also, we suggested that ego involvement would be negatively associated with all anxiety subscales at high perceived competence, and positively related to these measures at low perceived competence (Jagacinski & Nicholls, 1984; Nicholls, 1984, 1989; Roberts, 1986).

We examined these study purposes before a university sport team trial, which was an appropriate and interesting setting for a number of reasons. First, athletes could be either task involved (e.g., their goal is improve or master a skill) or ego involved (e.g., seek to outperform others) before the trial. Second, individuals chose to attend the trial, suggesting that being part of the team they are trying out for is an important goal. Given that they were seeking to achieve an important goal, the setting may have been perceived as stressful, and athletes may have appraised the situation as a challenge or a threat (Lazarus & Folkman, 1984); therefore, they might experience positive and negative emotions before the trial. Thus, the variables we were interested in examining were likely to be experienced in this situation. Third, we will extend the literature by shedding light on the emotions experienced in sport team trials, which is a context few researchers have considered. Examining goal involvement and cognitive appraisals before the trials is important because it will show whether these variables are related to positive and negative emotions; this knowledge might allow researchers to make recommendations so athletes are more likely to experience positive emotions before competition.

The trials were not traditional competitions because they didn't finish with an individual or team winning or losing. However, athletes who attended the trial competed against each other for a place on a team and only the best athletes were selected. Also, all trials involved game situations, which given that a place on the team was at stake, were likely to have been highly competitive. Thus, we believe the trials could be classed as a competitive environment.

Method

Participants

Three hundred and sixty undergraduate students (137 men, 223 women, *M* age = 18.86 years, *SD* = 1.25) participated in the study. Participants were attending a university cricket (7.7%), football (9.1%), hockey (17.8%), netball (39.9%), or tennis (25.5%) trial and had played this sport for less than three years (5.3%), four to seven years (22.5%), eight to eleven years (55.1%), or twelve to sixteen years (17.1%). The highest level participants had competed at was international (1.0%), national (7.1%), county (48.3%), club (31.2%), or school (12.4%).

Procedure

Upon receiving ethical approval from the university ethics committee, the principal investigator emailed team captains from six teams to ascertain whether they would allow the students to be approached at their team's trial. Five team captains granted access to the trialists. The trials lasted between two and six hours, involved a sport specific warm up (for cricket, football, and tennis) or an approximately 20 minute run (for hockey and netball), sport specific drills, and games with other trialists and existing members of the team. These sessions were run by team captains but coaches were also present.

The principal investigator attended trials during freshers week 2009 and 2011 and asked students, individually, if they were interested in taking part in a research project

investigating motivation and emotions. Those who agreed to take part were told that: participation in the study would have no effect on the conduct or outcome of the trial; there are no right or wrong answers to the questions asked; they could withdraw from the research at any time; and their responses would be kept strictly confidential. Participants were also asked to read all questions carefully and provide honest answers. Less than 30 minutes before the trial began, participants provided informed consent, spent approximately 10 minutes completing the questionnaire on their own, and then participated in the trial. Measures used in the questionnaire are described below and shown in full in Appendix 1a-g.

Measures

Goal involvement. We measured task and ego involvement before the trial by adapting the Perception of Success Questionnaire (POSQ; Roberts, Treasure, & Balague, 1998), which was similar to previous research (Williams, 1998). We asked participants to think about what will make them feel most successful in the forthcoming trial and then presented the stem "I will feel successful if…" before six items measuring task involvement (e.g., "I show clear personal improvement", "I master something I couldn't do before") and another six items assessing ego involvement (e.g., "I am the best", "I am clearly superior")[2]. Participants selected responses from a 5-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (5). The POSQ has shown construct and concurrent validity and high internal reliability scores of .82 and .87 for task and ego orientation (Roberts et al., 1998). For all measures, we computed the mean for each subscale used this value in the analysis.

Cognitive appraisals. We assessed how students appraised the situation by modifying a measure of cognitive appraisal of sport competition developed by Adie et al. (2008). Participants were asked to think how they perceived the forthcoming trial and respond to five

[2] We use the terms "task involvement" and "ego involvement" to refer to achievement goals adopted before competition. Although this is not entirely consistent with Nicholls' (1989) definition of goal involvement, we assessed what they expect will make them feel successful in a specific competition, which is similar to goal involvement.

items measuring challenge appraisal (e.g., "I view the trial as a positive challenge", "I look forward to being challenged in the forthcoming trial") and another five items assessing threat appraisal (e.g., "I think that the trial will be threatening to me", "I view the trial as a threat") using a 7-point Likert scale with anchors of *not at all true of me* (1) and *very true of me* (7). This scale has shown predictive validity and good internal reliability scores for challenge (.78) and threat (.73) subscales (Adie et al., 2008). We conducted exploratory factor analysis, which revealed two factors that accounted for 62.1% of variance. All challenge items loaded on a single factor, with factor loadings ranging from .53 to .80, and all threat items on another factor, with loadings ranging from .59 to .77.

Perceived competence. A subscale of the Intrinsic Motivation Inventory (McAuley, Duncan, Tammen, 1989) was used to assess perceived competence. Participants were asked to think generally about their ability in their sport. Then, six items (e.g., "I think I am pretty good at this sport", "I am pretty skilled at this sport") were used to measure this variable and participants responded on a 7-point Likert scale ranging from *not at all true of me* (1) to *very true of me* (7). Perceived competence has shown factorial validity and good reliability (.80) in a sample of undergraduate students (McAuley et al., 1989).

Hope. We modified the Achievement Emotion Questionnaire (Pekrun, Goetz, & Perry, 2005) instructions and items for test hope to assess the extent to which participants felt hope before the trial. Participants were told that the statements may or may not describe how they feel. The stem "At this moment..." was presented before the 8 items measuring hope (e.g., "I have great hope that my abilities will be sufficient", "I prepared for the trial with great hope and anticipation). Students responded on a Likert scale with anchors of *strongly disagree* (1) and *strongly agree* (5). Previous research (Pekrun, Goetz, Perry, Kramer, & Hochstadt, 2004) has supported the construct validity and revealed high internal reliability for this subscale (.80, Pekrun et al., 2005).

Excitement. Pre-trial excitement was measured using the Sport Emotion Questionnaire (Jones, Lane, Bray, Uphill, Catlin., 2005). The stem "I feel..." preceded four items (e.g., "exhilarated", "excited"). Participants indicated how intensely they felt the emotion, at that moment, in relation to the upcoming trial on a 5-point Likert scale with anchors of *not at all* (1) and *extremely* (5). Excitement has demonstrated construct validity (Jones et al., 2005) and shown good internal reliability (.72) when utilized before team sport competition (Allen, Jones, Sheffield, 2009).

Anxiety. The Sport Anxiety Scale-2 (Smith et al., 2006) was used to measure concentration disruption, worry, and somatic anxiety before the trial. Concentration disruption (e.g., "It is hard to concentrate on the trial", "I am losing focus on the trial"), worry (e.g., "I'm worrying that I will not play well", "I'm worrying that I will mess up during the trial"), and somatic anxiety (e.g., "My body feels tense", "My muscles feel shaky") were each measured with five items. Participants indicated how they felt at that moment on a 4-point Likert scale ranging from *not at all* (1) to *very much* (4). The subscales have shown construct and factorial validity as well as very good internal reliability with scores ranging from .84 to .89 (Smith et al., 2006).

Results

Preliminary Analysis

The number of missing values in the data set was examined before conducting the main analyses, which revealed that 1.5% of data points were missing. Given the low percentage of missing data, any method to replace these values is appropriate (Tabachnick & Fidell, 2001); therefore, we replaced the missing data points with the mean of the respective item. Assumptions of multivariate analysis were investigated using values of skewness and kurtosis, histograms, and q-q plots. All variables were normally distributed except task involvement and concentration disruption, which showed slight negative and positive skew,

respectively. Skewness was not excepted to be an issue because the statistical tests employed are robust to such deviations (Cohen, Cohen, West, & Aiken, 2003). All variables satisfied the assumption of homoscedasticity and showed no outliers when we checked Cook's statistic and Mahalanobis distance. Descriptive statistics, zero-order correlations, and alpha coefficients for all variables are shown in Table 2.1.

Task Involvement and Emotions

Our first study purpose was to examine whether task involvement was related to emotions before competition and whether these relationships were mediated by challenge and threat appraisals. We investigated this purpose using the four conditions of mediation outlined by LeBreton, Wu, and Bing (2009). Given that there is relatively little empirical evidence for the link between goal involvement and emotions before competition, we used a limited information technique, which in this case was regression; specifically, we employed the MEDIATE macro (Hayes & Preacher, 2011) because this method allowed us to examine multiple mediators and all four conditions of mediation in a single analysis. We also included ego involvement in the analysis as a covariate to control for any possible effects of this variable.

Table 2.1

Descriptive Statistics, Zero-Order Correlations and Alpha Coefficients (N = 360)

	Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10
1	Task Inv	4.17	0.86	(.92)									
2	Ego Inv	3.38	0.86	.11*	(.88)								
3	Challenge	4.93	0.94	.29***	.10	(.79)							
4	Threat	3.02	1.16	-.16**	.01	-.36***	(.83)						
5	Perc Comp	4.73	0.89	.10	.24***	.38***	-.18***	(.83)					
6	Hope	2.98	0.66	.18**	.13*	.63***	-.32**	.49***	(.85)				
7	Excitement	3.17	0.79	.21**	.04	.53***	-.18**	.25***	.50***	(.80)			
8	Conc Dis	1.44	0.51	-.15**	.03	-.25***	.33***	-.16**	-.26***	-.14**	(.85)		
9	Worry	2.30	0.74	-.09	-.06	-.21***	.51***	-.18***	-.40***	-.10	.44***	(.90)	
10	Somatic Anx	1.86	0.66	-.11**	-.11*	-.19***	.52***	-.12**	-.29***	-.06	.52***	.66***	(.87)
11	Sex	1.64	0.66	.05	-.18***	-.07	.17**	-.01	-.10	-.07	-.04	.16**	.11*

Note. Possible range for scores = 1 to 4 for concentration disruption, worry, and somatic anxiety; 1 to 5 for achievement goals and emotions; 1 to 7 for challenge and threat appraisal, and perceived competence. Sex is coded as 1 = male, 2 = female. Alpha coefficients are presented in the diagonal. Inv = Involvement; Perc Comp = Perceived Competence; Conc Dis = Concentration Disruption; Anx = Anxiety.
$^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

The first condition of mediation we examined was whether the independent variable was related to the dependent variable (LeBreton et al., 2009). We found that task involvement was positively related to hope, $B = 0.13$, $SE = .04$, $t(357) = 3.21$, $p < .001$, and excitement, $B = 0.19$, $SE = .05$, $t(357) = 3.94$, $p < .001$, negatively associated with concentration disruption, $B = -0.07$, $SE = .03$, $t(357) = -2.15$, $p = .032$, and unrelated to worry and somatic anxiety.

The second condition we assessed was whether the independent variable was associated with the mediators. Results showed that task involvement was positively related to challenge appraisal, $B = 0.31$, $SE = .06$, $t(357) = 5.58$, $p < .001$, and negatively associated with threat appraisal, $B = -0.21$, $SE = .07$, $t(357) = -3.03$, $p = .003$. The third condition set out by LeBreton et al. (2009) is that the mediators are related to the dependent variable while controlling for the independent variable. We found that challenge appraisal was positively related, $B = 0.41$, $SE = .03$, $t(355) = 12.81$, $p < .001$, and threat appraisal was negatively related, $B = -0.06$, $SE = .03$, $t(355) = -2.50$, $p = .013$, to hope. Challenge appraisal was also positively associated with excitement, $B = 0.44$, $SE = .04$, $t(355) = 10.40$, $p < .001$. Moreover, threat appraisal was positively related to concentration disruption $B = 0.12$, $SE = .02$, $t(355) = 4.93$, $p < .001$, worry, $B = 0.31$, $SE = .03$, $t(355) = 9.84$, $p < .001$, and somatic anxiety, $B = 0.29$, $SE = .03$, $t(355) = 10.33$, $p < .001$.

The fourth condition of mediation is that there is an indirect effect of the independent variable on the dependent variable through the mediating variables. Monte Carlo confidence intervals, which create random resamples from normal distributions with means and standard errors that use point estimates and standard errors from the paths of the indirect effect (Hayes & Preacher, 2011), were used to estimate the indirect effects in the mediation. This method is appropriate because it does not assume that the indirect effect is normal, an assumption which may not hold for the current data set given the non-normal distribution of task

involvement. We requested 5000 resamples to estimate the indirect effect of the mediation in the population and chose 95% confidence intervals. Although this analysis does not provide an exact p value, indirect effects (denoted by Θ) were significant at $p < .05$ when confidence intervals did not contain zero (Hayes & Preacher, 2011).

The indirect effects of task involvement on hope through challenge, Θ = 0.13, SE = .03, 95% CIs [08, .18], and threat, Θ = 0.01, SE = .03, 95% CIs [-.15, -.03], appraisal were significant. Also, task involvement influenced excitement through challenge, Θ = 0.13, SE = .03, 95% CIs [.08, .19], and threat, Θ = -0.002, SE = .03, 95% CIs [-.16, -.03], appraisal. However, there were no significant indirect effects for any anxiety subscale. Overall, the results supported the four conditions of mediation for the effects of task involvement on hope through challenge and threat appraisal and for task involvement on excitement through challenge appraisal.

Ego Involvement and Emotions

Our second study purpose was to examine whether the relationships between ego involvement and emotions were moderated by perceived competence. We investigated this purpose using Aiken and West's (1991) procedure for examining moderation, which employed moderated multiple regression analysis. First, we mean centred the variables by subtracting the mean for that variable from the individual scores, and then computed the interaction term by multiplying the two mean centred predictors. We entered task and ego involvement in Step 1 of the regression, perceived competence in Step 2, and the ego involvement by perceived competence interaction in Step 3. We explored significant interaction terms by plotting two simple slopes and testing whether they were significantly different from zero (Aiken & West, 1991). We plotted the interactions at two values (representing one *SD* above the mean and one *SD* below the mean) of ego involvement and perceived competence.

We found a significant ego involvement by perceived competence interaction on hope, $B = 0.08$, $SE = .04$, $t(355) = 2.12$, $p = .034$, $R^2 = .01$. However, ego involvement was unrelated to hope at low, $B = -0.06$, $t(355) = -1.31$, $p = .191$, and high, $B = 0.08$, $t(355) = 1.48$, $p = .140$, perceived competence. No other significant ego involvement by perceived competence interactions were found. We also examined perceived competence as a moderator of the relationship between ego involvement and both challenge and threat appraisals; however, these interactions were not significant.

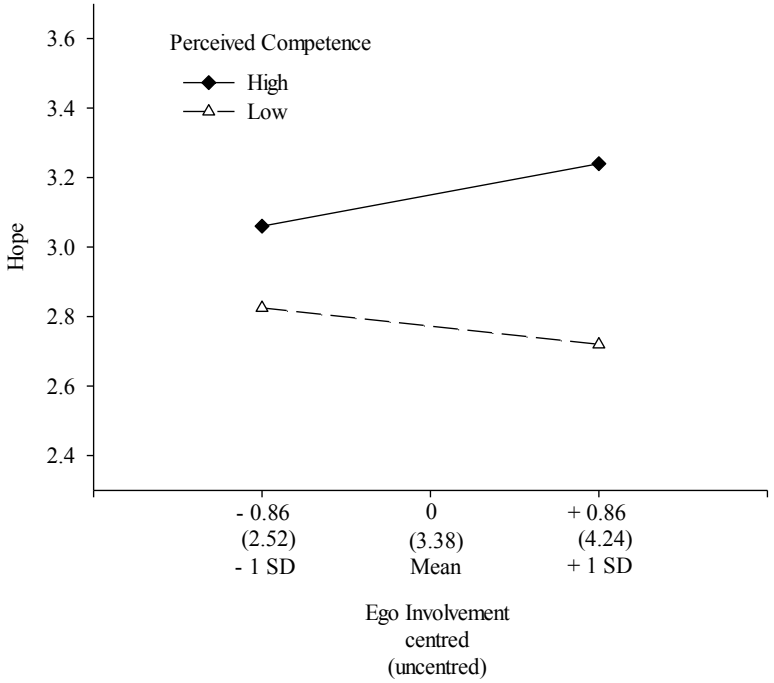

Figure 2.1. Ego involvement by perceived competence interaction for hope.

Discussion

Goal involvement may influence emotions experienced before competition (see Jagacinski & Nicholls, 1984; Nicholls, 1984; Roberts, 1986). If researchers understand these relationships, they may be able to make recommendations to athletes and coaches about how to create a more fulfilling sport experience (i.e., more positive, and less negative, emotions). However, very few researchers have examined goal involvement and positive emotions experienced before competition. Furthermore, the literature examining challenge and threat appraisals as mediators of the links between task involvement and emotions (Adie et al., 2008, 2010), and perceived competence as a moderator of the relationships between ego involvement and emotions (e.g., Hall & Kerr, 1997), is limited; thus, we sought to extend the literature by examining these relationships.

Task Involvement and Emotions

As expected, task involvement was positively associated with hope and excitement. These results support recent research which showed that task involvement was positively related to hope experienced after team sport competition (Dewar & Kavussanu, *in press*) and excitement during a competitive round of golf (Dewar & Kavussanu, 2011), but extend these relationships to a different timeframe, i.e. before competition. Moreover, our findings support a positive association between task orientation and positive affective outcomes (Biddle et al., 2003; Ntoumanis & Biddle, 1999). The results for positive emotions suggest that if athletes are task-involved before a competition, they are more likely to feel excited and hopeful prior to the event.

Anxiety findings were in line with our hypothesis. Specifically, there was a negative association between task involvement and concentration disruption and a null relationship between task involvement and worry and somatic anxiety. These results are consistent with, and extend, the literature (Dewar & Kavussanu, 2011; Hall et al., 1998; Morris & Kavussanu,

2009) by showing the association between task involvement and concentration disruption in a different timeframe and setting. Indeed, these findings may be observed before sport competition because task-involved athletes focus on the event, so it is less likely that they are distracted. However, this goal state may not influence worry and somatic anxiety because these variables may be triggered by competition (see Burton, 1998) and might be felt while focusing on the competition. Our results, together with extant literature (Dewar & Kavussanu, 2011; Hall & Kerr, 1997; Hall et al., 1998; Morris & Kavussanu, 2009), suggest that anxiety is a complex emotion and that concentration disruption may be related to task involvement.

We found some evidence for cognitive appraisals as mediators of the links between task involvement and emotions. Our results show that the relationship between task involvement and hope was mediated by challenge and threat appraisals and the link between task involvement and excitement was mediated by challenge appraisal. The mediation through challenge appraisal supports our hypothesis and recent research (Adie et al., 2008) which showed that mastery-approach goal is related to positive and negative emotions through challenge and threat appraisals, respectively (Adie et al., 2008). Also, the current study extends the mediation findings to emotions and a timeframe which has not been addressed in previous research. Based on these findings, we suggest that individuals who seek to improve may appraise the situation as a challenge, so have a positive expectation and may think the competition is an opportunity for gain or growth; therefore, they are more likely to feel hopeful and excited before competition. Moreover, task-involved athletes might be excited before competition because they are less likely to appraisals the situation as a threat, so they may be less likely to expect harm or loss in the competition.

Contrary to our hypothesis (Lazarus & Folkman, 1984), threat appraisal did not mediate the relationship between task involvement and concentration disruption, worry, or somatic

anxiety. However, task involvement was negatively associated with threat appraisal. Furthermore, threat appraisal was positively related to all three anxiety subscales, which suggests that those who anticipate harm or loss (Lazarus & Folkman, 1984) may be more likely to experience anxiety before competition. Overall, results suggest that task involvement and threat appraisal may influence anxiety separately and cognitive appraisals do not help us understand the relationship between this goal state and anxiety.

Ego Involvement and Emotions

The second purpose of the study was to investigate whether the relationships between ego involvement and emotions were moderated by perceived competence. Results showed that ego involvement interacted with perceived competence to predict hope; however, the simple slopes did not differ significantly from zero at high or low perceived competence, which suggests that ego involvement is not related to hope at either high or low perceived competence. The interaction is not strong and the slopes may not be significant because the variance in perceived competence is not high, meaning that there are few people with very high, or low, perceptions of competence so few ego-involved individuals with very high, or low, hope, respectively. Also, contrary to our hypothesis, perceived competence did not moderate the relationships between ego involvement and excitement, concentration disruption, worry, or somatic anxiety, which is consistent with research in Masters athletes showing that the relationship between ego orientation and enjoyment was not moderated by perceived competence (Hodge, Allen, Smellie, 2008; Morris & Kavussanu, 2009).

Previous literature has shown that perceived performance moderated the relationships between ego involvement and happiness, dejection, and anxiety during competition (Dewar & Kavussanu, 2011) and hope, dejection, and shame after competition (Dewar & Kavussanu, *in press*). Therefore, it can be suggested that the links between ego involvement and emotions may be better understood if we consider perceived performance, rather than

perceived competence, as a moderator of these associations. Differences in the timeframe which perceived competence, perceived performance, and emotions are measured could explain these differences. Indeed, perceptions of performance during the task may be used by ego-involved athletes to judge whether they have displayed superiority relative to others on that occasion, so may influence the emotions these individuals experienced at that time (Dewar & Kavussanu, 2011, *in press*). Conversely, general perceptions of competence may not have differently influenced the emotions experienced before competition because this variable did not tap into whether athletes thought they would achieve their goal of demonstrating ability on that occasion.

Limitations and Future Directions

The findings presented above should be interpreted in light of the limitations of this research. A limitation of the current study is that our measure of achievement goals did not assess goal involvement exactly as it was defined by Nicholls (1989). The difference was that our measure required participants to state what would make them feel successful in the upcoming competition, rather than their criteria of success adopted in a given situation; because of the timeframe that variables were examined, this measure was the best available option.

A comparison of moderation results from this study and previous research (Dewar & Kavussanu, 2011, *in press*) would have been easier if the moderator had been examined over the same timeframe as ego involvement and emotions. However, collecting a general measure of competence was necessary because participants were in a completely new environment and may not have been able to accurately judge how they would perform on that occasion against other athletes of unknown ability. Researchers could address this issue by examining whether expectations of performance for an upcoming competition moderates the links between ego involvement and emotions.

In future, researchers could investigate whether achievement goals are related to emotions that are interpreted as facilitative or debilitative and whether these emotions influence performance. Also, researchers could add to knowledge in this area by using video-assisted qualitative interviews to gain a deeper understanding of achievement goals, appraisals, and emotions associated with competition. Morever, Burton (1998) outlined four mental consequences of anxiety, which are: worry, concentration disruption, disturbing evaluation-related imagery, and control problems. Examining the link between goal involvement and all mental consequences of cognitive anxiety may shed light on the motivational antecedents and provide a deeper understanding of the causes of anxiety.

Conclusion

Our results suggest that task involvement will be related to positive emotions experienced before competition. Also, challenge and threat appraisals may help researchers understand the relationship between task involvement and hope, and challenge appraisal helps explain the link between task involvement and excitement. Moreover, perceived competence does not consistently moderate the relationships between ego involvement and emotions. Based on these findings, we suggest that if athletes are task-involved before a competition they may be more likely to experience positive emotions.

References

Adie, J. W., Duda, J. L., & Ntoumanis, N. (2008). Achievement goals, competition appraisals, and the psychological and emotional welfare of sport participants. *Journal of Sport & Exercise Psychology, 30*, 302-322.

Adie, J. W., Duda, J. L., & Ntoumanis, N. (2010). Achievement goals, competition appraisals, and the well- and ill-being of elite youth soccer players over two competitive seasons. *Journal of Sport & Exercise Psychology, 32*, 555-579.

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Thousand Oaks, CA: Sage Publications.

Allen, M. S., Jones, M. V., & Sheffield, D. (2009). Attribution, emotion, and collective efficacy in sports teams. *Group Dynamics: Theory, Research, and Practice, 13,* 205-217. DOI: 10.1037/a0015149

Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology, 84,* 261-271.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51,* 1173-1182.

Biddle, S. J. H., Wang, C. K. J., Kavussanu, M., & Spray, C. M. (2003). Correlates of achievement goal orientations in physical activity: A systematic review of research. *European Journal of Sport Science, 3,* 1-20.

Burton, D. (1998). Measuring competitive state anxiety. In J. L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 129-148). Morgantown, WV: Fitness Information Technology, Inc.

Cerin, E. (2003). Anxiety versus fundamental emotions as predictors of perceived functionality of pre-competitive emotional states, threat, and challenge in individual sports. *Journal of Applied Sport Psychology, 15*, 223-238.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioural sciences*. Mahwah, New Jersey: Lawrence Erlbaum Associates, Inc.

Dewar, A. J., & Kavussanu, M. (2011). Achievement goals and emotions in golf: The mediating and moderating role of perceived performance. *Psychology of Sport and Exercise,12*, 525-532. DOI:10.1016/j.psychsport.2011.05.005

Dewar, A. J., & Kavussanu, M. (in press). Achievement goals and emotions in team sport athletes. *Sport, Exercise, and Performance Psychology*.

Dewar, A. J., Kavussanu, M., & Ring, C. (2012). *The effects of achievement goals on emotions and performance in competition*. Manuscript submitted for publication.

Hall, H. K. & Kerr, A. W. (1997). Motivational antecedents of precompetitive anxiety in youth sport. *The Sport Psychologist, 11,* 24-42.

Hall, H. K., Kerr, A. W., & Matthews, J. (1998). Precompetitive anxiety in sport: The contribution of achievement goals and perfectionism. *Journal of Sport & Exercise Psychology, 20*, 194-217.

Hayes, A. F., & Preacher, K. J. (2011). Indirect and direct effects of a multicategorical causal agent in statistical mediation analysis. *Manuscript submitted for publication.*

Hodge, K., Allen, J. B., & Smellie, L. (2008). Motivation in Masters sport: Achievement and social goals. *Psychology of Sport and Exercise, 9,* 157-176.

Jagacinski, C. M., & Nicholls, J. G. (1984). Conceptions of ability and related affects in task involvement and ego involvement. *Journal of Educational Psychology, 76*, 909-919.

Jones, M. V., Lane, A. M., Bray, S. R., Uphill, M., & Catlin, J. (2005). Development and validation of the Sport Emotion Questionnaire. *Journal of Sport & Exercise Psychology, 27,* 407. Retrieved from http://hk.humankinetics.com/jsep/journalAbout.cfm

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York, New York: Springer Publishing Inc.

LeBreton, J.M., Wu, J., & Bing, M.N. (2009). The truth(s) on testing for mediation in the social and organizational sciences. In C. E. Lance & R. J. Vandenberg (Eds.), *Statistical and methodological myths and urban legends: Doctrine, verity, and fable in the organizational and social sciences* (pp. 107-142). New York, NY: Routledge.

McAuley, E., Duncan, T., & Tammen, V. V. (1987). Psychometric properties of the Intrinsic Motivation Inventory in a competitive sport setting: A confirmatory factor analysis. *Research Quarterly for Exercise and Sport, 60,* 48-58.

Morris, R. L., & Kavussanu, M. (2009). The role of approach-avoidance versus task and ego goals in enjoyment and cognitive anxiety in youth sport. *International Journal of Sport & Exercise Psychology, 7,* 185-202.

Nicholls, J. G. (1984). Achievement motivation: Conceptions of ability, subjective experience, task choice, and performance. *Psychological Review, 91,* 328-346.

Nicholls, J. G. (1989). *The competitive ethos and democratic education*. Cambridge, Massachusetts: Harvard University Press.

Ntoumanis, N., & Biddle, S. J. H. (1999). Affect and achievement goals in physical activity: A meta-analysis. *Scandinavian Journal of Medicine & Science in Sports, 9,* 315-332.

Papaioannou, A. G., Zourbanos, N., Krommidas, C., & Ampatzoglou, G. (2012). The place of achievement goals in the social context of sport: A comparison of Nicholls' and Elliot's models. In G. C. Roberts and Treasure (Eds), *Advances in motivation in sport & exercise*, 3rd ed. (pp. 59-90). Champaign, IL: Human Kinetics.

Pekrun, R., Goetz, T., Perry, R. P., Kramer, K., & Hochstadt, M. (2004). Beyond test anxiety: Development and validation of the Test Emotions Questionnaire (TEQ). *Anxiety, Stress & Coping, 17,* 287-316.

Pekrun, R., Goetz, T., & Perry, R. P. (2005). *Achievement Emotions Questionnaire (AEQ). User's manual*. Department of Psychology, University of Munich.

Roberts, G. C. (1986). The perception of stress: A potential source and its development. In M. R. Weiss & D. Gould (Eds.), *Sport for children and youths* (pp. 119-127). Champaign, IL: Human Kinetics.

Roberts, G. C., Treasure, D. C., & Balague, G. (1998). Achievement goals in sport: The development and validation of the Perception of Success Questionnaire. *Journal of Sports Sciences, 16,* 337-347. DOI: 10.1080/02640419808559362

Smith, R. E., Smoll, F. L., Cumming, S. P., & Grossbard, J. R. (2006). Measurement of multidimensional sport performance anxiety in children and adults: The Sport Anxiety Scale-2. *Journal of Sport & Exercise Psychology*, 28, 479-501.

Smith, R. E., Smoll, F. L., & Passer, M. W. (2002). Sport performance anxiety in young athletes. In F. L. Smoll & R. E. Smith (Eds.), *Children and youth in sport: A biopsychosocial perspective* (pp. 501-536). Dubuque, IA: Kendall/Hunt Publishing Company.

Standage, M., Duda, J. L., & Ntoumanis, N. (2003). Predicting motivational regulations in physical education: The interplay between dispositional goal orientation, motivational climate and perceived competence. *Journal of Sports Sciences, 21,* 631-647.

Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics*. (4th ed.) Boston: Allyn & Bacon.

Williams, L. (1998). Contextual influences and goal perspectives among female youth sport participants. *Research Quarterly for Exercise and Sport, 69,* 47-57.

CHAPTER 3

Study 2: Achievement Goals and Emotions in Golf: The Mediating and Moderating Role of Perceived Performance

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Abstract

Objectives: This study sought to examine whether achievement goals predict positive and negative emotions in golf and whether perceived performance mediates and moderates this relationship. *Method*: Two hundred male golfers completed a multi-section questionnaire measuring achievement goals, perceived performance, and a range of emotions, after playing a competitive round of golf. *Results*: Task involvement positively predicted happiness ($\beta = .29$, $p < .001$) and excitement ($\beta = .18$, $p = .023$), and negatively predicted dejection ($\beta = -.21$, $p = .007$). Perceived performance partially mediated the relationship between task involvement and happiness ($z = 3.18$, $p = .001$), excitement ($z = 3.12$, $p = .002$), and dejection ($z = -2.71$, $p = .028$); that is, task involvement positively predicted perceived performance, which in turn positively predicted happiness and excitement and negatively predicted dejection. Perceived performance moderated the relationship between ego involvement and happiness, dejection, and anxiety: Ego involvement predicted happiness negatively and dejection and anxiety positively, when athletes perceived that they performed poorly, but was unrelated to these emotions when they thought that they performed well. *Conclusions*: Perceived performance should be examined when trying to understand the relationship between achievement goals and emotions in golf.

Keywords: achievement goals, performance, emotions, golf

Introduction

Over the last two decades, Achievement Goal Theory (Ames, 1992; Dweck, 1986; Nicholls, 1989) has become one of the major theoretical frameworks used to understand achievement motivation in sport. The theory proposes that individuals engage in achievement situations in order to develop or demonstrate competence (Nicholls, 1989). However, individuals can construe competence or ability in two different ways, thus, two conceptions of ability exist. In the first conception, levels of ability are judged relative to one's own perceived mastery and learning. The more individuals improve, or learn, the more competent they feel. In the second conception, ability is construed as capacity and is judged with reference to the ability of others: Individuals feel competent when they outperform others or perform as well as others with less effort (Nicholls, 1984). The two conceptions of ability are embedded within two achievement goals namely task and ego involvement (Nicholls, 1984, 1989). Individuals differ in their propensity to adopt the one goal versus the other known as task and ego orientation, respectively (Nicholls, 1989).

Achievement goals and affective outcomes

The two achievement goals reflect differences in the subjective experience of the task (Nicholls, 1984). Specifically, in task involvement, the goal is to improve or master skills. A sense of competence is achieved when individuals accomplish or learn; thus, learning or mastery is an end in itself, and the activity is more intrinsically satisfying (Nicholls, 1989). In contrast, in ego involvement, the goal is to demonstrate superior ability relative to others; thus, task mastery or learning is a means to an end (Nicholls, 1984). In ego involvement, individuals with low perceived ability are predicted to experience negative affect due to the aversive expectation of demonstrating a lack of personal capacity (Nicholls, 1984). Based on this prediction it is likely that those with high perceived ability may expect to demonstrate high capacity, so may experience positive affect.

Thus, perceived ability – or competence – appears to play an important role in affect when one is ego involved.

Many sport studies have examined the relationship between goal orientations and positive affective outcomes, such as enjoyment and satisfaction. In two comprehensive reviews of the sport literature, task orientation had a moderate-to-large positive correlation with positive affective outcomes, whereas ego orientation was unrelated to these outcomes (Biddle, Wang, Kavussanu, & Spray, 2003; Ntoumanis & Biddle, 1999). Similar results have been reported in recent research with adolescents participating in individual and team sports (Bortoli, Bertollo, & Robazza, 2009). Finally, task orientation was positively related and ego orientation was negatively related to enjoyment in Masters athletes (Hodge, Allen, & Smellie, 2008). With regard to the proposed moderating role of perceived ability on the relationship between ego involvement and enjoyment (Nicholls, 1984), research which has examined ego orientation and affective outcomes has not supported this moderation (Hodge et al., 2008), while other studies investigating these variables have not examined perceived ability as a moderator (Biddle et al., 2003; Bortoli et al., 2009; Ntoumanis & Biddle, 1999).

Goal orientations have also been hypothesized to be related to anxiety. Specifically, Roberts (1986) proposed that because task-oriented individuals focus on improving performance, they are less likely to experience state anxiety. In contrast, ego-oriented individuals, who are concerned with displaying ability relative to others, are likely to experience high state anxiety when they display incompetence and low state anxiety when they display competence (Roberts, 1986). A negative relationship has been observed between task orientation and state anxiety (Vealey & Campbell, 1988) and state somatic anxiety, but not state cognitive anxiety (Hall & Kerr, 1997), 30 minutes before competition; ego orientation was unrelated to anxiety in these studies. In other research, task orientation had a small-to-moderate negative correlation with negative affective

outcomes, such as anxiety and feelings of pressure, whereas ego orientation was unrelated to these outcomes (Biddle et al., 2003; Ntoumanis & Biddle, 1999).

Research which showed that ego orientation was unrelated to anxiety (Hall & Kerr, 1997; Vealey & Campbell, 1988) and affective outcomes (Biddle et al., 2003; Ntoumanis & Biddle, 1999) did not examine perceived competence as a moderator of these relationships. Also, no evidence for moderation was found in research which examined whether perceived competence moderates the relationship between ego orientation and worry (e.g., Morris & Kavussanu, 2009). Overall, the extant literature indicates a consistent relationship between task orientation and affective outcomes. In contrast, the relationship between ego orientation and affective outcomes is less clear (Biddle et al., 2003; Ntoumanis & Biddle, 1999) and the moderating role of perceived competence on this relationship has not been supported (Hodge et al., 2008; Morris & Kavussanu, 2009).

Perceived Performance as a Moderator

A potential moderating variable that could help clarify the relationship between ego involvement and emotions is perceived performance, which refers to one's own evaluations of how he or she has performed and is informed by actual performance. Two individuals may have identical objective performance but differ on their perceived performance. Thus, perceived performance is related but not equivalent to objective performance (see Graham, Kowalski, & Crocker, 2002; McAuley & Tammen, 1989). Although it differs from perceived competence which is a perception of one's *ability* to perform a task, perceived performance should inform one's perceptions of competence. That is, when individuals believe that they perform well on a task they should also feel competent.

There is evidence to suggest that perceived performance may moderate the relationship between ego involvement and emotions. In one study (Sansone, 1986), participants in an ego-involving condition, who thought they performed well in a trivia game, experienced higher

enjoyment than participants who thought they performed poorly. In contrast, in a neutral context, high perceived performance did not influence enjoyment. These findings suggest that when one is ego involved, perceptions of performance are critical for one's enjoyment. This may be because in ego involvement the goal is to demonstrate superior ability to others (Nicholls, 1984) and when ego-involved individuals perceive that they have performed well, they are more likely to think that they have achieved this goal. Conversely, when athletes perform poorly, they have failed to accomplish their goal of demonstrating superior ability. Thus, ego involvement may lead to negative emotions when individuals have perceptions of low performance as they will feel unsuccessful.

Examining whether perceived performance moderates the link between ego involvement and emotions is important to fully understand this relationship, which may vary at different levels of perceived performance. If we do not consider a potential moderator, we may reach the wrong conclusions about the relationship between ego involvement and emotions.

Perceived performance as mediator

Although the relationship between task orientation and affective outcomes in sport is well established, to date no study has investigated the mechanism through which task involvement affects emotions. This relationship may, at least in part, be mediated by perceived performance, which may be affected by task involvement, in two ways. First, task-involved individuals may be more likely to *perceive* that they have performed well because of the criteria of success they employ. Evaluating success using self-referenced criteria means that they are more likely to be sensitive to improvements in their own performance and perceive even small improvements as an accomplishment; this in turn should lead to higher levels of perceived performance. Second, a focus on the task and trying hard to improve skills may lead to higher actual performance; indeed, players with high task orientation performed better in golf than those with low task orientation (see

Kingston & Swain, 1999). Higher actual performance may in turn result in higher perceived performance.

Previous research has supported the link between task involvement and perceived performance. Specifically, a meta-analysis of experimental research examining performance on tests of intellectual ability showed that task involvement resulted in superior performance compared to ego involvement, and this result was stronger in complex tasks and older participants (Utman, 1997). In sport research, tennis players' task orientation, measured one week before a match, was positively associated with their assessment of performance, measured after the match (Cervelló, Rosa, Calvo, Jimenez, & Iglesias, 2007). In another study, tennis players who reported high task orientation in competition were more likely to report higher evaluations of their performance in competition over the previous year (van de Pol & Kavussanu, 2011). Finally, football players' task orientation corresponded to an increase in skilled performance over the season, as appraised by the coach (Van-Yperen & Duda, 1999). Ego orientation was unrelated to performance in these studies.

Perceived performance has been consistently linked to emotions experienced during and after sport competition. Twelve international athletes indicated that they felt that perceptions of successful performance and making progress towards a goal made them feel happy, whereas perceptions of unsuccessful performance made them feel angry and sad (Uphill & Jones, 2007). In adolescent swimmers and track and field athletes, subjective outcome positively predicted joviality and negatively predicted sadness, or dejection (Graham et al., 2002). Moreover, match outcome predicts emotions: elite female Japanese field-hockey players competing in a world cup reported experiencing excitement after winning a match (Kerr, Wilson, Bowling, & Sheahan, 2005). Thus, research has shown that performance is associated with feelings of happiness, excitement, dejection, and anger.

The Present Study

The aim of this study was to examine whether perceived performance mediates and moderates the relationship between achievement goals and emotions during a competitive round of golf. Research has shown that happiness, excitement, dejection, anger, and anxiety are important emotions experienced during participation in sport (Graham et al., 2002; Hall & Kerr, 1997; Kerr et al., 2005; Uphill & Jones, 2007). Therefore, we will examine these emotions. We focused on emotions, which have been defined as "relatively brief but intense experiences activated by cognitive appraisal of situational factors" (Lane & Terry, 2000, p. 17), rather than affect, which is a general term used to describe all aspects of the emotional experience (Rosenberg, 1998) because emotions are assumed to measure the emotional experience associated with sport more accurately than affect (Jones, Lane, Bray, Uphill, & Catlin, 2005).

We chose to examine these relationships during a round of golf because there is a score to aim for on each hole, so each shot on the hole provides feedback on individuals' level of competence, which will have an impact on emotions experienced during the round (Schantz & Conroy, 2009). We used a retrospective design to examine our study purposes measuring the relevant variables once the golfers had completed their round because (a) we were interested in the overall achievement goal adopted during the round of golf[1] and (b) this design is less invasive for golfers, thus they were more likely to participate in the study. Similar designs have been used in research examining achievement goals, perceived performance, and emotions (Allen, Jones, & Sheffield, 2009; Cervelló et al., 2007; Papaioannou, Milosis, Kosmidou, & Tsigilis, 2007).

Based on previous research (Biddle et al., 2003; Ntoumanis & Biddle, 1999; Vealey & Campbell, 1988) we hypothesised that task involvement would positively predict happiness and excitement and negatively predict dejection, anger, and anxiety, and that ego involvement would be

[1] Although the terms task and ego involvement traditionally refer to situational fluctuations in these goals, we use the terms to refer to goals adopted during an entire round of golf.

unrelated to all emotions. We expected that perceived performance would *mediate* the effects of task involvement on emotions such that task involvement would positively predict performance (Cervelló et al., 2007; Utman, 1997; van de Pol & Kavussanu, 2011; Van-Yperen & Duda, 1999), which in turn would predict happiness and excitement positively, and dejection and anger negatively (Graham et al., 2002; Kerr et al., 2005; McAuley & Tammen, 1989; Uphill & Jones, 2007). Mediation analysis allowed us to investigate perceived performance as a potential mechanism in the relationship between task involvement and emotions. We expected no mediation for anxiety because both successful and unsuccessful performance can lead to feelings of anxiety (Nicholls, Hemmings, & Clough, 2010), thus we did not expect perceived performance to predict anxiety. Finally, we did not predict mediation for ego involvement due to the null results for ego orientation and perceived performance reported in past research (Cervelló et al., 2007; Utman, 1997; Van-Yperen & Duda, 1999).

We also hypothesised that the relationship between ego involvement and happiness, dejection, anger, and anxiety would be *moderated* by perceived performance (Jones et al., 2005; Roberts, 1986; Sansone, 1986). Specifically, we expected that when golfers performed well, ego involvement would positively predict happiness and would not be related to dejection, anger, and anxiety. When golfers performed poorly, we expected that ego involvement would be unrelated to happiness and positively predict dejection, anger, and anxiety. We did not expect ego involvement to be related to excitement at any level of perceived performance because excitement experienced during competition is the result of a positive feeling of arousal, rather than successfully completing a goal (Jones, 1995; Jones et al., 2005; Kerr et al., 2005).

Method

Participants

Two hundred male golfers with a mean age of 48.28 years (*SD* = 12.04) participated in the study. At the time of data collection, participants had a mean membership at their club of 12.23 years (*SD* = 9.88), and a mean handicap of 13.37 (*SD* = 5.89). Handicap can range from 0 to 28 for men, with lower values indicating higher golf ability.

Procedure

After ethical approval was granted, 14 golf clubs were contacted in order to establish if they were willing to participate in the research. The primary investigator visited the 4 clubs that agreed to participate. Players were approached within 30 minutes of finishing a competitive round of golf and were informed about the purpose of the study, and those who agreed to participate were asked to complete the questionnaire pack. They were asked to think about the round of golf they had just played, to read all questions carefully, and to answer all questions honestly. Participants were told that their responses would be kept confidential, and that they were free to withdraw their participation at any time. Then, they provided informed consent and completed the questionnaire pack in approximately 15 minutes. Measures used in the questionnaire are described below and shown in full in Appendix 2a-d.

Measures

Goal involvement. The Perception of Success Questionnaire (Roberts, Treasure, & Balague, 1998) was adapted to assess goal involvement during the round of golf, similar to previous research which has also adapted a goal orientation questionnaire to measure goal involvement (Williams, 1998). This scale measures goal orientations and has shown good validity and internal consistency scores of .82 for task orientation and .87 for ego orientation (Roberts et al., 1998). Participants were instructed to think about their experience and what made them feel most successful during the

round of golf they had just played. The adapted stem was "During the round today I felt most successful when…". Participants responded to six items measuring task involvement (e.g., "I worked hard"), and six items measuring ego involvement (e.g., "I was the best"). Responses were made on a 5-point Likert scale with anchors of *strongly disagree* (1) and *strongly agree* (5). Mean scores for each subscale were calculated and used in all analyses. The same procedure was used for all multi-item variables.

Emotions. The Sport Emotion Questionnaire (Jones et al., 2005) was used to measure the emotions that participants experienced during the round of golf they had just played. This scale has shown good validity and reliability when used after competition, with internal consistency scores for the five emotions ranging from .72 to .90 (Allen et al., 2009). Participants were asked to read each of the items and indicate the extent to which they experienced each emotion during the round of golf they had just played. The stem was "During the round today, I felt…", and the emotions measured were happiness (e.g., "pleased"), excitement (e.g., "exhilarated"), dejection (e.g., "unhappy"), anxiety (e.g., "nervous"), and anger (e.g., "furious"). The subscales measuring dejection and anxiety had five items each, whereas those measuring excitement, happiness, and anger had four items each. Participants responded on a 5-point Likert scale with anchors of *not at all* (1) and *extremely* (5).

Perceived performance. Our measure of perceived performance was based on previous research which assessed this variable by asking participants to rate how they perceived their performance in today's match compared to their usual performance (Cervelló et al., 2007) and to indicate how well they think they did compared to other students (Sansone, 1986). We asked golfers to rate their performance during the round today. Two items were used: "Overall (i.e., compared to your typical performance)" and "Overall (i.e., compared to others in the tournament)". The two items were highly correlated (r = .83) and had Cronbach's (1951) alpha of .91, and were

preceded by the statement “Please rate your performance during your round today”. Players responded on a 10-point Likert scale with anchors of *worst I could play* (1) and *best I could play* (10).

Data Analysis

We analysed our data using separate hierarchical multiple regressions for each emotion. In these analyses, we included task and ego involvement in the first step, perceived performance in the second step, and all combinations of interaction terms between achievement goals and perceived performance in the third step. We tested mediation using the procedures outline by Baron and Kenny (1986) and moderation using the guidelines provided by Aiken and West (1991). These procedures are described in detail in the next section.

Results

Preliminary Analyses

Data were examined to investigate missing values and evaluate assumptions of multivariate analysis. Missing data accounted for less than 5% of data points, so any method to replace missing data was appropriate (Tabachnick & Fidell, 2001). We replaced missing values with the mean for that variable. Examination of histograms, q-q plots, and values of skewness and kurtosis revealed no violations of homoscedasticity or normality. No outliers were detected when data were checked using Mahalanobis distance and Cook’s statistic.

Table 3.1

Descriptive Statistics, Zero-Order Correlations and Alpha Coefficients (N = 200)

Variables	*M*	*SD*	1	2	3	4	5	6	7	8	9
1. Task	3.32	1.04	(.85)								
2. Ego	2.63	0.97	.43***	(.89)							
3. Happiness	2.93	0.94	.29***	.14*	(.86)						
4. Excitement	2.75	0.86	.18*	.07	.74***	(.77)					
5. Dejection	2.48	0.99	-.17*	-.00	-.40***	-.13	(.84)				
6. Anger	2.65	1.19	-.20**	-.07	-.28***	-.04	.76***	(.90)			
7. Anxiety	2.21	0.95	.04	.06	.07	.21**	.47***	.41***	(.89)		
8. Perc Perf	4.73	1.92	.24**	.16*	.52***	.49***	-.35***	-.21**	.04	(.91)	
9. Age	48.42	12.17	.12	.14	.09	.02	-.18**	-.24***	-.07	-.01	-

Note. Possible range for scores = 1 to 5 for achievement goals and emotions; 1 to 10 for perceived performance. Alpha coefficients are presented in the diagonal. Perc Perf = perceived performance.
**p < .05, **p < .01, ***p < .001.*

Table 3.2

Hierarchical Regression Analyses for Positive and Negative Emotions

	Positive Emotions								Negative Emotions							
	Happiness				Excitement				Dejection				Anxiety			
	B	SE *B*	β	R^2 Change	B	SE B	β	R^2 Change	*B*	SE *B*	β	R^2 Change	B	SE B	β	R^2 Change
Step 1				.09***				.03*				.04*				.00
Task	.26	.07	.29***		.15	.06	.18*		-.20	.07	-.21**		.02	.07	.02	
Ego	.02	.07	.02		-.01	.07	-.01		.09	.08	.09		.05	.08	.05	
Step 2				.22***				.21***				.11***				.00
Task	.17	.06	.18**		.06	.06	.08		-.13	.07	-.14		.01	.07	.01	
Ego	-.01	.06	-.01		-.03	.06	-.04		.11	.07	.11		.05	.08	.05	
Perc Perf	.24	.03	.48***		.21	.03	.47***		-.17	.04	-.34***		.02	.04	.03	
Step 3				.03**				.01				.02*				.03*
Task	.18	.06	.19**		.07	.06	.08		-.14	.07	-.15		.00	.07	.00	
Ego	-.00	.06	-.01		-.03	.06	-.03		.10	.07	.10		.04	.08	.04	
Perc Perf	.24	.03	.48***		.21	.03	.47***		-.17	.04	-.34***		.01	.04	.03	
Ego x Perc Perf	.09	.03	.17*		.03	.03	.07		-.08	.04	-.16*		-.09	.04	-.16*	
R^2 Total				.33				.25				.17				.03

Note. Perc Perf = perceived performance.
**p <. 05, **p <. 01, ***p < .001.*

Descriptive Statistics, Zero-Order Correlations, and Alpha Coefficients

Descriptive statistics, zero-order correlations, and internal reliabilities for all variables are presented in 3.1. Golfers reported moderate task and ego involvement, happiness, excitement, dejection, anger, and perceived performance, and low anxiety. Task involvement had small to moderate positive correlations with positive emotions, small negative correlations with dejection and anger, and a moderately small positive correlation with perceived performance. Ego involvement had small positive correlations with happiness and perceived performance, but was unrelated to all other variables. Perceived performance had moderate to large positive correlations with positive emotions, and moderately small and moderate correlations with dejection and anger, respectively. Correlations were classified as small = .10, moderate = .30, and large = .50 (see Cohen, 1992). Finally, internal reliability coefficients were good or very good and ranged from .77 to .91.

Achievement Goals, Perceived Performance and Emotions

We used hierarchical regression analysis to examine our research questions. First, we centred all predictors by subtracting the mean from individual scores (Aiken & West, 1991). Then, we formed two-way interaction terms by multiplying the centred predictors. For example, the product of centred ego involvement and perceived performance represented the interaction between these two variables. Using the step-down procedure suggested by Aiken and West (1991), non-significant interaction terms were removed from the regression starting with interactions with the greatest *p* value and each interaction effect was tested sequentially. None of the task involvement by perceived performance or task by ego involvement interactions was significant, so they are not reported. The regression results for anger are also not reported because they were very similar to the dejection results. Results for positive and negative emotions are presented in Table 3.2.

As several regression analyses were conducted, which should increase the chance of making a Type I error, we used an adaptation of Fisher's protected *t* test (Cohen, Cohen, West, & Aiken, 2003) to control for Type I error. Specifically, we examined the significance of individual predictors only when the *F* value for a specific step in the regression was significant. These values were significant unless otherwise stated.

Positive emotions. The overall regression model for happiness was significant, $F(4, 195) = 24.08$, $p < .001$. In Step 1, task involvement positively predicted happiness, $t(197) = 3.77$, $p < .001$, while ego involvement did not predict happiness. In Step 2 we examined mediation. In order to show evidence of mediation four conditions must be satisfied (Baron & Kenny, 1986). First, the predictor must affect the mediator: Task involvement was positively related to perceived performance, $r = .24$, $p = .001$. Second, the predictor must affect the outcome variable: Task involvement positively predicted happiness (see Step 1 in Table 2). Third, the mediator must affect the outcome variable: Perceived performance positively predicted happiness, $t(196) = 7.81$, $p < .001$, see step 2 in Table 2. Finally, the effect of the predictor on the outcome variable must be reduced when the mediator is added to the regression. This was the case, and the reduction was tested with the Sobel test, which is represented by the symbol *z*. When perceived performance was added in Step 2, the effect of task involvement on happiness was reduced significantly, $t(196) = 2.71$, $p = .007$, $z = 3.18$, $p = .001$. However, the effect was not reduced to zero, thus perceived performance partially mediated this relationship.

In Step 3, we found a significant ego involvement by perceived performance interaction, $t(195) = 2.86$, $p = .005$. This interaction was probed as recommended by Aiken and West (1991). Specifically, we plotted the regression of happiness on ego involvement at two values of perceived performance: one *SD* below its mean and one *SD* above its mean. Figure 3.1 shows that when golfers perceived that they did not perform well, ego involvement negatively predicted happiness, *b*

= - .17, $t(195) = -2.02$, $p = .045$, whereas when they perceived that they performed well, ego involvement was unrelated to happiness, $b = 0.16$, $t(195) = 1.84$, $p = .068$. The latter effect approached significance.

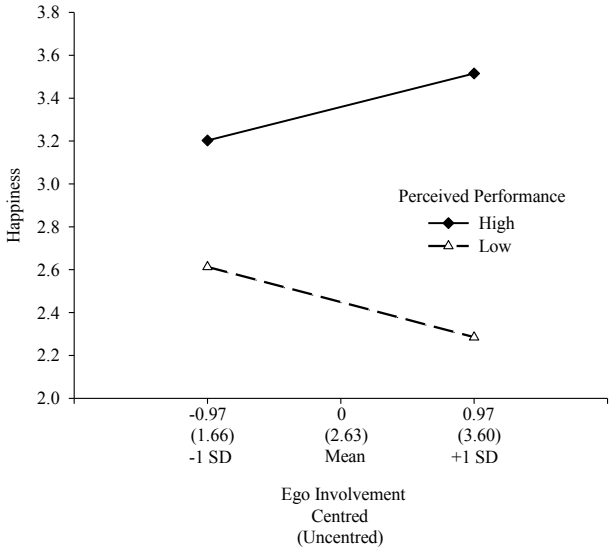


Figure 3.1. Ego involvement by perceived performance interaction for happiness.

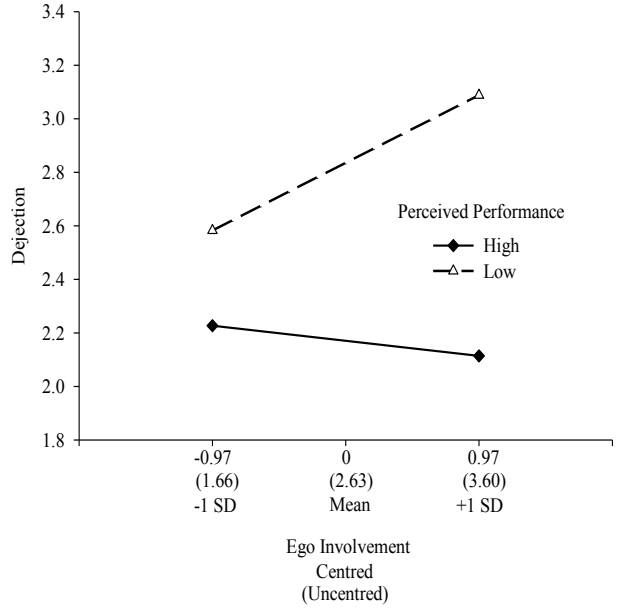
The overall regression model for excitement was significant, $F(4, 195) = 15.89$, $p < .001$. Task involvement positively predicted excitement, $t(197) = 2.29$, $p = .023$, but ego involvement did not predict excitement. Perceived performance positively predicted excitement, $t(196) = 7.37$, $p < .001$, and was a partial mediator of the relationship between task involvement and excitement, $t(196) = 1.10$, $p = .273$, $z = 3.12$, $p = .002$. There was no significant ego involvement by perceived performance interaction.

Negative emotions. The overall model for dejection was significant, $F(4, 195) = 9.65$, $p < .001$. Task involvement negatively predicted dejection, $t(197) = -2.72$, $p = .007$, but ego involvement did not predict dejection. Perceived performance negatively predicted dejection, $t(196) = -4.90$, $p < .001$, and was a partial mediator of the relationship between task involvement

and dejection, $t(196) = -2.03$, $p = .044$, $z = -2.71$, $p = .028$. Also, there was an ego involvement by perceived performance interaction, $t(195) = -2.36$, $p = .019$, shown in Figure 3.2(A): Ego involvement positively predicted dejection for those who performed poorly, $b = 0.26$, $t(195) = 2.67$, $p = .008$, and was unrelated to dejection for those who performed well, $b = -0.06$, $t(195) = -0.57$, $p = .569$.

Although the overall model for anxiety was non-significant, $F(4, 195) = 1.58$, $p = .182$, the F change value for step 3 was significant, $F(4, 195) = 5.33$, $p = .022$, so we examined the effects in this step (Cohen et al., 2003). There was an ego involvement by perceived performance interaction, $t(195) = -2.31$, $p = .022$, as can be seen in Figure 3.2(B): when golfers perceived that they did not perform well, ego involvement positively predicted anxiety, $b = 0.21$, $t(195) = 2.04$, $p = .043$, but when they perceived that they performed well, ego involvement was unrelated to anxiety, $b = -0.12$, $t(195) = -1.13$, $p = .259$.

A



B

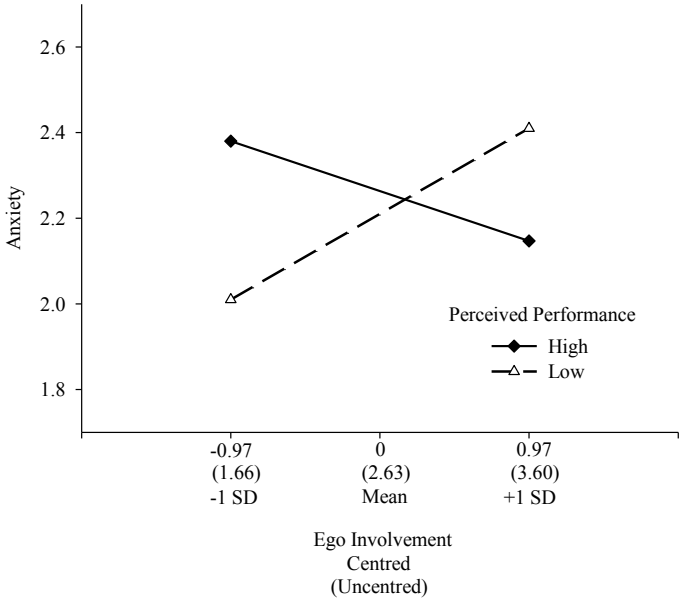


Figure 3.2. Ego involvement by perceived performance interaction for dejection (A) and anxiety (B).

Discussion

Previous research has examined the relationship between achievement goals and affective outcomes in sport (e.g., Biddle et al., 2003). However, to date no study has investigated whether perceived performance mediates and moderates the relationship between achievement goals and emotions experienced during a sport competition. We sought to address this gap in the literature and examined achievement goals, perceived performance, happiness, excitement, dejection, and anxiety experienced during a competitive round of golf.

Consistent with our hypothesis, task involvement positively predicted happiness and excitement and negatively predicted dejection, while ego involvement was unrelated to all emotions. These results support previous literature which has shown that task orientation positively predicts positive and negatively predicts negative affective outcomes, and that ego orientation was unrelated to affective outcomes (Biddle et al., 2003; Ntoumanis & Biddle, 1999). Thus, being in a state of task involvement while playing golf, may lead one to feel happy and excited during the competition; this motivational state is also likely to lead golfers to experience less dejection during the competition.

Our results showed that the relationship between task involvement and happiness, excitement, and dejection was partially mediated by perceived performance. Specifically, task involvement was positively related to perceived performance, which was in turn positively related to happiness and excitement, and negatively related to dejection. One reason for these results is golfers' perception of their performance; the focus on the task at hand and doing the best they can may actually lead these golfers to achieve high levels of performance (with subsequent positive performance evaluations), which in turn may lead to higher happiness and excitement, and lower dejection. It is also possible that, task-involved golfers are more sensitive to small improvements of their

performance and this may have led them to perceive higher perceived performance during the day of their round.

The mediation of perceived performance on task involvement and emotions supports previous research in sport which found that task orientation was positively associated with perceived and coach-rated performance (Cervelló et al., 2007; Van-Yperen & Duda, 1999) and that individuals reported feelings of happiness when they thought they had performed well and feelings of dejection when they thought they had performed poorly (Uphill & Jones, 2007). Moreover, this result adds to previous literature which has shown that match outcome predicts excitement (Kerr et al., 2005). Our study extends previous literature by identifying perceived performance as a potential mechanism that may explain why task-involved golfers experience certain emotions while playing golf.

It is important to note that task involvement remained a predictor of happiness, but not excitement and dejection, when perceived performance was taken into account. Thus, in addition to the indirect relationship through perceived performance, task involvement had a direct relationship with happiness. Task-involved golfers may experience higher happiness, irrespective of their level of performance, because a round of golf provides an opportunity to improve and challenge oneself, which may be intrinsically satisfying for task-involved golfers (Nicholls, 1989).

It is also possible that another variable, such as effort, may explain the relationship between task involvement and happiness. Research in education has suggested that task-involved individuals experience satisfaction when they work hard (Ames & Archer, 1988). Also, in a sample of college students participating in physical activity classes, task orientation positively predicted effort, which was positively related to enjoyment (Thomas & Barron, 2006), an emotion that is conceptually similar to happiness (Jones et al., 2005). Task-involved golfers may be more likely to experience happiness because they feel successful as a result of exerting effort (Ames & Archer,

1988; Thomas & Barron, 2006; Uphill & Jones, 2007). However, as we did not measure effort, this is a tentative explanation awaiting verification from future research.

Contrary to our hypothesis, task involvement did not predict anxiety experienced during the round of golf, which suggests that a focus on improving and performing as well as one can does not reduce anxiety experienced during a golf competition. This result is contrary to research which has shown an inverse relationship between task orientation and state anxiety (Vealey & Campbell, 1988). However, Vealey and Campbell (1988) used a measure of anxiety which contained items referring to perceptions of physiological activation (e.g. before I compete I get a queasy feeling in my stomach and just before competing I notice my heart beats faster than usual), while the current study used items which focused primarily on cognitive anxiety (e.g. apprehensive and anxious). The difference in results between these two studies could be because the task goal is related to somatic anxiety but not cognitive anxiety. Indeed, other research has found a negative relationship between task orientation and state somatic anxiety but not state cognitive anxiety (Hall & Kerr, 1997). Future research should aim to clarify why task involvement may be related to somatic but not cognitive anxiety.

Ego involvement alone did not predict happiness; however, when perceived performance was examined as a moderator, a relationship emerged. Specifically, ego involvement was negatively related to happiness when they believed they performed poorly, but unrelated to happiness when golfers believed that they performed well. Although the significance of the slopes of the interaction were not as expected, our hypothesis was partially supported because the relationships between ego involvement and happiness were different at the two levels of perceived performance. We suggest that these results are observed because ego-involved golfers may think about how they have performed during the round of golf to inform themselves if they have been successful in achieving their goal of demonstrating high ability (Nicholls, 1989). Thus, ego-involved golfers who

performed poorly may experience lower happiness because they believe they have failed to achieve their goal (Jones et al., 2005; Nicholls, 1989; Uphill & Jones, 2007). Our findings are consistent with Sansone's (1986) finding that in an ego-involving condition the enjoyment experienced on a trivia game was different at high and low perceived performance.

The relationship between ego involvement and dejection and anxiety was also moderated by perceived performance. Specifically, ego involvement was positively related to dejection and anxiety when golfers performed poorly, but unrelated to these variables when they performed well. Ego-involved golfers who performed poorly may experience dejection because they believe they have not made progress towards their goal of demonstrating high ability (Jones et al., 2005; Uphill & Jones, 2007). In contrast, ego-involved golfers who performed poorly may experience anxiety because they believe substandard performance results in a negative comparison of competence with other athletes (Lazarus, 2000), and so they have failed to demonstrate high ability. Thus, perceived performance helped explain the relationship between ego involvement and happiness, dejection, and anxiety.

As expected, perceived performance did not moderate the relationship between ego involvement and excitement, which suggests that this variable is unrelated to excitement at any level of perceived performance. It is possible that ego involvement was unrelated to excitement because achieving a goal is not important for creating this emotion. It may be that excitement experienced during competition is the result of arousal due to a positive perception of performance, and happiness is the result of the interaction between ego involvement and perceived performance (Jones, 1995; Jones et al., 2005). Also, the different results for happiness and excitement may reflect an advantage of examining a range of emotions.

Limitations of the Study and Directions for Future Research

The current study revealed some interesting findings, but also has some limitations which could be addressed in future research. First, our participants were male golfers, thus the findings can only be generalised to a similar population. Researchers should replicate the results in males and females in a range of sports. Second, our study was cross-sectional, thus firm assertions about the direction of causality cannot be made. It is possible that emotions may also mediate the relationship between task involvement and perceived performance. Future research should use prospective or experimental designs to address the issue of causality among achievement goals, perceived performance and emotions in sport. Third, the influence of other variables, such as effort, match importance, and motivational climate, on the relationship between achievement goals and a range of emotions could be examined. Also, the current study examined task and ego goals, rather than the 2 x 2 goal framework (Elliot & Murayama, 2008), because research using task and ego goals provided support for examining mediation (e.g., Cervelló et al., 2007) and moderation (Sansone, 1986). However, future researchers may wish to employ a different conceptualisation of achievement goals (Elliot & Murayama, 2008).

Conclusion

Our results extend achievement goal theory (Nicholls, 1989) by showing that being task-involved may have a direct and indirect positive relationship with emotions through perceived performance. Thus, we recommend that athletes should think of success in terms of improving or mastering a task when competing in sport, as this may lead them to experience positive emotions and make the experience of negative emotions, such as dejection, less likely. The current study adds to the literature as it clarifies the relationship between ego involvement and emotions, specifically that the emotions ego-involved athletes experience may depend on how they perceive their performance during competition. Also, ego involvement may be an emotional gamble due to

the different relationships with emotions at different levels of performance, and so we do not recommend that this achievement goal is reinforced when playing sport.

References

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Thousand Oaks, CA: Sage Publications.

Allen, M. S., Jones, M. V., & Sheffield, D. (2009). Attribution, emotion, and collective efficacy in sports teams. *Group Dynamics: Theory, Research, and Practice, 13,* 205-217. DOI: 10.1037/a0015149

Ames, C., & Archer, J. (1988). Achievement goals in the classroom: Students learning-strategies and motivation processes. *Journal of Educational Psychology, 80,* 260-267. Retrieved from http://www.apa.org/pubs/journals/edu/index.aspx

Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology, 84,* 261-271. Retrieved from http://www.apa.org/pubs/journals/edu/index.aspx

Baron, R. M. & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51,* 1173-1182. Retrieved from http://www.apa.org/pubs/journals/psp/index.aspx

Biddle, S. J. H., Wang, C. K. J., Kavussanu, M., & Spray, C. M. (2003). Correlates of achievement goal orientations in physical activity: A systematic review of research. *European Journal of Sport Science, 3,* 1-20. Retrieved from http://www.tandf.co.uk/journals/titles/17461391.asp

Bortoli, L., Bertollo, M., & Robazza, C. (2009). Dispositional goal orientations, motivational climate, and psychobiosocial states in youth sport. *Personality and Individual Differences, 47,* 18-24. DOI: 10.1016/j.paid.2009.01.042

Cervelló, E., Rosa, F. J. S., Calvo, T. G., Jimenez, R., & Iglesias, D. (2007). Young tennis players' competitive task involvement and performance: The role of goal orientations, contextual

motivational climate, and coach-initiated motivational climate. *Journal of Applied Sport Psychology, 19,* 304-321. DOI: 10.1080/10413200701329134

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112,* 155-159.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioural sciences*. Mahwah, New Jersey: Lawrence Erlbaum Associates, Inc.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Pschometrika*, *16*, 297-334.

Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist, 41,* 1040-1048. Retrieved from http://www.apa.org/pubs/journals/amp/

Elliot, A. J., & Murayama, K. (2008). On the measurement of achievement goals: Critique, illustration, and application. *Journal of Educational Psychology, 100,* 613-628. DOI: 10.1037/0022-0663.100.3.613

Graham, T. R., Kowalski, K. C., & Crocker, P. R. E. (2002). The contributions of goal characteristics and causal attributions to emotional experience in youth sport participants. *Psychology of Sport and Exercise, 3,* 273-291. DOI: 10.1016/S1469-0292(01)00006-1

Hall, H. K., & Kerr, A. W. (1997). Motivational antecedents of precompetitive anxiety in youth sport. *Sport Psychologist, 11,* 24-42. Retrieved from http://journals.humankinetics.com/tsp

Hodge, K., Allen, J. B., & Smellie, L. (2008). Motivation in Masters sport: Achievement and social goals. *Psychology of Sport and Exercise, 9,* 157-176. DOI:10.1016/j.psychsport.2007.03.002

Jones, G. (1995). More than just a game - Research developments and issues in competitive anxiety in sport. *British Journal of Psychology, 86,* 449-478. Retrieved from http://www.bpsjournals.co.uk/journals/bjp/

Jones, M. V., Lane, A. M., Bray, S. R., Uphill, M., & Catlin, J. (2005). Development and validation of the Sport Emotion Questionnaire. *Journal of Sport & Exercise Psychology, 27,* 407. Retrieved from http://hk.humankinetics.com/jsep/journalAbout.cfm

Kerr, J. H., Wilson, G. V., Bowling, A., & Sheahan, J. P. (2005). Game outcome and elite Japanese women's field hockey player's experience of emotions and stress. *Psychology of Sport and Exercise, 6,* 251-263. DOI:10.1016/j.psychsport.2003.11.002

Kingston, K. M., & Swain, A. (1999). Goal orientations and state goals: Research in golf and implications for performance. In A. J. Cochran & M. R. Farally (Eds.), *Science and golf III: Proceedings of world scientific congress of golf* (pp. 150-157). Champaign, IL; Human Kinetics.

Lane, A. M., & Terry, P. C. (2000). The nature of mood: Development of a conceptual model with a focus on depression. *Journal of Applied Sport Psychology, 12,* 16-33. http://www.informaworld.com/smpp/title~content=t713768823~db=all

Lazarus, R. S. (2000). How emotions influence performance in competitive sports. *Sport Psychologist, 14,* 229-252. Retrieved from http://hk.humankinetics.com/tsp/journalAbout.cfm

McAuley, E., & Tammen, V. V. (1989). The effects of subjective and objective competitive outcomes on intrinsic motivation. *Journal of Sport & Exercise Psychology, 11,* 84-93. Retrieved from http://hk.humankinetics.com/jsep/journalAbout.cfm

Morris, R. L., & Kavussanu, M. (2009). The role of approach-avoidance versus task and ego goals in enjoyment and cognitive anxiety in youth sport. *International Journal of Sport and Exercise Psychology, 7,* 185-202.

Nicholls, A. R., Hemmings, B., & Clough, P. J. (2010). Stress appraisals, emotions, and coping among international adolescent golfers. *Scandinavian Journal of Medicine & Science in Sports, 20,* 346-355. DOI: 10.1111/j.1600-0838.2009.00894.x

Nicholls, J. G. (1984). Achievement motivation: Conceptions of ability, subjective experience, task choice, and performance. *Psychological Review, 91,* 328-346. Retrieved from http://www.apa.org/pubs/journals/rev/index.aspx

Nicholls, J. G. (1989). *The competitive ethos and democratic education*. Cambridge, Massachusetts: Harvard University Press.

Ntoumanis, N., & Biddle, S. J. H. (1999). Affect and achievement goals in physical activity: A meta-analysis. *Scandinavian Journal of Medicine & Science in Sports, 9,* 315-332. Retrieved from http://www.wiley.com/bw/journal.asp?ref=0905-7188

Papaioannou, A. G., Milosis, D., Kosmidou, E., & Tsigilis, N. (2007). Motivational climate and achievement goals at the situational level of generality. *Journal of Applied Sport Psychology, 19,* 38-66. DOI: 10.1080/10413200601113778

Roberts, G. C. (1986). The perception of stress: A potential source and its development. In M.R.Weiss & D. Gould (Eds.), *Sport for children and youths* (pp. 119-127). Champaign, IL: Human Kinetics Publishers Inc.

Roberts, G. C., Treasure, D. C., & Balague, G. (1998). Achievement goals in sport: The development and validation of the Perception of Success Questionnaire. *Journal of Sports Sciences, 16,* 337-347. DOI: 10.1080/02640419808559362

Rosenberg, E. L. (1998). Levels of analysis and the organization of affect. *Review of General Psychology, 2,* 247-270. DOI: 10.1037/1089-2680.2.3.247

Sansone, C. (1986). A question of competence: The effects of competence and task feedback on intrinsic interest. *Journal of Personality and Social Psychology, 51*, 918-931. Retrieved from http://www.apa.org/pubs/journals/psp/

Schantz, L. H., & Conroy, D. E. (2009). Achievement motivation and intraindividual affective variability during competence pursuits: A round of golf as a multilevel data structure. *Journal of Research in Personality, 43,* 472-481. DOI: 10.1016/j.jrp.2009.02.002

Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics*. (4th ed.) Boston: Allyn & Bacon.

Thomas, J. A., & Barron, K. E. (2006). A test of multiple achievement goal benefits in physical education activities. *Journal of Applied Sport Psychology, 18,* 114-135. DOI: 10.1080/10413200600653527

Uphill, M. A., & Jones, M. V. (2007). Antecedents of emotions in elite athletes: A cognitive motivational relational theory perspective. *Research Quarterly for Exercise and Sport, 78,* 79-89.

Utman, C. H. (1997). Performance effects of motivational state: A meta-analysis. *Personality and Social Psychology Review, 1*. 170-182. Retrieved from http://psr.sagepub.com/

van de Pol, P. K. C., & Kavussanu, M. (2011). Achievement goals and motivational responses in tennis: Does the context matter? *Psychology of Sport and Exercise, 12,* 176-183. DOI: 10.1016/j.psychsport.2010.09.005

Van Yperen, N. W., & Duda, J. L. (1999). Goal orientations, beliefs about success, and performance improvement among young elite Dutch soccer players. *Scandinavian Journal of Medicine & Science in Sports, 9,* 358-364. Retrieved from http://www.wiley.com/bw/journal.asp?ref=0905-7188

Vealey, R. S., & Campbell, J. L. (1988). Achievement goals of adolescent figure skaters: Impact on self-confidence, anxiety, and performance. *Journal of Adolescent Research, 2,* 227-243. DOI: 10.1177/074355488832009

Williams, L. (1998). Contextual influences and goal perspectives among female youth sport participants. *Research Quarterly for Exercise and Sport, 69,* 47-57.

CHAPTER 4

Study 3: Achievement Goals and Emotions in Team Sport Athletes

This manuscript is in press in *Sport, Exercise, and Performance Psychology*

Abstract

In the present study we examined the relationships between task involvement and a range of emotions and whether these associations were mediated by perceived performance. Also, we assessed whether the relationships between ego involvement and emotions were moderated by perceived performance and outcome of the match. After a competitive match, team sport athletes (*N*=358) completed a multi-section questionnaire measuring task and ego involvement, perceived performance, outcome of the match, happiness, pride, hope, dejection, and shame. Results showed that task involvement was related to happiness, pride, and hope positively, and dejection and shame negatively and these relationships were mediated by perceived performance. Perceived performance moderated the relationships between ego involvement and hope, dejection, and shame, while outcome of the match moderated the relationships between ego involvement and pride, hope, and dejection. These findings suggest that task involvement may influence emotions through perceived performance, whereas the relationship between ego involvement and emotions depends on perceptions of performance and match outcome.

Keywords: goal involvement, competition, mediation, moderation

Introduction

A major framework used to study athletes' motivation over the past two decades is Achievement Goal Theory (e.g., Ames, 1992; Nicholls, 1989). A main tenet of this theory is that individuals participate in achievement settings in order to demonstrate or develop competence. However, competence or ability can be construed in two different ways: as effort accomplishment or as capacity. When the first conception of ability is employed, individuals evaluate their competence using self-referenced criteria and feel successful when they improve or master a task. When the second conception of ability is used, individuals evaluate competence using other-referenced criteria and feel successful when they outperform others, or perform as well as others with less effort (Nicholls, 1984, 1989).

The two conceptions of ability are embedded within two achievement goals: task and ego involvement. When individuals are task-involved, they employ the first conception of ability to evaluate their competence and their goal is to improve or master a task. People who are ego-involved evaluate their competence using the conception of ability as capacity, and their goal is to establish superiority by doing better than others, or as well as others but with less effort. Individuals can fluctuate between the two states of involvement and vary in their tendency to be task or ego involved; this is known as task and ego orientation. As Nicholls stated (1989, p. 95), ""task orientation" and "ego orientation" are applied to individual differences in proneness to the two types of involvement, and "task involvement" and "ego involvement" refer to the states that people experience in a given situation".

Achievement goals may have implications for individuals' emotions. In task involvement, task mastery is an end in itself, and the activity should be intrinsically satisfying (Nicholls, 1989). Also, it has been suggested that individuals high in task orientation should not perceive sport competition as highly stressful (Roberts, 1986), so task orientation may also be inversely related to

negative emotions. The relationship between ego involvement and emotions may be moderated[1] by perceived ability or competence (Nicholls, 1984). This means that this relationship may vary as a function of perceived ability. In ego involvement, individuals with low perceived ability may experience negative affect because they believe they will display low ability (Nicholls, 1984). When coupled with high perceived ability, ego involvement should lead to positive affect.

Theoretical predictions (Nicholls, 1984, 1989) have been investigated by examining the relationship between achievement goals (i.e., goal involvement and goal orientation) and affect, which is a "broad rubric that refers to all things emotional" (Rosenberg, 1998, p. 247) as well as emotions, which are "relatively brief but intense experiences activated by cognitive appraisal of situational factors" (Lane & Terry, 2000, p. 17). Research has shown that task involvement during a running task was positively associated with positive affect in adolescents participating in a Physical Education (PE) lesson (Vlachopoulos, Biddle, & Fox, 1997), and task involvement during a round of golf positively predicted happiness and excitement and negatively predicted dejection in adult male golfers (Dewar & Kavussanu, 2011). In both studies, goal involvement was measured retrospectively and ego involvement was unrelated to affect and emotions, respectively. In two extensive reviews of the literature, task orientation was positively related to positive affective outcomes (e.g., enjoyment and satisfaction) and negatively linked to negative affective outcomes (e.g., anxiety and boredom), whereas ego orientation was unrelated to these outcomes (Biddle, Wang, Kavussanu, & Spray, 2003; Ntoumanis & Biddle, 1999).

Although task involvement and task orientation have been associated with emotions (Dewar & Kavussanu, 2011) and affect (Vlachopoulos et al., 1997), variables that could mediate[2] (i.e., explain) this relationship have received little attention. A potential mediator is perceived

[1] A moderating variable affects the direction and strength of the relationship between the independent variable and the dependent variable, such that this relationship is different at different levels of the moderator (Baron & Kenny, 1986).
[2] A mediating variable represents the mechanism through which the independent variable influences the dependent variable (Baron & Kenny, 1986).

performance, which refers to one's evaluations of how he or she has performed on a specific task and is informed by actual performance (Dewar & Kavussanu, 2011). Task involvement could lead to more positive evaluations of performance because task-involved individuals feel successful when they improve or master a skill, so they may attend to aspects of their performance that have improved (Dewar & Kavussanu, 2011); thus, even small accomplishments may lead them to believe that they have performed well. Also, due to this focus on their own performance, task-involved individuals may perform better, which may result in higher perceived performance. Research has shown that task orientation was positively related to perceived performance in tennis players during a match (Cervelló, Rosa, Calvo, Jimenez, & Iglesias, 2007) and in competition over a year (van de Pol & Kavussanu, 2011). Perceived performance has also predicted joviality positively, and sadness (which is similar to dejection) negatively, in adolescent track and field athletes and swimmers (Graham, Kowalski, & Crocker, 2002), and was associated with happiness, pride, anger, and shame experienced by twelve elite athletes (Uphill & Jones, 2007).

As perceived performance has been linked to both task involvement and emotions in sport in past research it may mediate their relationship. In a recent cross-sectional study, task involvement positively predicted perceived performance, which in turn positively predicted happiness and excitement and negatively predicted dejection experienced by adult males during a round of golf (Dewar & Kavussanu, 2011). Also, in adolescent PE students (Vlachopoulos et al., 1997), task involvement was related to positive and negative affect through perceived success (a variable similar to perceived performance).

Although ego involvement has been hypothesized to influence emotions depending on one's perceived competence or ability (Nicholls, 1989), this moderating role of perceived competence has not been consistently supported in previous research (e.g., Hodge, Allen, & Smellie, 2008; Morris & Kavussanu, 2009). It has been suggested that perceived performance may moderate the

relationship between ego involvement and emotions (Dewar & Kavussanu, 2011): When perceived performance is high, ego-involved athletes may experience positive emotions because they believe they have achieved their goal of demonstrating superiority over others. In contrast, when perceived performance is low, ego involvement should be unrelated to positive emotions. Similarly, ego involvement should be positively associated with negative emotions when perceived performance is low, because athletes would feel that they have failed to achieve their goal of establishing superiority over others and unrelated to negative emotions when perceived performance is high.

Dewar and Kavussanu (2011) partially supported these predictions. Specifically, they found that ego involvement was positively related to happiness[3] and unrelated to dejection and anxiety when adult male golfers perceived that they performed well during a round of golf. However, ego involvement was inversely associated with happiness and positively linked to dejection and anxiety when golfers perceived low performance. Perceived performance did not moderate the relationship between ego involvement and excitement. These findings provide evidence to suggest that perceived performance moderates the relationship between ego involvement and emotions while playing golf although this was not consistent across both positive emotions.

The relationship between ego involvement and emotions may also vary depending on match outcome. Given that ego-involved athletes demonstrate ability when they establish superiority over others and would try to do this in competition, they may use outcome of a match as evidence that they have succeeded or failed in demonstrating high ability. Match outcome may moderate the relationship between ego involvement and emotions in the same way that perceived performance is expected to moderate this relationship (outlined above); however, the moderating role of outcome on the ego involvement emotion relationship has not been examined in previous research.

[3] The simple slope (*b*) was .16, $p = .068$, and approached significance.

The Present Study

The present study sought to extend the literature described above by investigating the relationship between goal involvement and a range of emotions experienced after competition. Examining a number of emotions is important because various emotions are experienced after sport competition (Nicholls, Hemmings, & Clough, 2010; Uphill & Jones, 2007) and measures of positive and negative affect may not fully capture the complexity of this emotional experience (Jones, Lane, Bray, Uphill, & Catlin, 2005). Also, recent research in school children showed that ego orientation predicted pride and shame but not enjoyment and hope; these relationships may not have been revealed if the researchers measured only positive and negative affect (Mouratidis, Vansteenkiste, Lens, & Auweele, 2009). Emotions such as happiness, pride, hope, dejection, and shame have been associated with, and are relevant after, sport competition (Allen, Jones, & Sheffield, 2009; Martinent & Ferrand, 2009; Uphill & Jones, 2007). In this study, we examined these emotions in relation to goal involvement.

Our study had two purposes. First, we examined whether task involvement during a match was related to emotions experienced after the match and the extent to which these relationships were mediated by perceived performance. We hypothesized that task involvement would be positively related to positive emotions and negatively related to negative emotions (Dewar & Kavussanu, 2011) and that perceived performance would mediate these relationships. Specifically, we expected that task involvement would be positively associated with perceived performance, which in turn, would be positively related to positive emotions and negatively associated with negative emotions (Dewar & Kavussanu, 2011; Vlachopoulos et al., 1997).

Second, we investigated whether the relationships between ego involvement and emotions are moderated by perceived performance and match outcome. We hypothesized that ego involvement would be positively related to positive emotions when athletes perceived high performance and

when they won the match, and inversely associated with positive emotions when they perceived low performance or lost the match (Dewar & Kavussanu, 2011). However, these hypotheses were tentative because in previous research, perceived performance did not moderate the relationship between ego involvement and excitement; thus, moderation was not consistent across all positive emotions (Dewar & Kavussanu, 2011). We also expected that ego involvement would be positively related to negative emotions when perceived performance was low or athletes lost the match and be unrelated to these emotions when perceived performance was high or they won the match (Dewar & Kavussanu, 2011).

With this study, we extended the literature in a number of ways. First, we examined achievement goals, perceived performance, and a range of emotions in male and female participants from a range of team sports. Second, we investigated outcome of the match as a moderator of the relationships between ego involvement and emotions. Third, we examined whether achievement goals during competition were related to emotions experienced after competition, a timeframe which has not yet been investigated.

Method

Participants

Male (n = 236) and female (n = 122) athletes recruited from university (n = 26) and local (n = 11) sport teams participated in the study. At the time of data collection, the highest level the athletes had competed was international (11.73%), national (14.80%), county (26.82%), regional (18.44%), and club (28.21%). Participants were drawn from a number of team sports including hockey (36.87%), football (14.25%), volleyball (11.17%), rugby (8.94%), basketball (6.98%), American football (5.87%), lacrosse (4.75%), netball (4.75%), indoor cricket (3.35%), and water polo (3.07%).

Procedure

After ethical approval was granted by the university ethics committee, coaches and team captains were contacted by two research assistants to determine if they were willing to participate in the study. Coaches from 37 teams allowed the research assistants to approach their players on a day an early or mid-season match was played. Players were approached immediately after losing (n = 137), drawing (n = 10), or winning (n = 211) their match. The purpose of the study was explained to them, and they were asked to think about the match they had just played, to read all questions carefully, and to answer them honestly. They were also told that their responses would be kept confidential and that they were free to withdraw their participation at any time. Then, participants provided informed consent and completed the questionnaire pack, in approximately 15 minutes. Data collection lasted approximately three months. Similar to previous research (Allen et al., 2009), the majority of questionnaires were completed within 30 minutes of finishing the match; an exception was participants in the American football teams (5.87% of sample), who completed the questionnaires within 60 minutes. Measures used in the questionnaire are described below and shown in full in Appendix 3a-f.

Measures

Goal involvement. We measured goal involvement during the match using an adapted version of the Perception of Success Questionnaire (POSQ; Roberts, Treasure, & Balague, 1998). The POSQ is a measure of goal orientation, and in line with other goal orientation measures (Nicholls, Patashnick, & Nolen, 1985), it refers to individuals' usual achievement-related criteria of success. As the only differentiation made by Nicholls (1989) between goal orientation and goal involvement is that the former refers to an individual difference variable whereas the latter is a state variable, it seemed important to measure goal involvement with reference to one's criteria of success. This approach has been used in previous studies that have measured goal involvement

(e.g., Hall & Kerr, 1997; Hall, Kerr, & Matthews, 1998; Vansteenkiste, Matos, Lens, & Soenens, 2007; Williams, 1998).

We measured goal involvement after competition for three reasons: First, participants could consider the entire match and indicate the degree to which they were task and ego involved throughout the competition. As various situational factors specific to the match (e.g., normative feedback and reactions of the crowd, see Nicholls, 1989), could have influenced task and ego involvement, assessing these variables *after* the match was important. Second, repeated assessments of goal states during engagement in sport may decrease task and increase ego involvement (Duda, 2001). To reduce this possibility, Duda (2001) suggested the use of retroactive recall. Finally, other studies that have examined goal involvement in physical activity settings have measured this construct using a retrospective design (e.g., Vansteenkiste et al., 2007; Vlachopoulos et al., 1997).

Participants were instructed to think about what made them feel most successful during the match they had just played. The stem was "During the match today I felt most successful when…". Participants responded to six items measuring task involvement (e.g., "I reached a personal goal", "I mastered something I couldn't do before"), and six items measuring ego involvement (e.g., "I outperformed my opponents", "I was the best"). Responses were made on a 5-point Likert scale with anchors of *strongly disagree* (1) and *strongly agree* (5). Mean scores for each subscale were calculated and used in all analyses. The same procedure was followed for all multi-item measures.

The POSQ has been shown to have construct and concurrent validity, and internal consistency with alpha coefficients of .82 and .87 for task and ego orientation, respectively (Roberts et al, 1998). As it is typically used as a measure of goal orientation, but we modified the stem to measure goal involvement, we conducted Confirmatory Factor Analyses on the POSQ items using EQS 6.1, and the robust maximum likelihood method (Bentler & Wu, 2002). Based on guidelines by Bentler

(2007), we assessed model fit using: the Satorra–Bentler scaled chi-square (χ^2); the robust Comparative Fit Index (CFI); the Standardized Root Mean Square Residual (SRMR); and the robust Root Mean Square Error of Approximation (RMSEA). These fit indices were: χ^2 (53) = 208.2898; CFI = .912; SRMR = .062; RMSEA = .108. Factor loadings range was .52 - .86.

Although these results are in line with the findings reported in other studies that have performed CFA on the POSQ (e.g., Kavussanu & Ntoumanis, 2003; Roberts et al., 1998) it is important to consider them in view of recommendations for cut off values for fit indices. Specifically, Hu and Bentler (1999) recommend that a good model fit is achieved when the CFI is close to .95, the SRMR is close to .08, and the RMSEA is close to .06. Thus, our SRMR is consistent with these guidelines, but our CFI and RMSEA fall short of these values. However, as Marsh, Hau, and Grayson (2005) have argued, traditional cut-off values (e.g., incremental fit indexes > .90) are best viewed as rules of thumb and have little statistical justification. They also suggest (p. 325) that "it is almost impossible to get an acceptable fit (e.g., CFI, RNI, TLI > .90; RMSEA < .05) for even "good" multifactor rating instruments when analyses are done at the item level and there are multiple factors (e.g., 5–10)." Thus, the fit indices of the adapted POSQ need to be interpreted in light of these comments.

Happiness and dejection. The Sport Emotion Questionnaire (Jones et al., 2005) was used to measure happiness and dejection experienced after the match. Participants were asked to think about their performance today and indicate how intensely they felt the emotion at that moment, in relation to the match they had just played. The stem "At this moment, I feel…", was presented before five items measuring happiness (e.g., "pleased", "joyful") and four items assessing dejection (e.g., "unhappy", "disappointed"). Participants responded on a Likert scale with anchors of *not at all* (1) and *extremely* (5). The scale has shown construct validity (Jones et al., 2005) and internal

consistency scores of .91 and .92 for happiness and dejection, respectively, when used after competition (Allen et al., 2009).

Pride and shame. Pride and shame experienced after the match were measured using the State Shame and Guilt Scale (Marschall, Sanftner, & Tangney, 1994). Participants were asked to think about their performance that day and indicate how intensely they felt the emotion at that moment, in relation to the match they just played. Fifteen items were preceded by the stem "At this moment…", with five items measuring pride (e.g., "I feel good about myself", "I feel proud") and shame (e.g., "I feel like a bad person", "I feel worthless, powerless"). Participants responded on a Likert scale with anchors of *did not feel this way at all* (1) and *felt this way very strongly* (5). This scale has demonstrated internal consistency scores of .87 and .89 for pride and shame, respectively (Marschall et al., 1994).

Hope. Hope was assessed by amending test-related instructions and items from the Achievement Emotion Questionnaire (Pekrun, Goetz, & Perry, 2005) to refer to the next match participants would play. Participants were told that the items may or may not describe how they feel about their next match and were asked to indicate their level of agreement with each of the eight statements used to measure hope (e.g., "I have great hope that my abilities will be sufficient", "I think about the match optimistically"). Participants responded on a Likert scale with anchors of *did not feel this way at all* (1) and *felt this way very strongly* (5). The subscale has shown construct validity (Pekrun, Goetz, Perry, Kramer, & Hochstadt, 2004) and high internal consistency with an alpha coefficient of .80 (Pekrun et al., 2005).

Perceived performance. Perceived performance was assessed using a 5-item scale based on a measure of subjective improvement (Balaguer, Duda, Atienza, & Mayo, 2002). Participants were asked to rate aspects of their performance on the match they had just played and were told that words in brackets were examples to explain each aspect of performance. The instruction "Please

rate your performance during the match" was presented before items for physical (e.g., stamina, speed, strength), psychological (e.g., concentration, attitude, regrouping after poor performance), tactical (e.g., using knowledge of your sport to your advantage), and technical (e.g., skill execution) aspects of performance, and overall performance (e.g., compared to your own typical performance). Participants responded to these items on an 11-point Likert scale with anchors of *worst I could perform* (0) and *best I could perform* (10). We conducted exploratory factor analysis on these items, which revealed one factor that explained 65.10% of the variance and factor loadings ranged from .63 to .86.

Outcome of the match. Participants reported the final score of the match and whether they lost, drew, or won the competition.

Results

Preliminary Analysis

Due to the small number of participants who drew their match (n = 10), meaningful analysis could not be performed on these individuals; therefore, they were removed from the analysis leaving a final sample of 348. Missing values accounted for less than 5% of data points, so any method for replacing them was appropriate (Tabachnick & Fidell, 2001). Data were examined to evaluate assumptions of multivariate analysis via histograms, q-q plots, and values of skewness and kurtosis. Although there were slight deviations from normality for dejection and shame, the statistical test employed is robust to such deviations, so this is not expected to influence the results (Cohen, Cohen, West, & Aiken, 2003). All other variables were normally distributed and all variables satisfied the assumption of homoscedasticity. Finally, no outliers were detected when data were checked using Mahalanobis distance and Cook's statistic.

Table 4.1

Descriptive Statistics, Zero-Order Correlations and Alpha Coefficients (n = 348)

	Variables	*M*	*SD*	1	2	3	4	5	6	7	8	9
1	Task Inv	3.76	0.87	(.88)								
2	Ego Inv	3.67	0.91	.60***	(.90)							
3	Happiness	3.12	1.22	.23***	.16**	(.93)						
4	Pride	3.19	0.96	.27***	.21***	.67***	(.89)					
5	Hope	3.63	0.73	.18**	.08	.40***	.45***	(.89)				
6	Dejection	2.06	1.08	-.16**	-.05	-.63***	-.63***	-.41***	(.91)			
7	Shame	1.70	0.78	-.20***	-.14**	-.40***	-.50***	-.35***	.64***	(.84)		
8	P Perf	6.18	1.40	.26***	.19***	.45***	.58**	.42***	-.46***	-.33***	(.86)	
9	Outcome	0.61	0.49	.06	.04	.58***	.39***	.26***	-.51***	-.30***	.28***	-
10	Sex	1.35	0.48	.08	-.05	.17**	.04	-.03	-.11*	-.01	.02	.19**

Note. Possible range of scores = 1 to 5 for achievement goals and emotions; 0 to 10 for perceived performance. Outcome is coded 0 = lost, 1 = won. Sex is coded as 1 = male, 2 = female. Alpha coefficients are presented in the diagonal. Inv = Involvement, P Perf = Perceived Performance.
**p<.05, **p<.01, ***p<.001.*

Descriptive Statistics, Zero-order Correlations, and Alpha Coefficients

Descriptive statistics, zero-order correlations, and alpha coefficients for all variables can be seen in Table 4.1. Athletes reported moderate-to-high levels of task and ego involvement, moderate positive emotions and perceived performance, and low levels of negative emotions. Task involvement was positively related to perceived performance, and both variables were positively related to positive emotions and negatively linked to negative emotions. Ego involvement was related positively to happiness and pride and negatively to shame. Outcome of the match was related positively to positive emotions and perceived performance, and negatively to negative emotions. Most relationships were moderate or large, except for the small relationships between ego involvement and emotions. Correlations of .10, .30 and .50 were classified as small, medium, and large, respectively (Cohen, 1992). Internal consistency scores were excellent, ranging from .84 to .93.

Task Involvement and Emotions

The first purpose of the study was to investigate whether task involvement was related to emotions experienced after the match and the extent to which perceived performance mediated these relationships. We examined this purpose by testing the four partial mediation conditions outlined by LeBreton, Wu, and Bing (2009). Due to the limited empirical support for the relationships between goal involvement during competition and emotions experienced after competition, a limited information technique, such as regression analysis, was considered appropriate for analyzing this data. Therefore, we calculated the relevant relationships and their effect sizes using the Hayes and Preacher (2011) MEDIATE macro. In this analysis, we entered ego involvement as a covariate to control for any possible effects of this variable.

LeBreton et al.'s (2009) first condition is that the independent variable is related to the dependent variable. Results showed that task involvement was positively related to happiness, B =

0.31, *SE* = .09, *t*(345) = 3.31, *p* < .001, pride, *B* = 0.24, *SE* = .07, *t*(345) = 3.41, *p* < .001, and hope, *B* = 0.18, *SE* = .06, *t*(345) = 3.15, *p* = .002, and negatively associated with dejection, *B* = -0.24, *SE* = .08, *t*(345) = -2.94, *p* = .004, and shame, *B* = -0.16, *SE* = .06, *t*(345) = -2.64, *p* = .009.

The second condition of mediation (LeBreton et al., 2009) is that the independent variable is related to the mediator, which was the case: Task involvement was positively associated with perceived performance, *B* = 0.36, *SE* = .11, *t*(345) = 3.44, *p* < .001. We tested the third condition by examining the relationship between the mediator and the dependent variable while controlling for the independent variable. Results showed that perceived performance was positively related to happiness, *B* = 0.36, *SE* = .04, *t*(344) = 8.43, *p* < .001, pride, *B* = 0.37, *SE* = .03, *t*(344) = 12.10, *p* < .001, and hope, *B* = 0.21, *SE* = .03, *t*(344) = 7.92, *p* < .001, and negatively associated with dejection, *B* = -0.35, *SE* = .04, *t*(344) = -9.18, *p* < .001, and shame, *B* = -0.17, *SE* = .03, *t*(344) = -5.67, *p* < .001.

LeBreton et al.'s (2009) fourth condition is that there is an effect of the independent variable on the dependent variable through the mediator. This indirect effect was estimated using percentile bootstrap confidence intervals, which randomly resample the original data and provide a range of possible values for this effect (Hayes & Preacher, 2011). Omnibus effect sizes (represented by φ) are also reported. These effects were significant at *p* < .05 when the confidence intervals did not contain zero (Hayes & Preacher, 2011). For our analysis we requested 5000 resamples and selected 95% confidence intervals. We found evidence of this indirect effect (denoted by Θ) for happiness, Θ = 0.13, *SE* = .04, 95% CIs [.05, .21], φ = .01, pride, Θ = 0.13, *SE* = .04, 95% CIs [.05, .22], φ = .01, hope, Θ = 0.08, *SE* = .03, 95% CIs [.03, .13], φ = .01, dejection, Θ = -0.13, *SE* = .04, 95% CIs [-.21, -.05], φ = -.01, and shame, Θ = -.06, *SE* = .02, 95% CIs [-.11, -.02], φ = -.01. Also, the other relationships necessary to satisfy mediation (mentioned above) were in the expected direction and were different from zero for all emotions. Therefore, there was evidence that the relationships

between task involvement and happiness, pride, hope, dejection, and shame were mediated by perceived performance.

Ego Involvement and Emotions

The second purpose of the study was to examine whether the relationships between ego involvement and emotions were moderated by perceived performance and outcome of the match. We examined this purpose by following the procedure outline by Aiken and West (1991). All predictors were centered by subtracting their mean from the individual scores, and interaction terms were formed using centered predictors (Aiken & West, 1991). We entered task and ego involvement in Step 1 (we included task involvement to control for this variable), perceived performance in Step 2, the ego by perceived performance interaction in Step 3[4], outcome in Step 4, and the ego involvement by outcome interaction in Step 5.

Significant interactions were explored by plotting two simple slopes and testing whether they were significantly different from zero (Aiken & West, 1991). For perceived performance, we plotted the interactions at two values: one *SD* above the mean and one *SD* below the mean, of the independent (e.g., ego involvement) and moderator (e.g., perceived performance) variables. For outcome, we plotted the interaction at two values: win and loss.

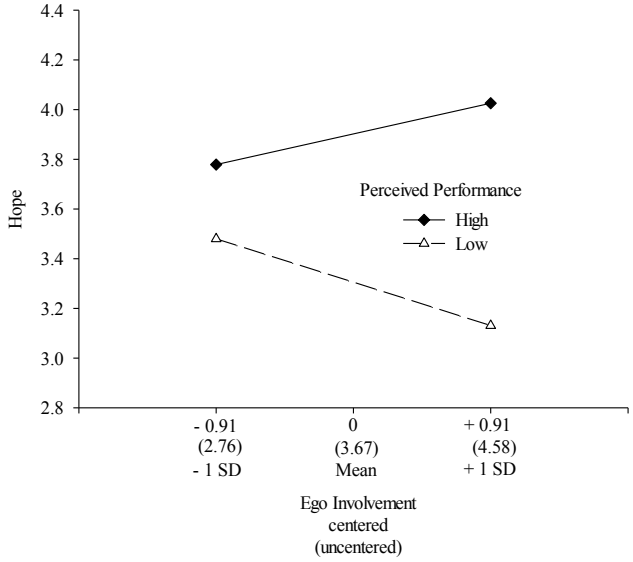
Results from Step 1 showed that ego involvement was unrelated to happiness, $B = 0.03$, $SE = .09$, $t(345) = 0.39$, $p = .696$, pride, $B = 0.08$, $SE = .07$, $t(345) = 1.18$, $p = .239$, hope, $B = -0.04$, $SE = .05$, $t(345) = -0.72$, $p = .474$, dejection, $B = 0.08$, $SE = .08$, $t(345) = 1.02$, $p = .311$, and shame, $B = -0.03$, $SE = .06$, $t(345) = -0.53$, $p = .597$. However, perceived performance moderated the relationship between ego involvement and a number of emotions. First, perceived performance moderated the relationship between ego involvement and hope, $B = 0.12$, $SE = .02$, $t(343) = 5.22$, $p < .001$, $R^2 = .06$. As shown in Figure 4.1(A), ego involvement was negatively related to hope at low

[4] We also examined the hypothesised moderation of perceived competence (Nicholls, 1984) by including the interaction of this variable, with ego involvement. There was no significant interaction effect on emotions.

levels of perceived performance, B = -0.19, $t(343)$ = -3.55, $p < .001$, and positively associated with hope at high levels of perceived performance, B = 0.14, $t(343)$ = 2.28, p = .024. However, the ego involvement by perceive performance interactions for happiness, B = 0.04, SE = .04, $t(343)$ = 1.15, p = .252, R^2 = .00, and pride, B = 0.04, SE = .03, $t(343)$ = 1.64, p = .103, R^2 = .01, were not significant.

Second, perceived performance moderated the relationship between ego involvement and dejection, B = -0.07, SE = .03, $t(343)$ = -2.18, p = .030, R^2 = .01. As shown in Figure 4.1(B), for athletes who perceived low performance, ego involvement was positively related to dejection, B = 0.19, $t(343)$ = 2.39, p = .017, and was unrelated to this emotion for those who perceived high performance, B = -0.01, $t(343)$ = -0.11, p = .912. Finally, we found an ego involvement by perceived performance interaction on shame, B = -0.07, SE = .03, $t(343)$ = -2.56, p = .011, R^2 = .02. However, the simple slopes for low perceived performance, B = 0.06, $t(343)$ = 0.31, p = .755, and high perceived performance, B = -0.12, $t(343)$ = -1.35, p = .178, were not significant.

A



B

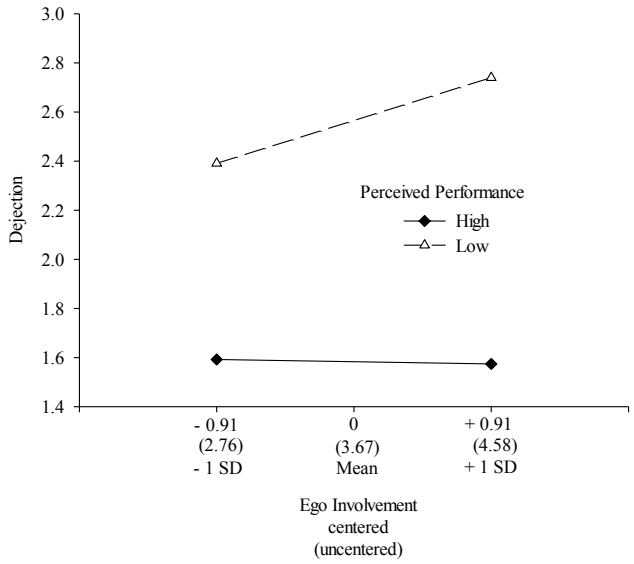


Figure 4.1. Ego involvement by perceived performance interaction for hope (A; regression equation: $\hat{Y} = 3.60 - 0.03X + 0.21Z + 0.12XZ$) and dejection (B; regression equation: $\hat{Y} = 2.07 + 0.09X - 0.35Z - 0.07XZ$).

Our analysis also showed that match outcome moderated the relationship between ego involvement and pride, $B = 0.20$, $SE = .09$, $t(341) = 2.10$, $p = .037$, $R^2 = .01$. As shown in Figure 4.2(A), ego involvement was positively related to pride in athletes who won the match, $B = 0.14$, $t(341) = 2.08$, $p = .03$, but unrelated to pride in athletes who lost the match, $B = -0.06$, $t(341) = -0.74$, $p = .462$. Outcome also moderated the relationship between ego involvement and hope, $B = 0.42$, SE = .10, $t(340) = 4.25$, $p < .001$, $R^2 = .02$. Figure 4.2(B) shows that ego involvement was positively associated with hope in winners, $B = 0.14$, $t(340) = 2.24$, $p = .025$, but negatively related to this emotion for losers, $B = -0.29$, $t(340) = -3.78$, $p < .001$. Finally, outcome moderated the relationship between ego involvement and dejection, $B = -0.26$, SE = .11, $t(341) = -2.39$, $p = .018$, $R^2 = .01$. As shown in Figure 4.2(C), ego involvement was positively related to dejection in athletes who lost the match, $B = 0.25$, $t(341) = 2.75$, $p = .006$, but was unrelated to dejection in athletes who won the match, $B = -0.01$, $t(341) = -0.16$, $p = .876$. Outcome did not moderate the relationships between ego involvement and happiness, $B = 0.10$, $SE = .12$, $t(341) = 0.86$, $p = .392$, $R^2 = .00$, or shame, $B = 0.01$, SE = .09, $t(341) = 0.59$, $p = .953$, $R^2 = .00$.

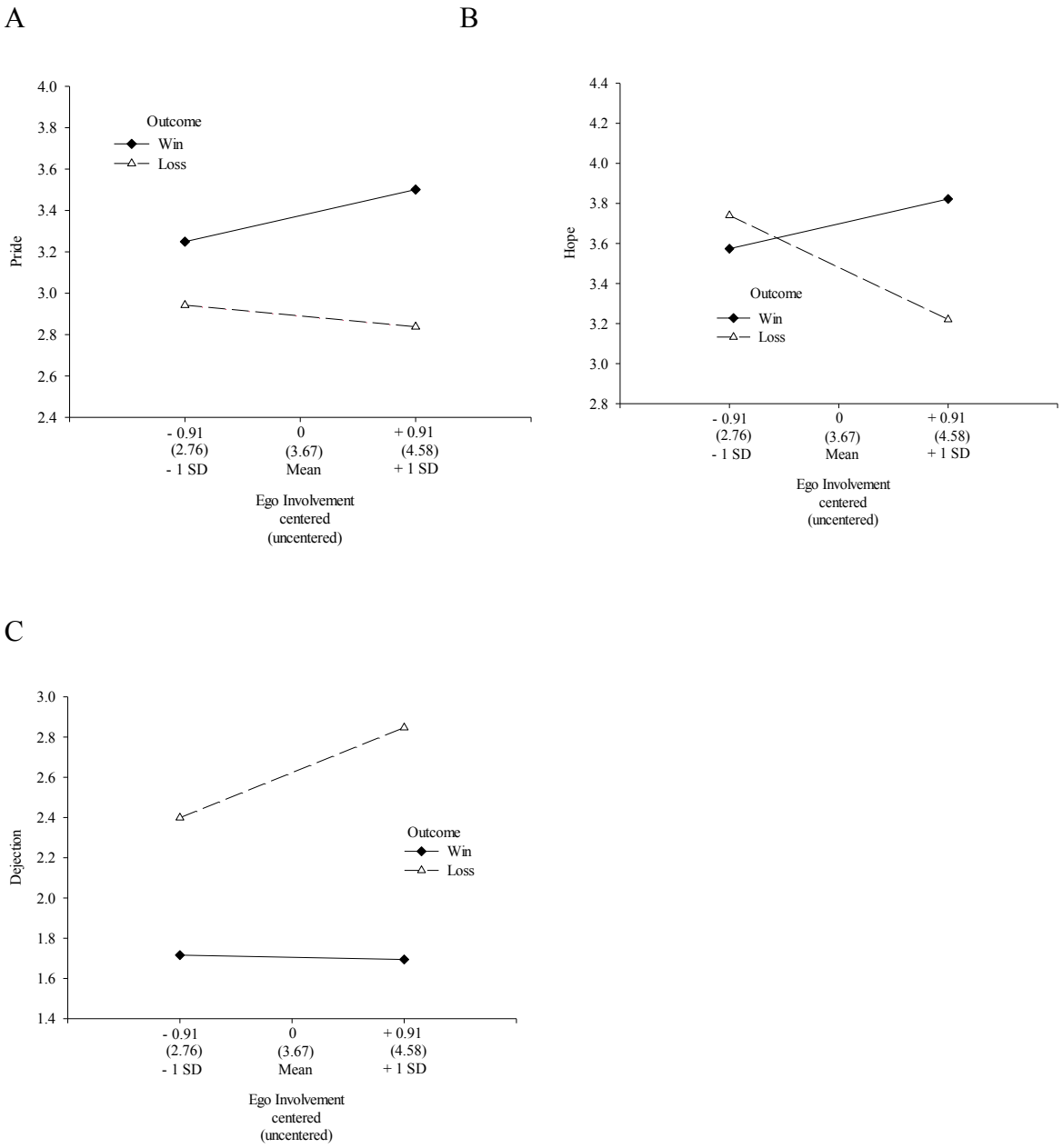


Figure 4.2. Ego involvement by outcome interaction for pride (A; regression equation: $\hat{Y} = 2.89 – 0.06X + 0.49Z + 0.20XZ$), hope (B; regression equation: $\hat{Y} = 3.48 – 0.16X + 0.21Z + 0.22XZ$) and dejection (C; regression equation: $\hat{Y} = 2.62 + 0.25X – 0.92Z – 0.26XZ$).

Discussion

Achievement goals have been examined in relation to affect and emotions (see Biddle et al., 2003). Recent research has examined the relationships between goal involvement and emotions experienced during a competitive round of golf and the mediating and moderating role of perceived performance (Dewar & Kavussanu, 2011). The present study extended this work by examining emotions experienced after a team sport competition and by investigating outcome of the match as a moderator of the relationship between ego involvement and emotions.

Task Involvement and Emotions

As hypothesized, task involvement was positively related to happiness, pride, and hope, and negatively related to dejection and shame. These findings extend previous research (Dewar & Kavussanu, 2011; Vlachopoulos et al., 1997) by identifying a relationship between the achievement goals athletes adopt during competition (measured after competition) with emotions experienced after competition. The findings are also in accord with research showing that task orientation is positively associated with enjoyment in the competition context in individual and team sport athletes (van de Pol & Kavussanu, 2012) and are consistent with results from two comprehensive reviews of the literature (Biddle et al., 2003; Ntoumanis & Biddle, 1999), which showed that task orientation was positively related to positive affective outcomes and negatively associated with negative affective outcomes. Our results suggest that being task involved during a competitive match may lead athletes to experience positive emotions, and reduce the likelihood of experiencing negative emotions, after the match.

The relationship between task involvement and all emotions was mediated by perceived performance. Specifically, task-involved athletes were more likely to perceive that they had performed well during the match; perceived performance was in turn related to happiness, pride, and hope positively, and dejection and shame negatively. These results extend findings in male

golfers (Dewar & Kavussanu, 2011) by providing evidence of perceived performance as a mediator of the link between task involvement and emotions in male and female team sport athletes. They also extend findings in adolescent physical education students that task involvement was related to positive affect and negative affect indirectly through perceived success (Vlachopoulos et al., 1997). The results are consistent with studies showing that task orientation positively predicted perceived performance (Cervelló et al., 2007; van de Pol & Kavussanu, 2011) and that perceived performance was associated with emotions (Graham et al., 2002; Uphill & Jones, 2007). Thus, task involvement may influence emotions through its effects on perceived performance.

Ego Involvement and Emotions

Our hypothesis that perceived performance would moderate the relationship between ego involvement and emotions was partially supported. Ego involvement was related to hope positively when athletes perceived high performance, and negatively when they perceived low performance. Ego-involved athletes might experience high (or low) hope because, based on perceived performance in the current match, they may (or may not) believe that they can outperform their opponents in a future competition.

Also, ego involvement was positively related to dejection in athletes who rated their performance as low and was unrelated to this emotion in those who rated their performance as high. The former athletes may have felt dejected because they believed that they failed to achieve their goal of performing well relative to others (see Jones et al., 2005). This finding suggests that when athletes do not perform well they will be dejected after the match particularly if they have been ego involved during the match.

The relationship between ego involvement and shame was also moderated by perceived performance. However, although the simple slopes were significantly different from each other, as implied by the significant interaction effect, they were not significantly different from zero. The

small effects for the simple slopes may be attributed to low levels of shame experienced after the match (see Cohen et al., 2003). Future research may find stronger relationships between these variables in a different sample and context, such as elite athletes who have performed poorly at a very important competition, where shame may be more likely to be experienced (Uphill & Jones, 2007).

Outcome of the competition also moderated the relationships between ego involvement and emotions. Specifically, after losing the match, ego involvement was negatively associated with hope, positively related to dejection, and unrelated to pride. However, after winning the match, ego involvement was positively related to pride and hope, and unrelated to dejection. Individuals feel proud when they have achieved beyond a goal (Uphill & Jones, 2007); perhaps ego-involved athletes used outcome of the match to inform themselves whether they had achieved beyond their goal. Immediately after losing a match, athletes who were ego involved during the match may not think improvement is possible and experience a loss; these thoughts may act as antecedents of these emotions (see Lazarus, 2000; Uphill & Jones, 2007), so athletes may experience lower hope and higher dejection, respectively. Overall, the moderation results suggest that ego involvement is differently related to emotions depending on how individuals believed they performed or the outcome of the match.

Limitations of the Study and Directions for Future Research

Although this study revealed some interesting findings, it also has some limitations which are worth highlighting. First, the data were cross-sectional, thus the direction of causality in the identified relationships cannot be established. Achievement goals adopted during the match could have influenced emotions experienced after the match. However, because both goals and emotions were measured after the match, it is also possible that emotions have affected individuals' reports of achievement goals. To address this issue, future research could experimentally investigate the effect

of achievement goals on emotions. Also, although we examined whether perceived performance mediates the relationships between task involvement and emotions, a true test of mediation can only occur in a randomized experiment in which both the independent variable and the mediator are manipulated (see MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). Future research should employ such a design to test our mediation hypotheses.

Our measure of goal involvement may also be considered by some researchers to be a limitation. As we explained in the Method, we measured this construct by adapting the stem of the POSQ, which is a measure of goal orientation, and asking participants at the end of the match to indicate their criteria of success during the match. Given that throughout the competition, players should have fluctuated between states of task and ego involvement, depending on factors specific to that competition (see Nicholls, 1989), our measure captured *overall* goal states during the match. However, others have suggested that measuring goal involvement during performance is complex because one's *focus* during an event may change (see Harwood, Hardy, & Swain, 2000). These researchers seem to imply that goal involvement should be measured as one's focus during an event. Future research should examine whether measurement of goal involvement, as was done in the current study, produces the same results as other methods, for example asking participants about their focus of achievement or video analysis and retrospective interviewing that allows one to measure moment to moment changes in goal involvement (Harwood et al., 2000).

The large correlation between task and ego involvement (.60) may also be viewed as unusual in light of Nicholls' (1989) conceptualization of task and ego orientations as orthogonal. However, this finding is consistent with the results of Vlachopoulos et al. (1997) and Dewar and Kavussanu (2011), who also reported large (.55) or medium-to-large (.43) correlations between these two constructs. Taken together with past research, these findings suggest that during a competitive sport event, individuals are likely to be task *and* ego involved (though not necessarily at the same time).

Perhaps sport competition elicits feelings of success when trying hard, but the interpersonal comparison which is inherent in competition leads individuals to also feel successful when doing better than others. Indeed, research (van de Pol & Kavussanu, 2011, 2012) has reported medium-to-large (.40, .42) correlations between task and ego orientation in competition but small correlations (.14, .17) in training, suggesting that the relationship between the two achievement goals is influenced by the context.

Although we focused on task and ego goals, researchers may wish to examine whether achievement goals are related to emotions after competition using the 2 x 2 achievement goal framework (Elliot, 1999), which as Papaioannou, Zourbanos, Krommidas, and Ampatzoglou (2012) point out, conceptualizes achievement goals in a different way from Nicholls (1989). The 2 x 2 framework considers the valence (i.e., approach vs. avoidance) dimension of competence in addition to the definition dimension (i.e., self vs. other-referenced); crossing the two dimensions of competence results in a 2 x 2 achievement goal framework. Finally, future researchers could examine the relationship between goal involvement at different points throughout competitive and non-competitive situations and whether this relationship remains constant over time.

Conclusion

Our findings suggest that being task involved while playing sport may be beneficial for perceptions of performance and emotions experienced after the match. Also, emotions ego-involved athletes experience after competition depend to a certain degree on how athletes believe they performed or the outcome of the competition. Given that performance may not be consistent across time or totally under athletes' control, athletes should be aware of the consequences for emotions that may result from being ego-involved. Finally, the results suggest that achievement goals, perceived performance, and outcome of the match are important variables to consider when examining emotions experienced by team sport athletes.

References

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Thousand Oaks, CA: Sage Publications.

Allen, M. S., Jones, M. V., & Sheffield, D. (2009). Attribution, emotion, and collective efficacy in sports teams. *Group Dynamics: Theory, Research, and Practice, 13,* 205-217. DOI: 10.1037/a0015149

Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology, 84,* 261-271.

Balaguer, I., Duda, J. L., Atienza, F. L., & Mayo, C. (2002). Situational and dispositional goals as predictors of perceptions of individual and team improvement, satisfaction and coach ratings among elite female handball teams. *Psychology of Sport and Exercise, 3,* 293-308.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51,* 1173-1182.

Bentler, P. M. (2007). On tests and indices for evaluating structural models. *Personality and Individual Differences, 42,* 825– 829. DOI:10.1016/j.paid.2006.09.024

Bentler, P. M., & Wu, E. J. C. (2002). *EQS 6 for Windows user's guide.* Multivariate Software.

Biddle, S. J. H., Wang, C. K. J., Kavussanu, M., & Spray, C. M. (2003). Correlates of achievement goal orientations in physical activity: A systematic review of research. *European Journal of Sport Science, 3,* 1-20.

Cervelló, E., Rosa, F. J. S., Calvo, T. G., Jimenez, R., & Iglesias, D. (2007). Young tennis players' competitive task involvement and performance: The role of goal orientations, contextual motivational climate, and coach-initiated motivational climate. *Journal of Applied Sport Psychology, 19,* 304-321. DOI: 10.1080/10413200701329134

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112,* 155-159.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioural sciences*. Mahwah, New Jersey: Lawrence Erlbaum Associates, Inc.

Dewar, A. J., & Kavussanu, M. (2011). Achievement goals and emotions in golf: The mediating and moderating role of perceived performance. *Psychology of Sport and Exercise,12*, 525-532. DOI:10.1016/j.psychsport.2011.05.005

Duda, J. L. (2001). Goal perspective research in sport: Pushing the boundaries and clarifying some misunderstandings. In G.C. Roberts (Ed.), *Advances in motivation in sport and exercise* (pp. 129–182). Champaign, IL: Human Kinetics.

Elliot, A. J. (1999). Approach and avoidance motivation and achievement goals. *Educational Psychologist*, *34*, 169-189.

Graham, T. R., Kowalski, K. C., & Crocker, P. R. E. (2002). The contributions of goal characteristics and causal attributions to emotional experience in youth sport participants. *Psychology of Sport and Exercise, 3,* 273-291. DOI: 10.1016/S1469-0292(01)00006-1

Hall, H. K., & Kerr, A. W. (1997). Motivational antecedents of precompetitive anxiety in youth sport. *The Sport Psychologist, 11,* 24-42.

Hall, H. K., Kerr, A. W., & Matthews, J. (1998). Precompetitive anxiety in sport: The contribution of achievement goals and perfectionism. *Journal of Sport & Exercise Psychology, 20*, 194-217.

Harwood, C., Hardy, L., & Swain, A. (2000). Achievement goals in sport: A critique of conceptual and measurement issues. *Journal of Sport & Exercise Psychology, 22*, 235-255.

Hayes, A. F., & Preacher, K. J. (2011). Indirect and direct effects of a multicategorical causal agent in statistical mediation analysis. *Manuscript submitted for publication*

Hodge, K., Allen, J. B., & Smellie, L. (2008). Motivation in Masters sport: Achievement and social goals. *Psychology of Sport and Exercise, 9,* 157-176. DOI:10.1016/j.psychsport.2007.03.002

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fix indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1–55.

Jones, M. V., Lane, A. M., Bray, S. R., Uphill, M., & Catlin, J. (2005). Development and validation of the Sport Emotion Questionnaire. *Journal of Sport & Exercise Psychology, 27,* 407-431.

Kavussanu, M., & Ntoumanis, N. (2003). Participation in sport and moral functioning: Does ego orientation mediate their relationship? *Journal of Sport & Exercise Psychology, 25,*1–18.

Lane, A. M., & Terry, P. C. (2000). The nature of mood: Development of a conceptual model with a focus on depression. *Journal of Applied Sport Psychology, 12,* 16-33.

Lazarus, R. S. (2000). How emotions influence performance in competitive sports. *The Sport Psychologist, 14,* 229-252.

LeBreton, J. M., Wu, J., & Bing, M. N. (2009). The truth(s) on testing for mediation in the social and organizational sciences. In C. E. Lance & R. J. Vandenberg (Eds.), *Statistical and methodological myths and urban legends: Doctrine, verity, and fable in the organizational and social sciences* (pp. 107-142). New York, NY: Routledge.

MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*, **7**, 83-104.

Marschall, D., Sanftner, J., & Tangney, J. P. (1994). *The state shame and guilt scale*. Fairfax, VA: George Mason University.

Marsh, H. W., Hau, K. T., & Grayson, D. (2005). Goodness of fit in structural equation models. In A. Maydeu-Olivares & J. J. McArdle (Eds.), *Changing policies, changing teachers: New directions for schooling?* (pp. 22– 40). Philadelphia, PA: Open University Press.

Martinent, G., & Ferrand, C. (2009). A naturalistic study of the directional interpretation process of discrete emotions during high-stakes table tennis matches. *Journal of Sport & Exercise Psychology, 31,* 318-336.

Morris, R. L., & Kavussanu, M. (2009). The role of approach-avoidance versus task and ego goals in enjoyment and cognitive anxiety in youth sport. *International Journal of Sport and Exercise Psychology, 7,* 185-202.

Mouratidis, A., Vansteenkiste, M., Lens, W., & Auweele, Y. V. (2009). Beyond positive and negative affect: Achievement goals and discrete emotions in the elementary physical education classroom. *Psychology of Sport and Exercise, 10*, 336-343.

Nicholls, A. R., Hemmings, B., & Clough, P. J. (2010). Stress appraisals, emotions, and coping among international adolescent golfers. *Scandinavian Journal of Medicine & Science in Sports, 20,* 346-355. DOI: 10.1111/j.1600-0838.2009.00894.x

Nicholls, J. G. (1984). Achievement motivation: Conceptions of ability, subjective experience, task choice, and performance. *Psychological Review, 91,* 328-346.

Nicholls, J. G. (1989). *The competitive ethos and democratic education*. Cambridge, Massachusetts: Harvard University Press.

Nicholls, J. G., Patashnick, M., & Nolen, S. B. (1985). Adolescents' theories of education. *Journal of Educational Psychology, 77,* 683-692.

Ntoumanis, N., & Biddle, S. J. H. (1999). Affect and achievement goals in physical activity: a meta-analysis. *Scandinavian Journal of Medicine & Science in Sports, 9,* 315-332.

Papaioannou, A. G., Zourbanos, N., Krommidas, C., & Ampatzoglou, G. (2012). The place of achievement goals in the social context of sport: A comparison of Nicholls' and Elliot's models. In G. C. Roberts and Treasure (Eds), *Advances in motivation in sport and exercise*, 3rd ed. (pp. 59-90). Champaign, IL: Human Kinetics.

Pekrun, R., Goetz, T., Perry, R. P., Kramer, K., & Hochstadt, M. (2004). Beyond test anxiety: Development and validation of the Test Emotions Questionnaire (TEQ). *Anxiety, Stress and Coping, 17,* 287-316.

Pekrun, R., Goetz, T., & Perry, R. P. (2005). *Achievement Emotions Questionnaire (AEQ). User's manual*. Department of Psychology, University of Munich.

Roberts, G. C. (1986). The perception of stress: A potential source and its development. In M. R. Weiss & D. Gould (Eds.), *Sport for children and youths* (pp. 119-127). Champaign, IL: Human Kinetics.

Roberts, G. C., Treasure, D. C., & Balague, G. (1998). Achievement goals in sport: The development and validation of the Perception of Success Questionnaire. *Journal of Sports Sciences, 16,* 337-347. DOI: 10.1080/02640419808559362

Rosenberg, E. L. (1998). Levels of analysis and organization of affect. *Review of General Psychology, 2,* 247-270.

Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics*. (4th ed.) Boston: Allyn & Bacon.

Uphill, M. A., & Jones, M. V. (2007). Antecedents of emotions in elite athletes: A cognitive motivational relational theory perspective. *Research Quarterly for Exercise and Sport, 78,* 79-89.

van de Pol, P. K. C., & Kavussanu, M. (2011). Achievement goals and motivational responses in tennis: Does the context matter? *Psychology of Sport and Exercise, 12,* 176-183. DOI: 10.1016/j.psychsport.2010.09.005

van de Pol, P. K. C., & Kavussanu, M. (2012). Achievement motivation across training and competition in individual and team sports. *Sport, Exercise, and Performance Psychology, 1,* 91-105. DOI: 10.1037/a0025967

Vansteenkiste, M., Matos, L., Lens, W., & Soenens, B. (2007). Understanding the impact of intrinsic versus extrinsic goal framing on exercise performance: The conflicting role of task and ego involvement. *Psychology of Sport and Exercise, 8,* 771-794. DOI: 10.1016/j.psychsport.2006.04.006

Vlachopoulos, S., Biddle, S., & Fox, K. (1997). Determinants of emotion in children's physical activity: A test of goal perspectives and attribution theories. *Pediatric Exercise Science, 9*, 65-79.

Williams, L. (1998). Contextual influences and goal perspectives among female youth sport participants. *Research Quarterly for Exercise and Sport, 69,* 47-57.

CHAPTER 5

Study 4: The Effects of Achievement Goals on Emotions and Performance in Competition

Abstract

We investigated the effects of achievement goals on (a) emotions experienced before and after, and (b) perceived and actual performance during, a competitive motor task. Undergraduate students participated in a speed agility quickness ladder drill and completed questionnaires measuring excitement and anxiety at pre-practice and pre-competition, happiness and dejection at post-practice and post-competition, and perceived performance for practice and competition. Actual performance was also measured. ANCOVAs controlling for pre- and post-practice emotions showed that participants in the ego group reported greater pre-competition excitement than those in the task and control groups. Also, pre-competition anxiety was higher in the ego group than the task group. Moreover, the task and ego groups reported higher post-competition perceived performance than the control group. The results suggest that when engaged in a moderately difficult task, ego involvement could lead to higher excitement before competition and both task and ego involvement could lead to higher perceived performance during competition.

Keywords: goal involvement, competition, experiment.

Introduction

For over two decades Achievement Goal Theory (Ames, 1992; Nicholls, 1989) has helped researchers understand achievement motivation in sport. A basic premise of this theory is that individuals seek to develop or demonstrate competence when participating in achievement contexts, such as sport. However, two conceptions of competence or ability exist. The first is the undifferentiated conception of ability, where individuals do not differentiate effort from ability and more effort indicates higher ability. When using this conception individuals can view competence as effortful accomplishment. The second is the differentiated conception of ability, where effort and ability are differentiated, and ability is construed as capacity. When this conception of ability is used, individuals demonstrate ability when they perform as well as others with less effort or outperform others while exerting equal effort (Nicholls, 1984, 1989).

The two conceptions of ability are embedded within two achievement goals, namely task and ego involvement. Task-involved individuals use self-referenced criteria to evaluate competence and feel successful when they improve or master a task. Ego-involved individuals use other-referenced criteria to evaluate competence and feel successful when demonstrating superiority over others. Individuals can fluctuate between task and ego involvement, which refer to the states individuals experience in a certain situation, while the terms task and ego orientation are used to refer to the proneness to be task or ego involved (Nicholls, 1984, 1989). Achievement goals have been differentially related to a variety of outcomes in sport, such as positive and negative affect, persistence in practice, moral functioning, and beliefs about the causes of success and purposes of sport (Biddle, Wang, Kavussanu, & Spray, 2003).

Achievement Goals and Emotions

Although achievement goals have been examined in relation to a variety of outcomes in sport (Biddle et al., 2003), little research has investigated their link with emotions experienced before,

during, and after sport competition. An emotion commonly reported before competition is anxiety (e.g., Hall, Kerr, & Matthews, 1998; Vealey & Campbell, 1988), which may be experienced because athletes are unsure whether they will achieve a goal (Lazarus, 2000). Specifically, uncertainty about the outcome of the competition and opponents' ability may result in ego-involved athletes wondering whether they will achieve their goal of establishing superiority relative to others, thereby leading to anxiety. Task-involved athletes may expect that they will be able to make small improvements in their performance and, given that this is largely under their control, they should not doubt their ability to achieve their goal of mastering the task. Thus, ego involvement should be positively associated with anxiety and task involvement should be either inversely related or unrelated to anxiety.

Researchers have conducted cross-sectional studies to investigate the link between achievement goals and anxiety in sport and physical education (PE) settings. In one study, cognitive anxiety, reported by adolescent cross-country athletes 30 minutes prior to competition, was positively associated with ego involvement (Hall et al., 1998) and unrelated to task involvement. Also, adolescent school pupils reported higher somatic anxiety during ego-involving, than task-involving, volleyball drills completed as part of a PE class (Papaioannou & Kouli, 1999). Finally, task orientation (Vealey & Campbell, 1988) and task involvement (Hall & Kerr, 1997) negatively predicted state anxiety and somatic anxiety experienced 30 minutes before competition by adolescent figure skaters and fencers, respectively; ego orientation and ego involvement were unrelated to anxiety in these studies. In general, mixed findings are observed when the relationships between achievement goals and anxiety are investigated. To date, there have been no experimental studies that have examined whether goal involvement affects anxiety experienced before a competitive sport task.

Achievement goals could also affect positive emotions experienced before competition. One such emotion is excitement, which is a feeling of arousal that might be experienced when individuals in a challenging situation expect that they may reach a goal (Jones, Lane, Bray, Uphill, & Catlin, 2005). Competition provides task- and ego-involved individuals with the *opportunity* to achieve their goal of improving or demonstrating high ability relative to others, respectively (Nicholls, 1984), which may lead to excitement. As yet, the effect of achievement goals on excitement before competition has received no research attention.

Goal involvement may influence the subjective experience of the task (Nicholls, 1984), so they may affect the emotions associated with competition. Specifically, if there is opportunity for improvement and development of one's ability by exerting effort, task-involved individuals should find an activity intrinsically satisfying (Nicholls, 1989), so they may experience more positive and less negative emotions. Research investigating these relationships during a competitive round of golf (measuring variables retrospectively), showed that task involvement was related to happiness and excitement positively and dejection negatively in male golfers (Dewar & Kavussanu, 2011). In team sport athletes, task involvement during the match (as reported at the end of the match) was positively associated with happiness and negatively linked to dejection experienced after the match (Dewar & Kavussanu, *in press*). In both studies, there was no main effect of ego involvement on emotions. Thus, task involvement has been positively associated with positive emotions and inversely related to negative emotions during and after competition.

Experimental research examining the effect of goal involvement on emotions or affect, particularly in a competitive sport setting, is scarce. An exception is a study investigating the effect of task and ego involved setting on positive and negative affect experienced by undergraduate students during a competitive dance task (Standage, Duda, & Pensgaard, 2005). Participants in two ego-involving groups reported experiencing negative affect more often than those in two task-

involving groups, but the groups did not differ in positive affect. Also, there was no difference in enjoyment experienced during a non-competitive golf putting task between mastery and performance-approach participants (Kavussanu, Morris, & Ring, 2009). The mastery and performance-approach goals in the 2 x 2 framework (Elliot, 1999) are similar but not equivalent to task and ego goals (Morris & Kavussanu, 2009; Papaioannou, Zourbanos, Krommidas, & Ampatzoglou, 2012). However, these studies (Kavussanu et al., 2009; Standage et al., 2005) did not include a control group, thus the effect of the two goals on emotions is unknown. To date, no experimental studies have investigated the effects of goal involvement on emotions experienced *before* or *after* competition.

Achievement Goals and Performance

Achievement goals may also be related to perceptions of performance. Perceived performance, defined as one's own evaluations of how he or she has performed (Dewar & Kavussanu, 2011), may be positively influenced by task involvement. Specifically, Dewar and Kavussanu (2011) have suggested that task-involved individuals may be more conscious of small increments in performance, so they are more likely to believe that even minor improvements are achievements; therefore, task involvement should lead to higher ratings of perceived performance. Ego-involved athletes may overlook small improvements in performance, so they are unlikely to feel successful and report high perceptions of performance when such improvements take place.

Recent research has examined the link between achievement goals and perceived performance. Task involvement was positively associated with perceived performance in golfers during a competitive round of golf and in team sport athletes during a match (Dewar & Kavussanu, 2011, *in press*). In addition, task orientation was positively related to perceived performance in a match (Cervelló, Rosa, Calvo, Jimenez, & Iglesias, 2007) and over the course of a season (van de Pol & Kavussanu, 2011) in tennis players. In these studies, ego involvement and orientation were

unrelated to perceived performance. These results suggest that task involvement may be beneficial for perceived performance in competitive sport situations; however, no experimental research has investigated this issue.

The effect of achievement goals on actual performance is less clear. A meta-analysis (Utman, 1997) that focused on academic tasks, such as anagrams, psychology exams, and reading comprehension, showed that learning goals (similar to task involvement) led to better performance than performance goals (similar to ego involvement). Also, school boys high in task orientation performed better on five climbing walls of increasing difficulty than boys high in ego orientation (Sarrazin, Roberts, Cury, Biddle, & Famose, 2002). However, there was no difference between mastery (task) and competitive (ego) groups on performance of a one-on-one basketball shooting task (Giannini, Weinberg, & Jackson, 1988). Therefore, in sport settings, there is not consistent support for an effect of task involvement on performance.

Addressing some limitations of past research may help researchers better understand the relationships between achievement goals and performance. For example, recent research (Kavussanu et al., 2009) did not include a control group so it is unclear whether the magnitude of any effects found for the task or ego groups were greater or less than those that would have been observed in a control group. Furthermore, Ntoumanis, Thøgersen-Ntoumani, and Smith (2009) suggested that the achievement goal instructions may have had no effect on performance because participants were at an early stage of skill learning. Also, it is possible that the ego group may display more errors than the task group because the former are focused on winning rather than performing the task as effectively as possible. Thus, research may benefit from examining the effects of task, ego, and control groups on performance in a task that was novel but could be learned quickly and errors committed during the task could be taken into account.

The Present Study

Although researchers have examined the effect of achievement goals on affect experienced during a competitive task (Standage et al., 2005), and performance on experimental tasks (e.g., Utman, 1997), the effects of goal involvement on emotions experienced before and after, or perceived performance during, competition have not been experimentally investigated. In this study, we sought to extend the literature by examining the effects of goal involvement on emotions and perceived and actual performance on a competitive motor task. We employed a speed agility quickness ladder drill because we could assess performance and errors, and the task could be learned quickly.

The present study had two purposes. The first purpose was to investigate the effect of goal involvement on excitement and anxiety experienced before and happiness and dejection experienced after competition. We hypothesised that: the task group would report higher excitement than the ego and control groups (Dewar & Kavussanu, 2011); the ego group would report higher anxiety than the task and control groups (Hall et al., 1998; Papaioannou & Kouli, 1999); and the task group would report greater happiness and lower dejection than the ego and control groups (Dewar & Kavussanu, *in press*). Our second purpose was to investigate the effect of goal involvement on perceived and actual performance. We expected that the task group would rate their performance higher (Cervelló et al., 2007; Dewar & Kavussanu, 2011; van de Pol & Kavussanu, 2011) and perform better (Sarrazin et al., 2002; Utman, 1997) than the ego and control groups.

Method

Participants

Male (n = 60) and female (n = 60) undergraduate students, with a mean age of 20.26 years (SD = 1.56), completed a speed agility quickness ladder drill as part of the experiment. On average,

participants used speed agility quickness ladders once every six months (*SD* = 1.95) and completed 3.41 hours (*SD* = 4.72) of speed or agility training per month. Participants took part in rugby (20%), football (11.67%), American football (10.83%), hockey (7.5%), athletics (5%), netball (5%), tennis (4.17%), basketball (3.33%), dance (3.33%), kayaking (3.33%), cricket (2.5%), ski-racing (2.5%), cross country running (1.67%), golf (1.67%), gymnastics (1.67%), karate (1.67%), swimming (1.67%), Australian rules football, cycling, horse riding, korfball, rowing, short track speed skating, squash, trampolining, triathlon, volleyball, and water polo (0.83% each), or indicated no main sport (3.33%). The highest level participants had competed at in their main sport was international (9%), national (11%), county (25%), regional (17%), and club (38%).

Equipment and Experimental Task

We used a XLR8 Flexible Rung Speed Ladder, which was 4.33m long x 45cm wide with 10 40cm x 40cm squares and 11 3cm x 40cm rungs, and two marker cones, each placed 1m from the edge of the last rung at each end of the ladder. The task was the Tango Drill (Davies, 2011). Before starting this drill, participants stood behind the first rung on the left side of the ladder. To start the drill, they placed their left foot into the first square of the ladder, and then stepped outside to the opposite side of the ladder, with their right and then their left foot. This movement was repeated in the opposite direction, and the sequence was completed five times until the participant reached the top of the ladder. Participants then ran around the marker cone, thus completing one repetition of the drill. One trial consisted of four repetitions of the task. A practice block was completed, which familiarized participants with the drill. Each block consisted of three trials because pilot testing revealed that performance levelled off after this number of trials. Pilot testing consisted of measuring the time to complete, and number of trials required for performance to plateau, on five speed agility quickness ladder drills. The Tango Drill was selected because it was thought to be mentally and physically demanding and performance levelled off after three trials, so

it could be learned quickly. Indeed, participants improved by approximately a third of a second on consecutive trials in the competition block suggesting that a stable level of performance had been reached at the end of the practice block.

Experimental Design

A mixed design was used in this experiment. The between-subjects factor was Group which had three levels: task, ego, and control. The within-subjects factor was Time which had two levels for each of the dependent variables: pre-practice and pre-competition for excitement and anxiety; post-practice and post-competition for happiness and dejection; and practice and competition for perceived and actual performance. Given that the label for the levels of the Time factor differed depending on the outcome variable examined, we use the specific terms (e.g., pre-practice, pre-competition) when referring to the Time factor.

Manipulations

The manipulations were based on previous research (Sage & Kavussanu, 2007; Standage et al., 2005) and are described below. Experimenter instructions for task-involving, ego-involving, and control groups are shown in Appendix 4a-c. The italics indicate words emphasized by the experimenters.

Task group. The purpose of the task group was to get participants to use self-referenced criteria to evaluate their competence. Therefore, we emphasized improving and mastering the task. Participants in this group were told:

> Research shows that people can *improve* their performance on this drill with practice. You will now have the opportunity to *improve* your *own performance* on the Tango Drill. *Try to focus on doing the steps as well as you can, and try as hard as you can to improve your performance.* The outcome of the competition

> is *not that* important. The *important thing* is that you *do the steps as well as you can* and that you *try hard to improve your own performance*.

Similar to Kavussanu et al. (2009), each participant was given a manipulation prompt before every trial to reinforce the manipulation. In the task group, participants were told: "Try to focus on doing the steps *as well as you can* and *try hard to improve your own performance*".

Ego group. The aim of the ego group was to get participants to use other-referenced criteria to evaluate their competence. Therefore, performing well relative to their opponent was stressed. Also, to create a moderately difficult task, participants were told that we would make the competition fair by taking into account their level of ability; we expected this would engage all ego-involved participants. Indeed, Nicholls (1984) suggests that individuals with high perceived ability would prefer a moderately difficult task. Participants had not experienced repeated failures at the task, so those with low perceived ability may have not been convinced of their ability on the task; thus, they may also prefer a moderately difficult task (Nicholls, 1984). Participants were told:

> We will *employ a handicap system* that will create a *fair competition*. Research shows that some people have more *natural sporting ability* than others. You will now have the opportunity to *show how good you are compared to others* on the Tango Drill. *Try to focus on beating your opponent* and try to show that *you are the best*. Improving performance is *not that* important. The *important thing* is that you *win this competition* and show that you have *high natural sporting ability*.

The manipulation prompt in this group was: "Try to focus on *beating your opponent* and show *that you have high natural sporting ability*".

Control group. This manipulation contained information regarding the use of speed agility ladders, without any reference to improvement or performing well relative to others. Participants were told:

> Speed agility ladders are usually 4 meters long and consist of a number of 40 cm squares. Ladder agility drills are used in many sports including rugby, football, hockey, netball, badminton, and American football. They are an integral part of many speed, agility, and quickness training programs. Speed agility ladders can be arranged in a number of formations and can be used for a wide variety of drills. The ladders are very durable and can last for up to seven years.

Before each trial, participants in the control group were told: "Speed agility ladders can be arranged in a number of formations and can be used for a wide variety of drills".

Manipulation Check

Some previous studies have examined the efficacy of the manipulation by asking participants about the purpose of (Elliot & Harackiewicz, 1996), or what was made salient during (Standage et al., 2005), the experiment. However, in line with Kavussanu et al (2009), we asked participants to state in their own words what their goal was during the competition block. We did so because we believed that this would be a more accurate assessment of their adopted goal state, which our manipulation aimed to elicit. Responses were coded as task (e.g., "improve own score"), ego (e.g., "beat my opponent"), both (e.g., "to improve my own performance and to win over my opponent") or other (e.g., "to not fall over") and were compared to the experimental group to which participants were assigned.

Measures

Emotions. We used the Sport Emotion Questionnaire (SEQ; Jones et al., 2005) to measure excitement and anxiety (pre-practice, pre-competition) and happiness and dejection (post-practice,

post-competition). In all cases, the stem was "At this moment, I feel…". Four items were used to measure excitement (e.g., "energetic") and happiness (e.g., "joyful"), and five items were used to asses anxiety (e.g., "apprehensive") and dejection (e.g., "sad"). Participants responded to all items on a five point Likert scale with anchors of *not at all* (1) and *extremely* (5). Allen, Jones, and Sheffield (2010) have reported construct validity and very good reliability for the SEQ, with alpha coefficients ranging from .80 to .90 before, and .77 to .94 after, an experimental competition. In the present study, alpha coefficients for emotions assessed throughout the experiment ranged from .80 to .90. Means for all self-reported variables were computed and used in the analyses.

Performance. We measured perceived and actual performance. Perceived performance was assessed using an instrument developed for this study, which was based on a measure of perceived improvement (Balaguer, Duda, & Crespo, 1999). This instrument was designed to assess participants' perceptions of different aspects of their performance as well as their overall performance on the task. Participants were asked to rate their performance over the last three trials and respond to seven items. Example items are "I completed the drill quickly", "I changed direction quickly", "I did the steps correctly", and "Overall, I performed optimally". Responses were recorded on a 7-point Likert scale with anchors of *not at all true of me* (1) and *very true of me* (7). The measure was administered at post-practice and post-competition. Principal axis factor analysis revealed one factor, which explained 66.23% and 70.29% of the variance at the two time points, respectively. Factor loadings ranged from .70 to .87 for post-practice, and .70 to .89 for post-competition items. Alpha coefficients were .91 and .92 for post-practice and post-competition measures of performance, respectively.

Actual performance was represented by the mean time, in seconds, it took participants to complete the three trials in each block. One of the experimenters started recording the time with a stopwatch when the participant put their foot in the first square of the ladder and stopped timing

when the participant's first foot exited the last square of the ladder on the final repetition. For every error participants committed (defined as an incorrect foot sequence or as touching the ladder and causing it to move), a one-second penalty was added to their time for that trial[1].

Procedure

First, ethical approval was granted by the University research ethics committee. Then, the principal investigator and four undergraduate research assistants recruited participants via an advertisement displayed on a notice board and an email to students enrolled in the School of Sport and Exercise Sciences. Both methods mentioned that course credit would be offered in return for participation in an experiment using speed agility ladders. Participants were recruited individually and then matched with an opponent of the same sex. Pairs of participants were then pseudo-randomly assigned to one of three groups (task, ego, control). Specifically, we used a random number grid, with values from 1 to 3, to create an order for experimental sessions, with the constraint that there were 20 men and 20 women in each group. Participants were assigned to the next available group as they were recruited. Assigning participants in this way reduced the possibility that participants were not close friends, as if that was the case they may be more competitive than individuals who do not know each other (see Allen et al., 2010), which could lead to a less effective manipulation.

All participants were tested in pairs at the university running track. When the pair arrived at the track they read the information sheet, which informed them that they would complete a competitive speed agility quickness ladder task for a number of trials and that questionnaires would be completed throughout the experiment. Questionnaires were administered at pre-practice, post-practice, pre-competition, and post-competition (see Appendix 4d-h). After reading the information sheet participants completed an informed consent form and a demographics questionnaire. Next,

[1] Very few errors were made (Practice $M = 0.31$, Competition $M = 0.25$), so we did not examine this variable separately.

they were told that they would perform the Tango Drill, which was explained and demonstrated to them, and they completed pre-practice measures of excitement and anxiety experienced in relation to the upcoming task. Participants were then given the opportunity to walk through two repetitions of the drill to ensure they understood the movements and were given instruction by the lead experimenter if they were unsure or made a mistake.

After checking understanding of the Tango Drill, the lead experimenter informed participants that they would practice the drill for three trials, that each trial consisted of four repetitions, and that they were to try and complete the task as fast as possible while making as few errors as possible. They were also told that a one-second time penalty would be incurred for every error committed, and an error was defined. Participants completed each trial, one after the other, with three minutes rest between trials; during this time they watched the other participant complete the task or stood quietly. Their time to complete the trial was recorded, but participants were told that we were not interested in this information and it was emphasised that this was a practice block. Participants were not allowed to practice between trials. Following the practice block, they completed the measure of perceived performance in practice, which referred to their performance on these trials, and then they completed post-practice measures of happiness and dejection felt at that moment in relation to the last three trials.

Participants were then informed that they would be competing against each other over three trials, after which they would receive feedback on their performance. The same manipulation was delivered verbally to both participants, and pre-competition excitement and anxiety, experienced at that moment in relation to the upcoming competition were measured. Next, participants completed the three-trial competition block, and a manipulation prompt was given before each trial. After the competition block, participants completed the manipulation check. They also completed measures of perceived performance in competition, and post-competition happiness and dejection,

experienced at that moment in relation to the last three trials. Finally, they were given feedback regarding the outcome of the competition, completed a measure of task difficulty[2], were debriefed, and thanked for their participation. At every testing session there were two experimenters, who were sex matched to the participants. During 90% of these sessions, the principal investigator was also present.

Results

Preliminary Analysis

Prior to the main analysis we conducted preliminary analyses. First, a check of missing values revealed that 0.01% of the data points were missing, so any procedure to replace values was deemed appropriate (see Tabachnick & Fidell, 2001). Missing values for each item were replaced with the item mean. Then, q-q plots, histograms, and values of skewness and kurtosis were examined to investigate assumptions of one way ANCOVA. The data satisfied the assumptions of a one-way ANCOVA for all variables except for dejection. This emotion had very low values (*M* of 1.08, 1.25, and 1.14, for task, ego, and control groups, respectively) and showed deviation from normality, which was not corrected by transforming the data; thus, dejection was not included in further analysis. Furthermore, one participant from the task group, another from the ego group, and two from the control group had experience of the Tango Drill, so were not included in the analysis.

Manipulation Check

In order to investigate whether the experimental manipulation was successful, we compared the participants' experimental group to coded responses on the manipulation check. Specifically, we conducted a 3 Group (task, ego, control) x 4 Response (task, ego, both, none) Chi-squared (χ^2)

[2] We modified an existing task difficulty measure (Horvath, Herleman, & McKie, 2006) to create a 3-item measure of this variable (e.g., "How difficult did you find the task?", "How challenging was this task?"). Participants responded on a 7-point Likert scale with anchors of *not at all* (1) and *extremely* (7). A one-way ANOVA revealed no significant differences in task difficulty ratings, F (2, 94) = 0.91, p = .406, η_p^2 = .02, between task (M = 3.10, SD = 0.89), ego (M = 3.40, SD = 0.79) and control (M = 3.23, SD = 0.85) groups, suggesting that we successfully controlled this variable between groups; therefore, we did not examine task difficulty.

test, χ^2 (6) = 35.76, p <.001, which showed that the responses were not equally distributed among groups. Responses to the manipulation check, including participants' responses classed as "both" (n = 2 from task group and n = 5 from ego group), showed that 34 participants in the task group and 26 participants in the ego group reported a goal that was consistent with their assigned group. One participant from the control group had missing data on the manipulation check and was removed; this resulted in 37 participants in this group.

In the main analysis, we included only those participants who adhered to the manipulation (n = 97 or 84% of eligible participants). This decision was based on previous research, in which researchers have excluded participants based on the results of the Instructional Manipulation Check (IMC), a check used to determine whether participants read instructions carefully (Nadler & McDonnell, 2012; Oppenheimer, Meyvis, & Davidenko, 2009). The percentage of retained participants in our study is within the range observed in previous research that has used the IMC (54% - 93%; Alter, Oppenheimer, & Zemla, 2010; Hui, Bond, & Molden, 2012; Nadler & McDonnell, 2012; Oppenheimer, et al., 2009). Oppenheimer et al (2009) showed that analyzing data with only the participants who responded correctly to the IMC revealed a well-established experimental effect that was non-significant when all participants were included, increased power to detect such an effect, reduced noise in the data (observed because participants did not follow instructions), and did not bias results (Oppenheimer et al., 2009). Although we did not employ the IMC, our manipulation check examined whether participants adhered to the manipulation, thus it shares some similarities to the IMC. Recently, researchers excluded participants who did not respond as expected to a manipulation (Ehrlenspiel, Wei, & Sternad, 2010; Stanger, Kavussanu, & Ring, 2012) or individuals who voiced doubt about a manipulation (Gano-Overway, 2008) and then investigated their research question with the remaining participants.

Main Analyses

We investigated the effects of achievement goals on excitement, anxiety, happiness, and perceived and actual performance, using 3 Group (task, ego, control) x Sex (male, female) ANCOVAs. Sex was included in the analyses because previous research has revealed sex differences in goal orientation (e.g., Kavussanu & Roberts, 2001). In these ANCOVAs we controlled for the relevant covariate: pre-practice excitement and anxiety when examining group differences in pre-competition excitement and anxiety, post-practice happiness when examining group differences in post-competition happiness, and practice perceived and actual performance when examining competition perceived and actual performance. Group differences were examined with least-significant difference pairwise comparisons. Effect size was represented using partial eta squared (η_p^2) and values of .01, .06, and .14 were classified as small, medium, and large, respectively (Cohen, 1988). Means and standard deviations for all variables are shown in Table 5.1.

Table 5.1

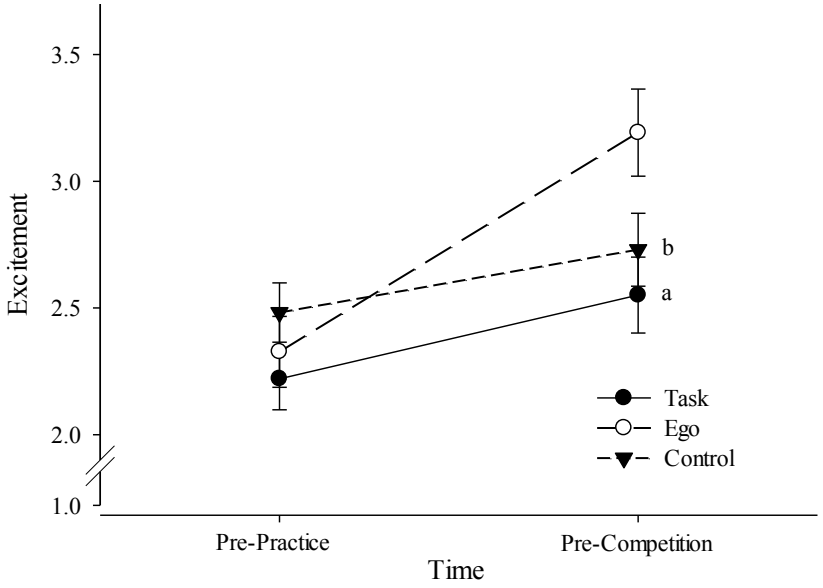
Means and Standard Deviations for Dependent Variables by Experimental Condition

	Group					
	Task		Ego		Control	
	M	*SD*	*M*	*SD*	*M*	*SD*
Excitement						
Pre-Practice	2.22	0.75	2.33	0.73	2.48	0.67
Pre-Competition	2.55[a]	0.87	3.19[ab]	0.82	2.73[b]	0.91
Anxiety						
Pre-Practice	2.02	0.65	2.02	0.48	2.12	0.58
Pre-Competition	1.92[a]	0.69	2.24[a]	0.77	2.02	0.60
Happiness						
Post-Practice	2.84	0.86	2.76	0.80	3.02	0.82
Post-Competition	2.85	0.94	2.72	0.77	3.02	0.93
Perceived Performance						
Practice	4.47	1.10	4.52	0.91	4.67	1.02
Competition	4.98[a]	1.10	4.99[b]	0.99	4.71[ab]	1.11
Actual Performance						
Practice	35.37	4.55	35.50	5.76	34.96	4.28
Competition	31.34	4.02	30.59	3.84	31.36	4.11

ANCOVA revealed significant group differences on pre-competition excitement, F (2, 90) = 5.97, p = .004, η_p^2 = .12. The ego group experienced higher excitement than the task, p = .004, η_p^2 = .13, and control, p = .002, η_p^2 = .14, groups; the latter groups did not differ from each other, p = .751, η_p^2 = .00. These findings can be seen in Figure 5.1(A). There was also a sex effect, F (1, 90) = 4.59, p = .035, η_p^2 = .05, showing that men were more excited than women. The ANCOVA for pre-competition anxiety, F (2, 90) = 2.37, p = .099, η_p^2 = .05, reveled a medium sized effect that approached significance; based on the expected differences between task and ego groups (Papaioannou & Kouli, 1999), it seemed appropriate to explore it further. Investigation of the group effect showed that the ego group felt more anxiety than the task group, p = .046, η_p^2 = .06, and marginally higher anxiety than the control group, p = .069, η_p^2 = .05; the latter two groups did not differ, p = .814, η_p^2 = .00. These results are presented in Figure 5.1(B). There was no group effect on post-competition happiness, F (2, 90) = 0.09, p = .917, η_p^2 = .00.

The ANCOVA on perceived performance showed a group effect, F (2, 90) = 3.80, p = .026, η_p^2 = .08: Both the task, p = .017, η_p^2 = .09, and the ego, p = .028, η_p^2 = .07, groups had higher perceptions of performance than the control group. However, there was no difference between the task and ego groups in perceived performance, p = .997, η_p^2 = .00. These findings can be seen in Figure 5.2. The ANCOVA on competition actual performance revealed no group effects, F (2, 90) = 1.81, p = .170, η_p^2 = .04, but showed an effect for sex, F (1, 90) = 15.84, p < .001, η_p^2 = .15, such that women took longer to complete the drill (i.e., performed worse) than men.

A



B

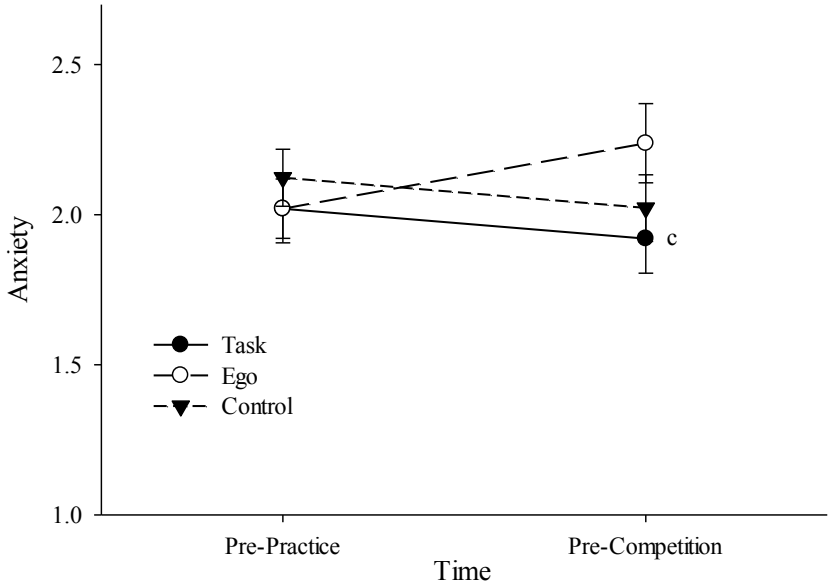


Figure 5.1. (A) Group effects for excitement. [a] indicates that the ego group was higher than the task group, [b] shows that the ego group was higher than the control group. (B) Group effects for anxiety. [c] indicates that the ego group was higher than the task group. The possible range of values for excitement and anxiety was 1 to 5.

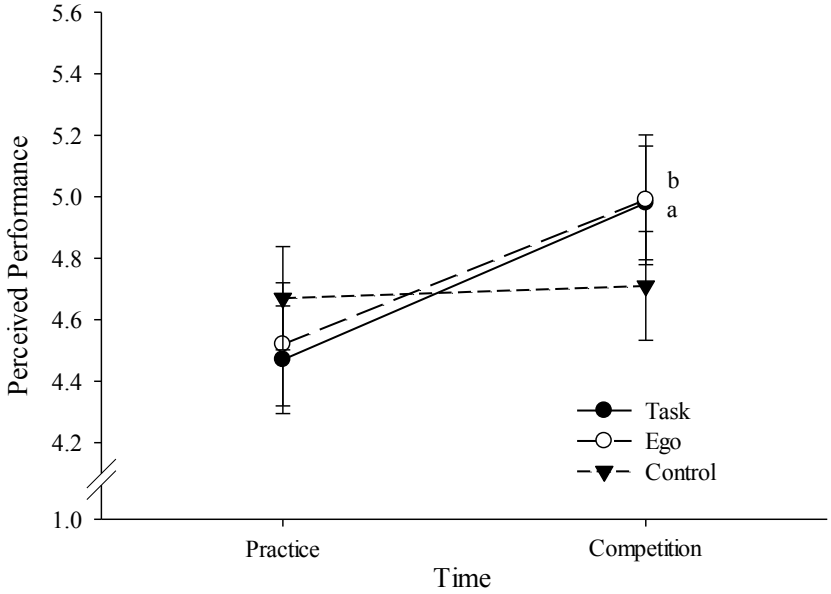


Figure 5.2. Group effects for perceived performance. [a] indicates that the task group was higher than the control group, [b] shows that the ego group was higher than the control group. The possible range of values for perceived performance is 1 to 7.

Discussion

Understanding the effects of achievement goals on emotions and performance in sport is an important consideration for research as this knowledge may provide evidence on whether task or ego involvement is more likely to lead to more positive emotions and higher performance. To date, researchers have examined the effect of achievement goals on affect experienced during a competitive task (Standage et al., 2005), as well as performance on experimental tasks (e.g., Utman, 1997). However, the effects of achievement goals on emotions before or after a competition and on perceived performance during competition have not been experimentally examined. In the present study, we sought to address these issues.

Achievement Goals and Emotions

Our first study purpose was to examine whether achievement goals influence excitement and anxiety experienced before, and happiness and dejection experienced after, a competitive motor task. Contrary to our hypothesis, pre-competition excitement was greater in the ego than the task

and control groups. This may be due to the handicap system implemented in the ego group, which might have led participants in this group to perceive competition as moderately difficult. This could have created an environment where ego-involved participants thought they may win the competition and, as a result, they experienced excitement (see Jones et al., 2005). Moreover, excitement may have been greatest in the ego group because the situation and goal state were focused on outperforming the opponent, whereas only the situation emphasised this for the other two groups. Our result differs from a study which showed that during a golf competition, task involvement was positively related to excitement and ego involvement was unrelated to this emotion (Dewar & Kavussanu, 2011). In the golf competition, athletes had an opportunity to increase their golf competence at their local course, which they had been playing at for a number of years (M = 12.23); because of the years spent trying to improve relative to their previous performances and master the course, doing so may have been a more salient goal than winning the competition. Therefore, golfers may have been task involved, which could have led to excitement because they thought they might reach their goal (Jones et al., 2005) of improving or mastering the task. Thus, the effect of achievement goals on excitement may differ based on the situation examined.

The effects of goal involvement on anxiety were not as strong as we expected. Specifically, the overall group effect was medium sized and marginally significant which indicates that there were not large differences between groups for anxiety; the anxiety results should be interpreted in light of the effect sizes and significance values presented. Interrogation of the group effect showed that anxiety was higher for the ego rather than the task group and marginally higher for the ego as opposed to the control group. This finding supports previous research (Papaioannou & Kouli, 1999) which showed that school pupils taking part in ego-involving volleyball drills had higher somatic anxiety than those in task-involving drills. Also, this finding supports a positive relationship between ego orientation and state cognitive anxiety (Hall et al., 1998). In the current

experiment, ego-involved individuals may have experienced anxiety before competition because they may have doubted whether they would achieve their goal of outperforming their opponent (Lazarus, 2000), whereas task-involved participants were likely to have focused on their own performance and thought they could improve because they had performed the drill a relatively small number of times; therefore, they may not have experienced high anxiety.

An unexpected result was that there was no difference in post-competition happiness between groups. Although no studies have examined the effect of achievement goals on happiness after competition, our results are consistent with recent research showing that enjoyment (which is similar to happiness, see Jones et al., 2005) experienced during a golf putting task was not different between mastery and performance-approach groups (Kavussanu et al., 2009) and that positive affect during a competitive dance task did not differ between task and ego groups (Standage et al., 2005). In our study, all groups felt moderately happy in practice and competition, which is consistent with research showing that individuals experienced moderate enjoyment when learning a golf putting skill (Kavussanu et al., 2009) and participating in a one-on-one basketball shooting competition (Tauer & Harackiewicz, 2004); however, it is unclear why achievement goals had no effect on happiness. Also, we did not examine the effects of achievement goals on post-competition dejection because this emotion was very low.

Achievement Goals and Performance

Our second study purpose was to examine the effect of achievement goals on perceived and actual performance. Results showed that the task group displayed greater post-competition perceived performance than the control group. The finding is consistent with two previous studies (Dewar & Kavussanu, 2011, *in press*), which have shown that task involvement positively predicted perceived performance in competition. This finding may have been due to the focus on improving performance, inherent in task involvement (Nicholls, 1989), as well as the improvement of actual

performance from practice to competition. The current study extends the literature as it was the first experiment to investigate, and show an effect of, task involvement on perceived performance.

The ego group also reported higher post-competition perceived performance than the control group. Ego-involved individuals may have believed that they took less time to complete the drill than their opponent; indeed, research on passage of time judgements suggests that time passes more quickly when individuals are involved in an activity than when they are waiting (Wearden, 2008). Therefore, because of the passage of time judgement and the emphasis on performing well relative to their opponent from the situation and achievement goal manipulation, individuals in the ego group may have thought they outperformed their opponent so had high ratings of perceived performance.

Contrary to our hypothesis, there were no group differences in actual performance. This result is similar to experimental studies showing no difference in performance on basketball shooting (Giannini et al., 1988), golf putting (Kavussanu et al., 2009), dart throwing (Ntoumanis et al., 2009), or basketball dribbling (Elliot, Cury, Fryer, & Huguet, 2006) tasks. A meta-analysis (Utman, 1997) showed that task and ego groups displayed similar performance in simple but not complex tasks; thus, it is possible that this null result was observed because the task was too simple. This result was unexpected because we did not believe that the drill would be simple given that participants had to remember and execute the foot sequence while exerting maximum effort on the task. Moreover, errors, which resulted in a time penalty that was included within the actual performance measure, did not help distinguish between groups for this outcome. Our findings suggest that the task group does not show better performance than the ego group when participants have learned the task and errors were taken into account; however, differences between these groups may be observed on complex non-competitive tasks (Utman, 1997).

Limitations and Future Research Directions

This study has some limitations which need to be considered when interpreting the findings. First, all participants were informed that they were taking part in a competition, which may have increased ego involvement slightly in all groups. This was unavoidable because we were interested in the effects of goal involvement on emotions and performance in competition. Previous research (e.g., Dewar & Kavussanu, 2011) has shown that task involvement is higher than ego involvement ($M = 3.32$, and $M = 2.63$, respectively) in competition, so it is unlikely that ego involvement would have dominated in the task and control groups. Second, some participants did not adhere to the manipulation, possibly because they did not pay close attention to it or engage with it while it was administered. Similar to previous research (Ehrlenspiel et al., 2010; Gano-Overway, 2008, Stanger et al., 2012), our results are based on data of participants who adhered to the manipulation. However, those participants could differ from individuals who were excluded on unmeasured variables (e.g., propensity to follow instructions); thus, our findings can only be generalized to participants who followed the manipulation.

Third, we employed a handicap system in the ego group to create a challenging competition. This may have prevented participants with low perceived ability from experiencing intense negative emotions and low performance. In the future, researchers should examine the degree to which ego involvement affects emotions and performance when a handicap system is not employed. Also, researchers could examine whether achievement goals affect excitement and anxiety in different settings and timeframes and whether they influence other emotions.

Conclusion

The current experiment was the first to show that excitement experienced before competition was higher in the ego group than task and control groups and anxiety was greater in the ego than the task group. Also, task and ego involvement had an effect on perceived performance; thus, in a one-

on-one competitive situation, both task and ego involvement may result in higher perceptions of performance. Finally, achievement goals do not appear to affect happiness experienced after competition or actual performance.

References

Allen, M. S., Jones, M. V., & Sheffield, D. (2010). The influence of positive reflection on attributions, emotions, and self-efficacy. *The Sport Psychologist, 24*, 211-226.

Alter, A. L., Oppenheimer, D. M., & Zemla, J. C. (2010). Missing the trees for the forest: A construal level account of the illusion of explanatory depth. *Journal of Personality and Social Psychology, 99*, 436-451.

Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology, 84,* 261-271.

Balaguer, I., Duda, J. L., & Crespo, M. (1999). Motivational climate and goal orientation as predictors of perceptions of improvement, satisfaction and coach ratings among tennis players. *Scandinavian Journal of Medicine & Science in Sports, 9*, 381-388.

Biddle, S. J. H., Wang, C. K. J., Kavussanu, M., & Spray, C. M. (2003). Correlates of achievement goal orientations in physical activity: A systematic review of research. *European Journal of Sport Science, 3*, 1-20.

Cervelló, E., Rosa, F. J. S., Calvo, T. G., Jimenez, R., & Iglesias, D. (2007). Young tennis players' competitive task involvement and performance: The role of goal orientations, contextual motivational climate, and coach-initiated motivational climate. *Journal of Applied Sport Psychology, 19,* 304-321. DOI: 10.1080/10413200701329134

Cohen, J. (1988). *Statistical power analysis for the behavioural sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Davies, P. (2011). Ladder agility drills. Retrieved from http://www.sport-fitness-advisor.com/ladder-agility-drills.html

Dewar, A. J., & Kavussanu, M. (2011). Achievement goals and emotions in golf: The mediating and moderating role of perceived performance. *Psychology of Sport & Exercise,12*, 525-532. DOI:10.1016/j.psychsport.2011.05.005

Dewar, A. J., & Kavussanu, M. (in press). Achievement goals and emotions in team sport athletes. *Sport, Exercise, and Performance Psychology*.

Ehrlenspiel, F., Wei, K., & Sternad, D. (2010). Open-loop, closed-loop and compensatory control: performance improvement under pressure in a rhythmic task. *Experimental Brain Research, 201*, 729-741. DOI 10.1007/s00221-009-2087-8

Elliot, A. J. (1999). Approach and avoidance motivation and achievement goals. *Educational Psychologist*, *34*, 169-189.

Elliot, A. J., Cury, F., Fryer, J. W., & Huguet, P. (2006). Achievement goals, self-handicapping, and performance attainment: A meditational analysis. *Journal of Sport & Exercise Psychology*, *28*, 344-361.

Elliot, A. J., & Harackiewicz, J. M. (1996). Approach and avoidance achievement goals and intrinsic motivation: A meditational analysis. *Journal of Personality and Social Psychology, 70*, 461-475.

Gano-Overway, L. A. (2008). The effect of goal involvement on self-regulatory processes. *International Journal of Sport and Exercise Psychology, 6,* 132-156.

Giannini, J. M., Weinberg, R. S., & Jackson, A. J. (1988). The effects of mastery, competitive, and cooperative goals on the performance of simple and complex basketball skills. *Journal of Sport & Exercise Psychology, 10*, 408-417.

Hall, H. K., & Kerr, A. W. (1997). Motivational antecedents of precompetitive anxiety in youth sport. *The Sport Psychologist, 11,* 24-42.

Hall, H. K., Kerr, A. W., & Matthews, J. (1998). Precompetitive anxiety in sport: The contribution of achievement goals and perfectionism. *Journal of Sport & Exercise Psychology, 20,* 194-217.

Horvath, M., Herleman, H. A., & McKie, R. L. (2006). Goal orientation, task difficulty, and task interest: A multilevel analysis. *Motivation & Emotion, 30*, 171-178. DOI 10.1007/s11031-006-9029-6

Hui, C. M., Bond, M. H., & Molden, D. C. (2012). Why do(n't) your partner's efforts at self-improvement make you happy? An implicit theories perspective. *Personality and Social Psychology Bulletin, 38*, 101-113.

Jones, M. V., Lane, A. M., Bray, S. R., Uphill, M., & Catlin, J. (2005). Development and validation of the Sport Emotion Questionnaire. *Journal of Sport & Exercise Psychology, 27*, 407-431.

Kavussanu, M., Morris, R. L., & Ring, C. (2009). The effects of achievement goals on performance, enjoyment, and practice of a novel motor task. *Journal of Sports Sciences, 27,* 1281-1292.

Kavussanu, M., & Roberts, G.C. (2001). Moral functioning in sport: An achievement goal perspective. *Journal of Sport & Exercise Psychology, 23,* 37-54.

Lazarus, R. S. (2000). How emotions influence performance in competitive sports. *The Sport Psychologist, 14*, 229-252.

Morris, R. L., & Kavussanu, M. (2009). Approach-avoidance achievement goals in sport: Psychological correlates and a comparison with the dichotomous model. *International Journal of Sport and Exercise Psychology, 9*, 185-202.

Nadler, J., & McDonnell, M. H. (2012). Moral character, motive, and the psychology of blame. *Cornell Law Review, 97,* Northwestern Public Law Research Paper No. 11-43. Available at SSRN: http://ssrn.com/abstract=1814309

Nicholls, J. G. (1984). Achievement motivation: Conceptions of ability, subjective experience, task choice, and performance. *Psychological Review, 91,* 328-346.

Nicholls, J. G. (1989). *The competitive ethos and democratic education*. Cambridge, Massachusetts: Harvard University Press.

Ntoumanis, N., Thogersen-Ntoumani, C., & Smith, A. L. (2009). Achievement goals, self-handicapping, and performance: A 2 x 2 achievement goal perspective. *Journal of Sports Sciences, 27,* 1471-1482.

Oppenheimer, D. M., Meyvis, T., & Davidenko, N. (2009). Instructional manipulation checks: Detecting satisficing to increase statistical power. *Journal of Experimental Social Psychology, 45,* 867-872.

Papaioannou, A., & Kouli, O. (1999). The effect of task structure, perceived motivational climate and goal orientations on students' task involvement and anxiety. *Journal of Applied Sport Psychology, 11*, 51-71.

Papaioannou, A. G., Zourbanos, N., Krommidas, C., & Ampatzoglou, G. (2012). The place of achievement goals in the social context of sport: A comparison of Nicholls' and Elliot's models. In G. C. Roberts and Treasure (Eds), *Advances in motivation in sport and exercise*, 3rd ed. (pp. 59-90). Champaign, IL: Human Kinetics.

Sage, L., & Kavussanu, M. (2007). The effects of goal involvement on moral behaviour in an experimentally manipulated competitive setting. *Journal of Sport & Exercise Psychology, 29*, 190-207.

Sarrazin, P., Roberts, G., Cury, F., Biddle, S., & Famose, J-P. (2002). Exerted effort and performance in climbing among boys: The influence of achievement goals, perceived ability, and task difficulty. *Research Quarterly for Exercise and Sport*, *73*, 425-436.

Standage, M., Duda, J. L., & Pensgaard, A. M. (2005). The effect of competitive outcome and task-involving, ego-involving, and cooperative structures on the psychological well-being of individuals engaged in a co-ordination task: A self-determination approach. *Motivation & Emotion, 29,* 41-68.

Stanger, N., Kavussanu, M., & Ring, C. (2012). Put yourself in their boots: Effects of empathy on emotion and aggression. *Journal of Sport & Exercise Psychology, 34,* 208-222.

Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (4th ed.). Boston: Allyn & Bacon.

Tauer, J. M., & Harackiewicz, J. M. (2004). The effects of cooperation and competition on intrinsic motivation and performance. *Journal of Personality & Social Psychology, 86*, 849-861.

Utman, C. H. (1997). Performance effects of motivational state: A meta-analysis. *Personality and Social Psychology Review, 1*, 170-182.

van de Pol, P. K. C., & Kavussanu, M. (2011). Achievement goals and motivational responses in tennis: Does the context matter? *Psychology of Sport & Exercise, 12,* 176-183. DOI: 10.1016/j.psychsport.2010.09.005

Vealey, R. S., & Campbell, J. L. (1988). Achievement goals of adolescent figure skaters: Impact on self-confidence, anxiety, and performance. *Journal of Adolescent Research, 2,* 227-243. DOI: 10.1177/074355488832009

Wearden, J. H. (2008). The perception of time: Basic research and some potential links to the study of language. *Language Learning, 58 s1,* 149-171.

CHAPTER 6

General Discussion

Investigating the relationships between goal involvement and emotions is important because this knowledge could be used to advise athletes whether task or ego involvement is likely to lead to a more fulfilling experience (i.e., more positive, and less negative, emotions) and high performance in competition. Few researchers have considered the relationships between goal involvement and a range of emotions experienced before (except Hall & Kerr, 1997; Hall et al., 1998), during, and after competition, why (Vlachopoulos et al., 1997) or under what conditions these associations occur (e.g., Hall & Kerr, 1997), and whether task and ego involvement are associated with higher perceived and actual performance (Giannini et al., 1988). Therefore, this thesis addressed these gaps in the literature.

This thesis had three purposes, which were to: examine whether goal involvement was related to emotions and perceived and actual performance; investigate mediators of the links between task involvement and emotions; and examine potential moderators of the relationships between ego involvement and emotions. The three purposes were examined in four studies. Study 1 investigated goal involvement[1], cognitive appraisals, and emotions experienced by undergraduate students before team sport trials. Study 2 examined goal involvement, perceived performance, and emotions felt by adult males during a competitive round of golf. Study 3 investigated goal involvement and perceived performance during, and outcome of the match and emotions after, team sport competition in young adult athletes. Study 4 examined goal involvement and emotions before and after, and performance during, a competitive experimental task. Thus, thesis purposes 1, 2, and 3 were investigated in Study 1, 2, 3, and 4 and thesis purpose 1 was examined in Study 4.

[1] The terms "task involvement" and "ego involvement" are used to describe achievement goals adopted before competition (Study 1). Although goal involvement was not measured exactly as it was defined by Nicholls (1989), these variables assessed what will make individuals feel successful in the upcoming competition, which is similar to goal involvement.

Goal Involvement and Emotions

An aspect of the first thesis purpose was to investigate the link between goal involvement and emotions. In Studies 1, 2, and 3, task involvement was positively related to excitement and hope before, happiness and excitement during, and happiness, pride, and hope after, competition, respectively. Moreover, task involvement was negatively related to concentration disruption before, dejection during, and dejection and shame after, a competitive sport event. Ego involvement was unrelated to emotions in Studies 1, 2, and 3. Thus, over three studies, task involvement was positively related to positive, and negatively associated with negative, emotions (except anxiety) at a number of time points throughout competition.

The findings for task involvement and emotions support extant literature. Indeed, the results from Studies 1, 2, and 3 are consistent with a study in school children which showed that task orientation was related positively to enjoyment, pride, and hope, and negatively to anger, shame, and anxiety (Mouratidis et al., 2009). Furthermore, our findings support studies showing similar relationships for affective outcomes (e.g., Biddle et al., 2003; Ntoumanis & Biddle, 1999; Vlachopoulos et al., 1997).

The relationships between task involvement and emotions shown in this thesis extend existing literature (e.g., Biddle et al., 2003; Ntoumanis & Biddle, 1999; Vlachopoulos et al., 1997). Specifically, the findings provide an understanding of the links between task involvement and a range of emotions at a number of timeframes in competitive sport settings, whereas the majority of extant literature has considered goal orientation and affective outcomes generally associated with sport or Physical Education (PE) (e.g., Biddle et al., 2003; Ntoumanis & Biddle, 1999; Vlachopoulos et al., 1997). Also, similar links between task involvement and excitement (Studies 1 and 2), happiness, and dejection (Studies 2 and 3) were found in cross-sectional studies at different times and amongst different participants. Therefore, these findings may also be observed at

different times in sport competition (e.g., before and during), and in other samples and settings (e.g., elite athletes competing at an international competition). Thus, we suggest that if athletes are task involved throughout competition they may be more likely to experience more positive, and less negative, emotions.

Ego involvement was unrelated to emotions in Studies 1, 2, and 3, which supports the majority of literature in sport and PE (e.g., Biddle et al., 2003; Ntoumanis & Biddle, 1999). Also, these findings are similar to null relationships between ego involvement and hope and enjoyment in school pupils taking part in PE (Mouratidis et al., 2009); however, these findings are not in line with the positive associations between ego orientation and pride, anger, and shame (Mouratidis et al., 2009). Therefore, the results from three studies presented in this thesis do not support Mouratidis et al.'s (2009) suggestion that ego orientation will be related to emotions if a number of emotions are examined, which may be the case because of what is emphasised in the two situations. The social situation and range of abilities in a PE class may result in a situation where displaying ability relative to others is important, so seeking to achieve this goal might influence emotions. Conversely, in sport, winning the competition may be more important than outperforming others, so emotions might not be influenced by ego involvement alone; in order for emotions to be experienced ego-involved athletes may have to consider their perceived performance or the outcome of the competition.

The relationship between task involvement and happiness was not consistent across cross-sectional (Studies 2 and 3) and experimental research (Study 4). In Studies 2 and 3, task involvement was positively associated with happiness. Conversely, in Study 4, task involvement had no effect on happiness, which is similar to research that showed null effects of a mastery goal on enjoyment and task involvement on positive affect (Kavussanu et al., 2009; Standage et al., 2005). Although one could suggest that the experimental manipulation was weak, this may not be

the case given that there were effects for task and ego groups, but not the control group, on perceived performance during competition. Moreover, Ntoumanis et al. (2009) showed that competence valuation (i.e., "the extent to which participants reported that they cared about performing well in the task", p. 1480) was not predicted by experimentally manipulated achievement goals but was predicted by personally held mastery-approach and performance-approach goals, which suggests that personal achievement goals, as opposed to experimentally induced achievement goals, may be more likely to influence some variables. Furthermore, a number of sources (e.g., learning a skill, improving, or performing well) could influence enjoyment during, or happiness after, competition (Kavussanu et al., 2009; Studies 2, 3, & 4). Perhaps, there was no effect of experimentally manipulated task involvement on happiness in Study 4 because the goal involvement manipulation did not influence happiness as much as sources of enjoyment experienced during competition (e.g., learning). However, in Studies 2 and 3, personal task involvement may have had a stronger influence on happiness during and after competition than sources of enjoyment during competition; thus, task involvement was related to happiness in studies 2 and 3. Overall, happiness findings were consistent for cross-sectional research but these results were not replicated in the experimental study.

Other inconsistent findings are those for goal involvement and excitement (Studies 1, 2, and 4). In Studies 1 and 2, ego involvement was unrelated to excitement. However, in Study 4, the ego group showed higher excitement before the one-on-one competition than the task and control groups. These different results for excitement, which is a feeling of arousal that may be experienced when individuals in a challenging situation believe they will achieve a goal (Jones et al., 2005), might be due to differences in task difficulty. It is possible that this result is observed because the handicap system employed in the experiment created a task which participants believed was moderately difficult and they may have thought they had a 50/50 chance of displaying their

ability relative to their opponent. Although there was a degree of uncertainty, those in the ego group, who were not likely to be convinced of their low ability because the task was novel, may have believed that they might achieve their goal of outperforming their opponent (see Nicholls, 1984), so they experienced high excitement. Conversely, in Studies 1 and 2, the null relationships may have been observed because participants had been playing for different lengths of time and had different skill levels, so they may have made a range of task difficulty judgements. Based on Nicholls (1984) predictions, it is possible that at moderate task difficulty, ego involvement is positively related to excitement because these individuals expect to display ability. In contrast, at low or high task difficulty, ego involvement should be negatively related to excitement because success in these situations will not indicate, or individuals don't expect to display, high ability, respectively (Nicholls, 1984). Thus, ego involved individuals may only experience excitement on moderately difficult tasks.

Anxiety findings may point to a consistent relationship between task involvement and worry and somatic anxiety. Specifically, in Study 1, task involvement was negatively related to concentration disruption and unrelated to worry and somatic anxiety; in Study 2, this goal state was unrelated to anxiety; in Study 4, the task group did not have lower anxiety than the control group. The measures used to assess anxiety may highlight similarities between these results. Some items from the Sport Emotion Questionnaire (SEQ; Jones et al., 2005) used in Study 2 and 4 (e.g., "tense", "uneasy", "nervous") are similar to somatic anxiety items (e.g., "My body feels tense", "I feel tense in my stomach", "My muscles feel tight because I am nervous") from the Sport Anxiety Scale-2 (SAS-2; Smith et al., 2006). Also, "apprehensive" from the SEQ has a similar meaning to worry items from SAS-2 (e.g., "I'm worrying that I will not play my best", "I'm worrying that I will mess up during the trial"). Therefore, the Sport Emotion Questionnaire may measure worry

and somatic anxiety. Thus, the results from Studies 1, 2, and 4 suggest that task involvement was unrelated to worry and somatic anxiety.

Different antecedents of the three anxiety subscales may explain different results between task involvement and concentration disruption, worry, and somatic anxiety. Task-involved individuals are seeking to improve (Nicholls, 1989), so may focus on the task they are about to perform, and it might be less likely that they are distracted, or their concentration is disrupted on, the activity. Indeed, undergraduate students in a task group showed lower self-defeating thoughts than individuals in an ego group during a reaction time task in which participants were told they failed (Gano-Overway, 2008); this result suggests that task-involved individuals may be less likely to become distracted during a task. However, this explanation is provided tentatively because although research has considered antecedents of cognitive anxiety (e.g., Hall & Kerr, 1997; Hall et al., 1998), few researchers have examined antecedents of concentration disruption (Morris & Kavussanu, 2009). The attention to the task at hand may also explain the null relationships for task involvement and worry and somatic anxiety. Specifically, the competition could trigger cognitive and somatic anxiety (Burton, 1998), so focusing on the event may not have reduced negative thoughts or perceptions of physiological responses; therefore, task involvement was unrelated to worry and somatic anxiety. Thus, individuals' focus before an event and the nature of anxiety may explain why task involvement was negatively associated with concentration disruption but not worry or somatic anxiety.

The relationships between ego involvement and anxiety were not consistent between Studies 1, 2, and 4. Specifically, in Studies 1 and 2, ego involvement was unrelated to anxiety, whereas in Study 4, the ego group had higher anxiety than the task group; these results may be explained by expectations of success. Indeed, anxiety is experienced when individuals are facing uncertain, existential threat (Lazarus, 2000, p. 234). In Study 4, the handicap system created a moderately

difficult task for those in the ego group, so these participants may have anticipated that they had an equal chance of showing, or failing to show, their ability relative to their opponent; therefore, individuals might have been uncertain about whether they will achieve their goal, and they may have experienced anxiety as a result (see Nicholls, 1984). Given that athletes in Study 1 and 2 were likely to have a range of expectations of success, we would not expect, and did not find, that ego involvement would be directly related to anxiety. However, in Study 1, ego-involved athletes experienced high anxiety when they thought they performed poorly and were not highly anxious when they had high ratings of perceived performance. Perhaps these golfers expected, or did not expect, success at high or low perceived performance, respectively (Study 2). Thus, expectation of achieving a goal may influence anxiety for ego-involved athletes.

Over three cross-sectional studies, athletes who were task involved had a more fulfilling emotional experience before, during, and after competition, whereas being ego involved was not related to emotions. However, results for happiness were not consistent across all studies. Also, the relationships between goal involvement and excitement and anxiety were different between cross-sectional and experimental studies, possibly because of goal difficulty and uncertainty about achieving a goal.

Goal Involvement and Performance

The second aspect of our first study purpose was to investigate the relationship between goal involvement and performance. Therefore, in Study 4, the link between goal involvement and perceived performance on a competitive agility task was examined. Findings support the causal relationship between task involvement and perceived performance. Indeed, in Study 4, the task group had higher perceived performance during competition than the control group, which supports the proposed direction of the relationship between these variables from Studies 2 and 3 and extant literature (Cervelló et al., 2007; van de Pol & Kavussanu, 2011). This was the first experimental

study to investigate how goal involvement influenced perceived performance. Although the results from Study 4 are not totally in accord with findings from Studies 2 and 3 (i.e., the ego group also had higher perceived performance than the control group in Study 4) taken together the results from the cross-sectional and experimental studies suggest that task involvement has a positive effect on perceived performance.

The effect of goal involvement on actual performance was also investigated in Study 4. Results showed that neither the task nor the ego group had higher actual performance than the control group. Furthermore, in Study 3, both task and ego involvement were unrelated to match outcome. These findings support null relationships between goal orientation and an objective measure of ability (van de Pol & Kavussanu, 2011) and mastery and performance-approach goals and performance in sport-based experimental tasks (Elliot et al., 2006; Kavussanu et al., 2009; Ntoumanis et al., 2009). Taken together, the results for perceived and actual performance suggest that achievement goals may influence how an individual believes they have performed but may not lead to higher objective performance in competitive sport settings.

Task Involvement and Emotions: Mediation

The second thesis purpose was to investigate mediators of the links between task involvement and emotions. Results from Study 2 showed that during a competitive round of golf, task involvement was positively related to perceived performance, which was in turn associated with happiness and excitement positively and dejection negatively. Moreover, in team sport competition (Study 3), task involvement was positively associated with perceived performance, which was related to happiness, pride, and hope positively, and dejection and shame negatively.

The mediation findings in this thesis support and extend existing research (Vlachopoulos et al., 1997) by showing this mediation in different emotions (i.e., happiness, excitement, pride, hope, dejection, and shame) and a different timeframe and setting (i.e., during competition). Also, task

involvement was related to happiness and dejection through perceived performance in Studies 2 and 3; therefore, these findings were consistent across two situations and may also be observed if emotions generally associated with competition are examined. Moreover, mediation was observed for the relationships between task involvement and all emotions except anxiety, which might suggest that similar findings will be revealed if researchers examine the links between task involvement and emotions that have not been considered in this thesis, such as relief and anger.

Mediation of the relationships between task involvement and emotions through perceived performance extends Achievement Goal Theory (Nicholls, 1984, 1989). Indeed, examining perceived performance was beneficial because it added to our understanding of why task involvement was related to emotions during and after competition. Specifically, task-involved athletes seek to improve and may recognise small improvements in their performance, so they think they have performed well; therefore, they have high perceived performance. High ratings of performance may in turn make them feel more positive, and less negative, emotions. This finding supports a number of studies in the literature showing a link between perceived performance and emotions (e.g., Graham et al., 2002; Sève et al., 2007). Moreover, Nicholls (1989) states that task-involved individuals' goal is to improve or master a task and when they do so they feel competent and intrinsically satisfied; mediation results add to this proposition by suggesting that part of the reason task-involved athletes have a fulfilling experience is that they think they have performed well.

The mediation of perceived performance shown in Studies 2 and 3 may be beneficial for athletes in two ways. First, individuals who are task involved during competition may be more likely to think they performed well, which in turn may lead to higher positive and lower negative emotions during and after competition. Therefore, mediation findings may allow researchers to tell athletes why being task-involved is beneficial for emotions. Also, improving or performing well

may beneficially influence task-involved athletes' emotions and they may feel they are doing what they want to do (see Nicholls, 1989), as a result, they may experience an increase in competence.

A mechanism to explain why task involvement was related to emotions before competition was examined in Study 1. Findings showed that task involvement was positively related to challenge appraisal, which in turn was positively associated with hope and excitement experienced prior to team trials. Specifically, individuals who were task involved were more likely to view the situation as a challenge, i.e., an opportunity to gain something (Lazarus & Folkman, 1984), which in this case could have been satisfying their goal of improving. Challenge appraisal was in turn positively associated with hope and excitement; these relationships may have occurred because of the emphasis on gaining something or improving inherent in challenge appraisal. Indeed, hope is experienced when individuals believe improvement is possible (Lazarus, 2000) and excitement is arousal experienced when athletes think they will achieve a goal (Jones et al., 2005). Therefore, the extent to which task-involved individuals evaluated the situation as challenging was related to the positive emotions they experienced before a team trial.

The finding that challenge appraisal mediated the links between task involvement and hope and excitement before competition extends Nicholls' (1984, 1989) work, as it shows how research based on Achievement Goal Theory can help understand the cognitions (i.e., challenge appraisal) and emotions (i.e., hope and excitement) experienced in achievement settings. Furthermore, these mediation results add to the literature (Adie et al., 2008, 2010), which has shown a link between a mastery-approach goal and affect through challenge appraisal, by providing evidence of these relationships in emotions which have not been considered. Also, the findings from Study 1 revealed links between goal involvement and emotions in a setting which has not been investigated in the literature.

Mediation results from Study 1 may have implications for appraisals and positive emotions experienced before competition. Specifically, if athletes are task involved they may be more likely to evaluate the situation as a challenge and experience positive emotions, such as excitement and hope, which might put them in a positive frame of mind before competition. Conversely, ego involvement was unrelated to challenge appraisal, so we suggest that adopting this goal state will not positively influence athletes' evaluation of the situation.

Overall, mediation findings from Studies 2 and 3 suggest that perceived performance can help researchers understand why task-involved athletes experience high positive, and low negative, emotions during and after competition. Moreover, challenge appraisals could add to knowledge of why task involvement is related to excitement and hope before competition (Study 1). Taken together, the mediation results for challenge appraisal and perceived performance suggest that individuals' evaluation of how they will do, or perception of how they did, can help explain why they have positive emotional experiences in competition.

Ego Involvement and Emotions: Moderation

Based on theoretical predictions that ego-involved individuals with low perceived competence should expect to demonstrate low ability and experience anxiety and affect (Jagacinski & Nicholls, 1984; Nicholls, 1984) and that ego-oriented children with high perceived ability are less likely to feel anxious (Roberts, 1986), moderators of the relationships between ego involvement and emotions were investigated (Studies 1, 2, and 3). Results showed that perceived performance and outcome interacted with ego involvement to predict emotions (Studies 2 and 3). However, the same could not consistently be said when perceived competence was considered as a moderator (Study 1).

Perceived performance moderated the relationships between ego involvement and some positive emotions during and after competition (Studies 2 and 3). Specifically, when individuals

had high perceived performance, ego involvement was positively related to happiness[2] during competition (Study 2) and hope after competition (Study 3), whereas when perceived performance was low, ego involvement was negatively related to happiness and hope. Athletes who have high ego involvement may have a strong desire to display their superiority relative to others, and might experience high happiness when they think they performed well and low happiness when they rate their performance as poor. Ego-involved individuals may experience happiness in this way because they might think they have achieved their goal (which is an antecedent of happiness, see Lazarus, 2000), or failed to achieve their goal, of performing well relative to their opponent, respectively. Also, ego-involved athletes who had high perceived performance may experience high hope because they may expect to perform well relative to others in future. Conversely, those with low perceptions of performance may not expect to achieve their goal, so feel less hope.

The link between ego involvement and negative emotions was also moderated by perceived performance[3]. Indeed, when athletes rated their performance as high, ego involvement was unrelated to dejection and anxiety during competition (Study 2) and dejection after competition (Study 3). In contrast, when individuals had low perceptions of performance, ego involvement was positively associated with dejection and anxiety during, and dejection after, competition. The results for dejection may be observed across two studies because highly ego-involved individuals that perform poorly may believe they are failing to make progress towards, or have failed to achieve, their highly sought after goal (which Jones et al., 2005, suggest is a reason for experiencing dejection) of outperforming others. Conversely, highly ego-involved athletes who have high ratings of performance are unlikely to think they are failing to achieve their goal, so may not experience dejection. Also, anxiety is experienced when individuals are "facing uncertain, existential threat" (Lazarus, 2000, p. 234). Therefore, athletes who are highly ego-involved and thought they

[2] This simple slope for this line was $B = 0.16$, $p = .068$ and approached significance.
[3] There was also an ego involvement by perceived performance interaction on shame experienced after team sport competition (Study 3); however, the simple slopes were not significant, so this result will not be discussed.

performed poorly during the round may have a desire to display their superiority relative to others but might be uncertain whether they will do so; thus, they experience high anxiety. Highly ego-involved golfers who had high perceived performance may be less likely to be uncertain about outperforming others, so do not experience higher anxiety.

Outcome of the match also moderated the link between ego involvement and pride, hope, and dejection experienced after the match. Indeed, when athletes won the match, ego involvement was positively related to pride and hope, and unrelated to dejection. Conversely, when individuals lost the match, ego involvement was unrelated to pride, negatively related to hope, and positively related to dejection. The relationship between ego involvement and pride, which can be experienced when individuals feel they have achieved something (Uphill & Jones, 2007), was different based on match outcome. Specifically, after winning, highly ego-involved athletes may feel high pride because they have achieved their goal of outperforming others, whereas this may not be the case after a loss, so they do not feel high pride. Moreover, the reasons why the relationship between ego involvement and hope and dejection are different when individuals win or lose may be similar to when perceived performance moderates these relationships. However, these interactions suggest that outcome of the match may also be used by ego-involved athletes to ascertain if they have achieved their goal of outperforming others.

The moderation results presented above showed that ego-involved athletes experienced higher positive, or lower negative, emotions at different levels of perceived performance and outcome of the match. This differential relationship will not be a problem for athletes who perform well because they will experience positive emotions. However, if they perform poorly, ego-involved individuals are likely to experience negative emotions, which could be particularly difficult for athletes to deal with if the match is believed to be an important competition, such as a national championship or cup final, because these types of situations are likely to have a strong influence on

emotions (Kerr et al., 2005; Kerr & Males, 2010). Moreover, these moderating variables are not completely under the athlete's control, so ego-involved athletes cannot maximise the chance that they will experience positive emotions. Thus, we suggest that athletes should not be ego involved during competition because, unlike task involvement, this goal state is unlikely to consistently lead to positive emotions.

Another variable that was considered as a moderator of the link between ego involvement and emotions was perceived competence. However, this moderator was only significant for hope, and ego involvement was unrelated to this emotion at high and low values of perceived competence (Study 1). Moreover, ego involvement did not interact with perceived competence to predict any emotions in team sport athletes (Study 3). Therefore, the results from Studies 1 and 3 suggest that general perceptions of competence may not help researchers understand the relationships between ego involvement and emotions before or after competition. These findings support some studies in the literature (Hodge et al., 2008; Morris & Kavussanu, 2009), which showed that ego orientation was not differently related to enjoyment at high and low perceived competence.

When considered together, the moderation findings from Studies 1, 2 and 3 add to Achievement Goal Theory (Nicholls, 1984, 1989) and extend literature (Hall & Kerr, 1997; Hodge et al., 2008). Specifically, results showed that the emotions ego-involved athletes feel may vary depending on what they think about their performance or the outcome of a team sport match, which supports the proposition that perceived competence will moderate the relationship between ego involvement and anxiety or affect (Jagacinski & Nicholls, 1984; Nicholls, 1984; Roberts, 1986). Findings from Studies 2 and 3 add to the literature, which showed inconsistent support for perceived competence as a moderator of ego orientation and anxiety (Hall & Kerr, 1997) or enjoyment (Hodge et al., 2008; Morris & Kavussanu, 2009, by highlighting more consistent moderators. Therefore, based on findings for all moderators, one could suggest that perceived

performance and outcome (Studies 2 and 3) are better moderators than perceived competence (Study 1) to consider if researchers wish to shed light on the link between ego involvement and emotions.

The moderation results for perceived performance and outcome may be different to perceived competence because of the timeframe in which moderators and emotions were measured. Perceived performance, outcome of the match, and emotions all referred to a specific point in time; however, perceived competence was a general perception of the athletes' competence. Perhaps perceived performance and outcome informed the ego-involved athletes how they performed on that occasion, so was differently related to emotions as it helped these individuals judge whether they had achieved their goal of outperforming others at that time. However, the general perception of competence may not inform ego-involved athletes whether they have achieved their goal on that occasion, so perceived competence did not interact with ego involvement to predict emotions.

Some moderation findings were consistent across variables or timeframes. For example, the relationship between ego involvement and hope was moderated by perceived competence, perceived performance, and outcome (Studies 1, 2, and 3). These results add to the literature as they suggest that hope felt by ego-involved athletes may depend on how these individuals view their competence, performance, or the outcome of the match. Also, ego involvement interacted with perceived performance to predict dejection experienced during and after competition (Studies 2 and 3). Therefore, this moderation may be observed at these timeframes in other samples and different settings (i.e., adolescent athletes at local competitions).

Perceived performance did not consistently moderate the relationship between ego involvement and happiness; specifically, this interaction was shown in Study 2 (ego involvement was positively related to happiness at high perceived performance, and negatively associated with this emotion at low perceived performance) but not in Study 3. Happiness is experienced when

individuals believe they are making progress towards a goal (Lazarus, 2000). During a golf competition, ego-involved individuals' goal was to outperform others and they may have based their decision on whether they were making progress towards this goal on how they thought they were performing; thus, these variables interacted to predict happiness. Conversely, this moderation was not observed in Study 3. It has been suggested that individuals who play team sports may have to make team goals more important than individual goals (Matheson, Mathes, & Murray, 1997). Perhaps in the team sport context, the outcome of the match has more of an influence on happiness after competition than ego-involved individuals' goal of outperforming others. However, this is a tentative explanation that should be investigated in future research.

Overall, the moderation results for ego involvement and emotions suggest that perceived performance and outcome are better variables than perceived competence to consider if one seeks to understand the links between ego involvement and emotions. The different timeframes that these moderators refer to could explain these results. Furthermore, hope was moderated by a number of variables, which suggests that various indices of performance influence the hope ego-involved athletes experience. Moreover, the relationship between ego involvement and dejection during and after competition was moderated by perceived performance so this interaction may be observed in different settings.

Limitations and Future Directions

Although there are interesting findings in this thesis, there are also a number of limitations. The first limitation is that goal involvement was not measured exactly as it was defined by Nicholls (1989), i.e., ""task involvement" and "ego involvement" refer to the states that people experience in a given situation" (p. 95). Specifically, in Study 1, goal involvement was measured as what individuals expect will make them feel successful in the upcoming competition, rather than how

they defined success on a given occasion. Although our measure and Nicholls (1989) definition are similar, it is worth noting that they are not exactly the same.

Measures of goal involvement in Study 2 and 3 (i.e., goal states adopted throughout the whole competition) are also similar, but not identical to Nicholls (1989) definition. Goal involvement was measured in this way for two reasons: First, the research questions concerned goal states adopted throughout the whole competition. Second, Duda (2001) recommended that measuring goal involvement retrospectively may not alter individuals' levels of task and ego involvement, which could be the case with repeated measurements of goal involvement in the situation. Literature in this area could be extended if researchers examined the links between goal involvement and emotions at specific points throughout competition; qualitative research methods, such as retrospective video recall, could investigate this issue with less disruption to levels of goal involvement than measuring these states repeatedly during competition.

Second, researchers may consider not measuring achievement goals using Elliot's (1999) 2 x 2 framework, which has four goal constructs (i.e., mastery-approach, mastery-avoidance, performance-approach, and performance-avoidance) that differ based on how competence is defined (i.e., self- and other-referenced) and valanced (i.e., approach and avoidance), a limitation. However, achievement goals are viewed differently by these two researchers (Elliot, 1999; Nicholls, 1989). Specifically, Nicholls (1984, 1989) states that achievement goals are based on conceptions of ability and definitions of success, whereas Elliot (1999) suggests that they result from a need for achievement (Papaioannou, Zourbanos, Krommidas, & Ampatzoglou, 2012). Moreover, I sought to extend Achievement Goal Theory (Nicholls, 1989) by examining the role that perceived performance plays in explaining the relationships between goal involvement and emotions. Furthermore, I did not expect avoidance goals to provide a greater understanding of emotions beyond variables considered; specifically, the associations between ego involvement at

low perceived performance or a performance-avoidance goal to emotions were expected to be similar. In future, researchers could examine achievement goals using the 2 x 2 framework (Elliot, 1999) if they thought these goals help address their research question.

Third, although we found support for the effect of task involvement on perceived performance, we did not experimentally test whether this variable mediated and moderated the effect of goal involvement on emotions in Study 4. The purpose of Study 4 was to examine the effect of achievement goals on emotions and performance in a competitive sports based task. Given that support was found for the links between goal involvement and emotions before competition, researchers could examine mediators and moderators of these relationships in future studies. An effective method to examine mediation is to use two randomized experiments (Stone-Romero & Rosopa, 2011). In the first experiment, the independent variable has experimental and control groups and the mediator and dependent variable are measured. In the second experiment, participants are randomly allocated to two groups, there are experimental and control groups for the mediator variable, and the dependent variable is observed. To examine moderation, researchers could manipulate goal involvement and have a confederate competitor win or lose the task (which may go some way towards manipulating perceived performance) and then examine the effect on emotions.

A fourth limitation of this research is that perceived competence and perceived performance referred to different timeframes, which makes it difficult to compare the results for these variables between studies. Specifically, it is not clear whether the timeframe or differences in the constructs these variables assess account for the different moderation results. In future, researchers could clarify which variable is the most effective moderator by examining individuals' expectations for performance before a competition, how they believe they performed during the event, and general

perceptions of competence, as moderators of the relationships between ego involvement and emotions before, during, or after competition.

The effect sizes for the majority of moderation findings from Studies 1, 2, and 3 were small, based on Cohen's (1992) classification that R^2 of .02, .13, and .26 are classified as small, medium and large, respectively. Although it could be argued that small effect sizes for moderation results suggest that these findings do not add a great deal to the literature, researchers have suggested that small effect sizes do not always indicate trivial effects and that using the terms small or large may bias interpretation of results, which could harm theory development (Cortina & Landis, 2009). Thus, although the moderation effect sizes were small, these results extend Achievement Goal Theory (Nicholls, 1989) so may not be trivial. Also, researchers who examined ego orientation by perceived competence interactions on emotions (Mouratidis et al, 2009) or intrinsic motivation to know (Standage et al., 2003) have also reported small effect sizes; thus, the effect sizes observed for moderation in Studies 2 and 3 are consistent with previous research.

Finally, given the focus on emotions in this thesis, one could be criticised for examining concentration disruption in Study 1 as it is not an emotion. Indeed, concentration disruption can be considered one of four mental consequences of anxiety (i.e., worry, concentration disruption, disturbing evaluation-related imagery, and control problems, see Burton, 1998). However, findings from this thesis (Study 1, 2, and 4) suggest that task involvement is differently related to concentration disruption and worry and somatic anxiety, so examining these three variables may help understand how goal involvement is related to anxiety. Also, concentration disruption was examined in addition to cognitive and somatic anxiety; therefore, relationships investigated in previous research (e.g., Hall et al., 1998) were also considered in Study 1. Examining the link between goal involvement and four mental consequences of cognitive anxiety may shed light on the

motivational antecedents of anxiety and provide a deeper understanding of the causes of this emotion.

In future, researchers could extend this literature by examining the role that effort plays in understanding the relationships between task involvement and emotions. Although researchers have considered the link between goal orientation and effort in competition (e.g., van de Pol & Kavussanu, 2011), and goal orientation, effort, and affect in university athletes (Ntoumanis, Biddle, Haddock, 1999), no researchers have considered the relationships between goal involvement, effort, and a number of emotions. Indeed, task-involved individuals feel competent as a result of effortful accomplishment (Nicholls, 1989). Therefore, during an achievement setting, task involvement may be positively related to effort, which might in turn be positively associated with positive emotions and negative related to negative emotions.

Research from this thesis could be extended by examining whether attributions, which are defined as "the reasons that people give to explain events related to themselves or others" (Hanrahan & Biddle, 2008, p. 100), also mediate the link between task involvement during, and emotions after, competition. Specifically, task involvement may positively predict personally controllable attributions (Vlachopoulos & Biddle, 1997), which might then be positively associated with pride (Weiner, 1985). Also, there may be a three-way interaction for ego involvement, controllability, and perceived performance on pride. As such, we would expect that at high perceived performance and high personal control, ego involvement will be positively related to pride and unrelated to this emotion at low control. Conversely, at low perceived performance and high personal control, ego involvement may be unrelated to pride and negatively related at low control.

Having fun or experiencing a lack of fun were reasons for persistence and dropout in sport, respectively (Gould & Horn, 1984). However, no research has examined whether goal orientation,

perceived improvement, and a range of emotions predict persistence in sport. Indeed, researchers could examine perceived performance as a mediatior of task involvement and emotions and a moderator of ego involvement and emotions, as was investigated in Study 3, but also examine whether emotions predict intention to continue participation in, or dropout from, sport. Also, the change in goal involvement and perceived performance over time may predict emotions and continued participation or dropout, such that task involvement may result in improved performance, which may be positively related to positive emotions and persistence, and negatively associated with negative emotions and dropout. Conversely, ego involvement and emotions may be moderated by perceived performance, so those who perform well may experience positive emotions and persist and those who have low performance might feel more negative emotions and dropout.

Conclusion

The aim of this thesis was to investigate the links between goal involvement and emotions and performance, and potential mediators and moderators of the relationships between goal involvement and emotions. Taken together, the results suggest that task involvement is positively associated with positive, and negatively related to negative, emotions at various points in time throughout competition. Moreover, task and ego involvement had no effect on actual performance or outcome, but task involvement was associated with higher perceived performance in Studies 2, 3, and 4. Mediation findings suggest that perceived performance and challenge appraisals may help explain the links between task involvement and emotions. Furthermore, perceived performance and outcome of the match add to the understanding of the relationships between ego involvement and emotions.

Individuals can be task or ego involved in a given situation (Nicholls, 1989). Moreover, a task-involving climate was positively related to task involvement (Gimeno, Hutzler, Vaíllo, Rivas, & Murcia, 2005). Therefore, goal involvement may be malleable and definitions of success

emphasised by coaches may influence goal states. Based on results from this thesis, I suggest that athletes should be task involved throughout competitive matches as this will be beneficial for their challenge appraisal, perceptions of performance, and emotions experienced. Also, being ego involved in competition is unlikely to lead to high performance and this goal state may be differently related to emotions depending on how individuals think they have performed or the outcome of the competition. Specifically, when ego-involved athletes perform well or win the match, they may feel high positive emotions, such as hope, and are unlikely to experience negative emotions, such as dejection. However, when they perform poorly or lose, they may be unlikely to feel positive emotions and may experience high negative emotions. Given that perceived performance and outcome of the match are not totally under the athletes' control, it is not recommended that individuals are ego involved during competition. Sport coaches could pass these recommendations on to their athletes to help the latter have a more fulfilling sport experience.

References

Adie, J. W., Duda, J. L., & Ntoumanis, N. (2008). Achievement goals, competition appraisals, and the psychological and emotional welfare of sport participants. *Journal of Sport & Exercise Psychology, 30*, 302-322.

Adie, J. W., Duda, J. L., & Ntoumanis, N. (2010). Achievement goals, competition appraisals, and the well- and ill-being of elite youth soccer players over two competitive seasons. *Journal of Sport & Exercise Psychology, 32*, 555-579.

Biddle, S. J. H., Wang, C. K. J., Kavussanu, M., & Spray, C. M. (2003). Correlates of achievement goal orientations in physical activity: A systematic review of research. *European Journal of Sport Science, 3,* 1-20.

Burton, D. (1998). Measuring competitive state anxiety. In J. L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 129-148). Morgantown, WV: Fitness Information Technology, Inc.

Cervelló, E., Rosa, F. J. S., Calvo, T. G., Jimenez, R., & Iglesias, D. (2007). Young tennis players' competitive task involvement and performance: The role of goal orientations, contextual motivational climate, and coach-initiated motivational climate. *Journal of Applied Sport Psychology, 19,* 304-321. DOI: 10.1080/10413200701329134

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112,* 155-159.

Cortina, J.M., & Landis, R.S. When small effect sizes tell a big story, and when large effect sizes don't. (2009). In C. E. Lance & R. J. Vandenberg (Eds.), *Statistical and methodological myths and urban legends: Doctrine, verity, and fable in the organizational and social sciences*. New York: Routledge.

Duda, J. L. (2001). Goal perspective research in sport: Pushing the boundaries and clarifying some misunderstandings. In G.C. Roberts (Ed.), *Advances in motivation in sport and exercise* (pp. 129–182). Champaign, IL: Human Kinetics.

Elliot, A. J. (1999). Approach and avoidance motivation and achievement goals. *Educational Psychologist*, *34*, 169-189.

Elliot, A. J., Cury, F., Fryer, J. W., & Huguet, P. (2006). Achievement goals, self-handicapping, and performance attainment: A meditational analysis. *Journal of Sport & Exercise Psychology*, *28*, 344-361.

Gano-Overway, L. A. (2008). The effect of goal involvement on self-regulatory processes. *International Journal of Sport and Exercise Psychology, 6,* 132-156.

Giannini, J. M., Weinberg, R. S., & Jackson, A. J. (1988). The effects of mastery, competitive, and cooperative goals on the performance of simple and complex basketball skills. *Journal of Sport & Exercise Psychology, 10*, 408-417.

Gimeno, E. C., Hutzler, Y., Vaíllo, R. R., Rivas, D. S., & Murcia, J. A. M. (2005). Goal orientations, contextual and situational motivational climate and competition goal involvement in Spanish athletes with cerebral palsy, *Psicothema, 17*, 633-638.

Gould, D., & Horn, T. (1984). Participation motivation in young athletes. In J. M. Silva III & R. S. Weinberg (Eds.), *Psychological foundations in sport* (pp. 359-370). Champaign, Illinois: Human Kinetics Publishers.

Graham, T. R., Kowalski, K. C., & Crocker, P. R. E. (2002). The contributions of goal characteristics and causal attributions to emotional experience in youth sport participants. *Psychology of Sport and Exercise, 3,* 273-291. DOI: 10.1016/S1469-0292(01)00006-1

Hall, H. K., & Kerr, A. W., (1997). Motivational antecedents of precompetitive anxiety in youth sport. *The Sport Psychologist, 11,* 24-42.

Hall, H. K., Kerr, A. W., & Matthews, J. (1998). Precompetitive anxiety in sport: The contribution of achievement goals and perfectionism. *Journal of Sport & Exercise Psychology, 20*, 194-217.

Hanrahan, S.J., & Biddle, S.J.H. (2008). Attributions and perceived control. In T.S. Horn (Ed.), Advances in sport psychology (pp. 99–114). Champaign, IL: Human Kinetics.

Hodge, K., Allen, J. B., & Smellie, L. (2008). Motivation in Masters sport: Achievement and social goals. *Psychology of Sport and Exercise, 9,* 157-176. DOI:10.1016/j.psychsport.2007.03.002

Jagacinski, C. M., & Nicholls, J. G. (1984). Conceptions of ability and related affects in task involvement and ego involvement. *Journal of Educational Psychology, 76*, 909-919.

Jones, M. V., Lane, A. M., Bray, S. R., Uphill, M., & Catlin, J. (2005). Development and validation of the Sport Emotion Questionnaire. *Journal of Sport & Exercise Psychology, 27,* 407-431.

Kavussanu, M., Morris, R. L., & Ring, C. (2009). The effects of achievement goals on performance, enjoyment, and practice of a novel motor task. *Journal of Sports Sciences, 27,* 1281-1292.

Kerr, J. H., & Males, J. R. (2010). The experience of losing: Qualitative study of elite lacrosse athletes and team performance at a world championships. *Psychology of Sport and Exercise, 11*, 394-401. DOI:10.1016/j.psychsport.2010.04.014

Kerr, J. H., Wilson, G. V., Bowling, A., & Sheahan, J. P. (2005). Game outcome and elite Japanese women's field hockey player's experience of emotions and stress. *Psychology of Sport and Exercise, 6,* 251-263. DOI:10.1016/j.psychsport.2003.11.002

Lazarus, R. S. (2000). How emotions influence performance in competitive sports. *The Sport Psychologist, 14,* 229-252.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York, New York: Springer Publishing Inc.

Matheson, H., Mathes, S., Murray, M. (1997). The effect of winning and losing on female interactive and coactive team cohesion. *Journal of Sport Behavior, 20*, 284-298.

Morris, R. L., & Kavussanu, M. (2009). The role of approach-avoidance versus task and ego goals in enjoyment and cognitive anxiety in youth sport. *International Journal of Sport and Exercise Psychology, 7,* 185-202.

Mouratidis, A., Vansteenkiste, M., Lens, W., & Auweele, Y. V. (2009). Beyond positive and negative affect: Achievement goals and discrete emotions in the elementary physical education classroom. *Psychology of Sport and Exercise, 10*, 336-343. DOI:10.1016/j.psychsport.2008.11.004

Nicholls, J. G. (1984). Achievement motivation: Conceptions of ability, subjective experience, task choice, and performance. *Psychological Review, 91,* 328-346.

Nicholls, J. G. (1989). *The competitive ethos and democratic education*. Cambridge, Massachusetts: Harvard University Press.

Ntoumanis, N., & Biddle, S. J. H. (1999). Affect and achievement goals in physical activity: A meta-analysis. *Scandinavian Journal of Medicine & Science in Sports, 9,* 315-332.

Ntoumanis, N., &. Biddle, S.J.H., & Haddock, G. (1999). The mediating role of coping strategies on the relationship between achievement motivation and affect in sport. *Anxiety, Stress, and Coping: An International Journal*, *12*, 299-327. DOI: 10.1037/a0024934

Ntoumanis, N., Thogersen-Ntoumani, C., & Smith, A. L. (2009). Achievement goals, self-handicapping, and performance: A 2 x 2 achievement goal perspective. *Journal of Sports Sciences, 27,* 1471-1482.

Papaioannou, A. G., Zourbanos, N., Krommidas, C., & Ampatzoglou, G. (2012). The place of achievement goals in the social context of sport: A comparison of Nicholls' and Elliot's

models. In G. C. Roberts and Treasure (Eds), *Advances in motivation in sport & exercise*, 3rd ed. (pp. 59-90). Champaign, IL: Human Kinetics.

Roberts, G. C. (1986). The perception of stress: A potential source and its development. In M.R.Weiss & D. Gould (Eds.), *Sport for children and youths* (pp. 119-127). Champaign, IL: Human Kinetics Publishers Inc.

Sève, C., Ria, L., Poizat, G., Saury, J., & Durand, M. (2007). Performance-induced emotions experienced during high-stakes table tennis matches. *Psychology of Sport and Exercise, 8*, 25-46. DOI:10.1016/j.psychsport.2006.01.004

Smith, R. E., Smoll, F. L., Cumming, S. P., & Grossbard, J. R. (2006). Measurement of multidimensional sport performance anxiety in children and adults: The sport anxiety scale-2. *Journal of Sport & Exercise Psychology*, 28, 479-501.

Standage, M., Duda, J. L., & Ntoumanis, N. (2003). Predicting motivation regulations in physical education: The interplay between dispositional goal orientations, motivational climate, and perceived competence. *Journal of Sport Sciences, 21*, 631-647. DOI: 10.1080/0264041031000101962

Standage, M., Duda, J. L., & Pensgaard, A. M. (2005). The effect of competitive outcome and task-involving, ego-involving, and cooperative structures on the psychological well-being of individuals engaged in a co-ordination task: A self-determination approach. *Motivation & Emotion, 29,* 41-68.

Stone-Romero, E. F., & Rosopa, P. J. (2011). Experimental tests of mediation models: Prospects, problems, and some solutions. *Organizational Research Methods, 14*, 631-646. DOI: 10.1177/1094428110372673

Uphill, M. A., & Jones, M. V. (2007). Antecedents of emotions in elite athletes: A cognitive motivational relational theory perspective. *Research Quarterly for Exercise and Sport, 78,* 79-89.

van de Pol, P. K. C., & Kavussanu, M. (2011). Achievement goals and motivational responses in tennis: Does the context matter? *Psychology of Sport and Exercise, 12,* 176-183. DOI: 10.1016/j.psychsport.2010.09.005

van de Pol, P. K. C., & Kavussanu, M. (2012). Achievement motivation across training and competition in individual and team sports. *Sport, Exercise, and Performance Psychology*. DOI: 10.1037/a0025967

Vlachopoulos, S., & Biddle, S. (1997). Modeling the relation of goal orientations to achievement-related affect in physical education: Does perceived ability matter? *Journal of Sport & Exercise Psychology, 19*, 168-187.

Vlachopoulos, S., Biddle, S., & Fox, K. (1997). Determinants of emotion in children's physical activity: A test of goal perspectives and attribution theories. *Pediatric Exercise Science, 9*, 65-79.

Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological Review, 92*, 548-573.

APPENDICES

Appendix 1 – Study 1 Questionnaires

Appendix 1a: Demographics questionnaire items

1. Sex (please circle): Male / Female	
2. Sport trial attending:	3. Years playing this sport:
4. What is the highest level you have competed at in this sport? Please Circle a) International b) National c) County d) Club e) School/College	
5. Age:	

Appendix 1b: Perception of Success Questionnaire (POSQ; Roberts, Treasure, Balague, 1998)

Please think about what will make you feel **most successful in the forthcoming trial**. Please respond to the following statements **honestly** by circling the relevant number.

I will feel successful if…		**Strongly Disagree**		**Neutral**		**Strongly Agree**
1.	I beat other students.	1	2	3	4	5
2.	I am clearly superior.	1	2	3	4	5
3.	I am the best.	1	2	3	4	5
4.	I work hard.	1	2	3	4	5
5.	I show clear personal improvement.	1	2	3	4	5
6.	I outperform my opponents.	1	2	3	4	5
7.	I accomplish something others can't do.	1	2	3	4	5
8.	I reach a personal goal.	1	2	3	4	5
9.	I overcome difficulties.	1	2	3	4	5
10.	I master something I couldn't do before.	1	2	3	4	5
11.	I show other people I am the best.	1	2	3	4	5
12.	I perform to the best of my ability.	1	2	3	4	5

Appendix 1c: Cognitive appraisal of sport competition (Adie, Duda, Ntoumanis, 2008)

Please think about **how you perceive the forthcoming trial** and respond to the items below. There are no right or wrong answers. Please answer all questions honestly.

	Not At All True Of Me			**Somewhat True Of Me**			**Very True Of Me**
1. I view the trial as a positive challenge.	1	2	3	4	5	6	7
2. I often think about what it would be like if I do badly in the trial.	1	2	3	4	5	6	7
3. I view the trial as a threat.	1	2	3	4	5	6	7
4. I look forward to being challenged in the forthcoming trial.	1	2	3	4	5	6	7
5. I believe the trial will have positive consequences for me.	1	2	3	4	5	6	7
6. I think that the trial will be threatening to me.	1	2	3	4	5	6	7
7. I am dreading the trial.	1	2	3	4	5	6	7
8. I think that the trial would represent a positive challenge to me.	1	2	3	4	5	6	7
9. I believe the trial would have negative consequences for me.	1	2	3	4	5	6	7
10. I often think about what it would be like if I do well in the trial.	1	2	3	4	5	6	7

Appendix 1d: Perceived competence from the Intrinsic Motivation Inventory (McAuley, Duncan, Tammen, 1989)

Please think **generally about your ability in your sport**. Use the scale below to indicate your level of agreement with each of the items. Please answer all questions **honestly** by circling the relevant number.

	Not At All True Of Me			Somewhat True Of Me			Very True Of Me
1. I think I am pretty good at this sport, compared to other students.	1	2	3	4	5	6	7
2. I am pretty skilled at this sport.	1	2	3	4	5	6	7
3. This is an activity that I can't do very well.	1	2	3	4	5	6	7
4. After taking part in this sport for a while, I feel pretty competent.	1	2	3	4	5	6	7
5. I am satisfied with my ability in this sport.	1	2	3	4	5	6	7
6. I think I am pretty good at this sport.	1	2	3	4	5	6	7

Appendix 1e: Hope from Achievement Emotion Questionnaire (Pekrun, Goetz, & Perry, 2005)

The following are some statements which may or may not describe how you feel at this time. Please rate each based on **how you feel at this moment**. Please answer all questions **honestly**.

At this moment…	Strongly Disagree				Strongly Agree
1. I am optimistic that everything will work out fine.	1	2	3	4	5
2. I am very confident.	1	2	3	4	5
3. I have great hope that my abilities will be sufficient.	1	2	3	4	5
4. I'm quite confident that my preparation is sufficient.	1	2	3	4	5
5. I think about my trial optimistically.	1	2	3	4	5
6. I prepared for the trial with great hope and anticipation.	1	2	3	4	5
7. My confidence motivates me to prepare well.	1	2	3	4	5
8. Hoping for success, I'm motivated to invest a lot of effort.	1	2	3	4	5

Appendix 1f: Excitement from Sport Emotion Questionnaire (Jones, Lane, Bray, Uphill, Catlin, 2005)

Please read each word carefully and indicate the on the scale next to the item **how intensely you feel this emotion right now, at this moment, in relation to the upcoming trial**. There are no right or wrong answers. Please answer all questions **honestly**.

I feel…	**Not at all**	**A Little**	**Moderately**	**Quite A Bit**	**Extremely**
Exhilarated	0	1	2	3	4
Excited	0	1	2	3	4
Enthusiastic	0	1	2	3	4
Energetic	0	1	2	3	4

Appendix 1g: Sport Anxiety Scale-2 (Smith, Smoll, Cumming, & Grossbard, 2006)

Please read each question then circle the number that applies to **how you feel at this moment**. There are no right or wrong answer. Please answer all questions **honestly**.

At this moment…	Not At All	A Little Bit	Pretty Much	Very Much
1. It is hard to concentrate on the trial.	1	2	3	4
2. My body feels tense.	1	2	3	4
3. I'm worrying that I will not play well.	1	2	3	4
4. It is hard for me to focus on what I am supposed to do.	1	2	3	4
5. I'm worrying that I will let others down.	1	2	3	4
6. I feel tense in my stomach.	1	2	3	4
7. I am losing focus on the trial.	1	2	3	4
8. I'm worrying that I will not play my best.	1	2	3	4
9. I'm worrying that I will play badly.	1	2	3	4
10. My muscles feel shaky.	1	2	3	4
11. I'm worrying that I will mess up during the trial.	1	2	3	4
12. My stomach feels upset.	1	2	3	4
13. I cannot think clearly.	1	2	3	4
14. My muscles feel tight because I am nervous.	1	2	3	4
15. I am having a hard time focusing on the trial.	1	2	3	4

Appendix 2 – Study 2 Questionnaires

Appendix 2a: Demographics questionnaire items

1. Date of Birth:	2. What is your handicap?:
3. Name of current club:	4. Number of years with current club:

Appendix 2b: Perception of Success Questionnaire (POSQ; Roberts et al., 1998)

Please think about your experience **during your round today.** When did you feel **most successful?** Please respond to the following statements **honestly** by circling the relevant number.

During the round today I felt most successful when…	**Strongly Disagree**		**Neutral**		**Strongly Agree**
1. I beat other people	1	2	3	4	5
2. I was clearly superior	1	2	3	4	5
3. I was the best	1	2	3	4	5
4. I worked hard	1	2	3	4	5
5. I showed clear personal improvement	1	2	3	4	5
6. I outperformed my opponents	1	2	3	4	5
7. I accomplished something others couldn't do	1	2	3	4	5
8. I reached a personal goal	1	2	3	4	5
9. I overcame difficulties	1	2	3	4	5
10. I mastered something I couldn't do before	1	2	3	4	5
11. I showed other people I am the best	1	2	3	4	5
12. I performed to the best of my ability	1	2	3	4	5

Appendix 2c: Sport Emotion Questionnaire (Jones et al., 2005)

Below you will find a list of words that describe a range of feelings that sport performers may experience while playing sport. Please read each one carefully and indicate the extent to which you experienced the emotions **during your round today**. There are no right or wrong answers. Do not spend too much time on any one item, but choose the answer which best describes your feelings during your round. Please answer all questions **honestly**.

During the round today, I felt…	**Not at all**	**A Little**	**Moderately**	**Quite A Bit**	**Extremely**
Uneasy	0	1	2	3	4
Upset	0	1	2	3	4
Exhilarated	0	1	2	3	4
Irritated	0	1	2	3	4
Pleased	0	1	2	3	4
Tense	0	1	2	3	4
Sad	0	1	2	3	4
Excited	0	1	2	3	4
Furious	0	1	2	3	4
Joyful	0	1	2	3	4
Nervous	0	1	2	3	4
Unhappy	0	1	2	3	4
Enthusiastic	0	1	2	3	4
Annoyed	0	1	2	3	4
Cheerful	0	1	2	3	4
Apprehensive	0	1	2	3	4
Disappointed	0	1	2	3	4
Energetic	0	1	2	3	4
Angry	0	1	2	3	4
Happy	0	1	2	3	4
Anxious	0	1	2	3	4
Dejected	0	1	2	3	4

Appendix 2d: Perceived performance

In this section, we are asking you to rate your **performance during your round today.** Please answer all questions **honestly**.

Please rate your performance during your round today.	**Worst I Could Play**			**Average**						**Best I Could Play**
1. Overall (e.g. compared to your typical performance)	1	2	3	4	5	6	7	8	9	10
2. Overall (e.g. compared to others in the tournament)	1	2	3	4	5	6	7	8	9	10

Appendix 3 – Study 3 Questionnaires

Appendix 3a: Demographics questionnaire items

Please give us some information about yourself.

1. Date of Birth:	2. Sex (please circle): Male / Female
3. Sport Played Today:	4. Years playing this sport:
5. What is the highest level you have competed at in this sport? Please circle one a) International b) National c) County d) Regional e) Club	
6. What team do you play for? _____	
7. What squad do you play for? (i.e. 1st, 2nd, etc.) _____	
8. What was the outcome of your match today? (please circle) Win Loss Draw 9. What was the score? _____	

Appendix 3b: Perception of Success Questionnaire (POSQ; Roberts et al., 1998)

*Please indicate what made you feel **most successful** during your match today. Please respond to the following statements **honestly** by circling the relevant number.*

During the match today I felt **most successful** when…	Strongly Disagree		Neutral		Strongly Agree
1. I beat other people	1	2	3	4	5
2. I was clearly superior	1	2	3	4	5
3. I was the best	1	2	3	4	5
4. I worked hard	1	2	3	4	5
5. I showed clear personal improvement	1	2	3	4	5
6. I outperformed my opponents	1	2	3	4	5
7. I accomplished something others couldn't do	1	2	3	4	5
8. I reached a personal goal	1	2	3	4	5
9. I overcame difficulties	1	2	3	4	5
10. I mastered something I couldn't do before	1	2	3	4	5
11. I showed other people I am the best	1	2	3	4	5
12. I performed to the best of my ability	1	2	3	4	5

Appendix 3c: Happiness and dejection from the Sport Emotion Questionnaire (Jones et al., 2005)

*Please t**hink about your performance today** and indicate **how intensely you feel this emotion right now, at this moment,** in relation to the match you have just played. There are no right or wrong answers. Please answer all questions **honestly.***

At this moment I feel…	Not at all	A Little	Moderately	Quite A Bit	Extremely
Upset	0	1	2	3	4
Pleased	0	1	2	3	4
Sad	0	1	2	3	4
Joyful	0	1	2	3	4
Unhappy	0	1	2	3	4
Cheerful	0	1	2	3	4
Disappointed	0	1	2	3	4
Happy	0	1	2	3	4
Dejected	0	1	2	3	4

Appendix 3d: Pride and shame from the State Shame and Guilt Scale (Marschall, Sanftner, & Tangney, 1994)

*In this section we are asking about emotions you may be experiencing at the moment. Please t**hink about your performance today** and indicate **how intensely you feel this emotion right now, at this moment,** in relation to your performance on the match you have just played. There are no right or wrong answers. Please answer all questions **honestly.***

At **this moment**…	Do Not Feel This Way At All		Feel This Way Somewhat		Feel This Way Very Strongly
1. I feel good about myself.	1	2	3	4	5
2. I want to sink into the ground and disappear.	1	2	3	4	5
3. I feel worthwhile, valuable.	1	2	3	4	5
4. I feel small.	1	2	3	4	5
5. I feel capable, useful.	1	2	3	4	5
6. I feel like a bad person.	1	2	3	4	5
7. I feel proud.	1	2	3	4	5
8. I feel humiliated, disgraced.	1	2	3	4	5
9. I feel pleased about performing well.	1	2	3	4	5
10. I feel worthless, powerless.	1	2	3	4	5

Appendix 3e: Hope from Achievement Emotion Questionnaire (Pekrun et al., 2005)

The following statements may or may not describe ***how you feel about your next match****. Please indicate your level of agreement with each statement. Please answer all questions* ***honestly****.*

	Strongly Disagree				Strongly Agree
1. I am optimistic that everything will work out fine.	1	2	3	4	5
2. I am very confident.	1	2	3	4	5
3. I have great hope that my abilities will be sufficient.	1	2	3	4	5
4. I'm quite confident that my preparation is sufficient.	1	2	3	4	5
5. I think about my trial optimistically.	1	2	3	4	5
6. I prepared for the trial with great hope and anticipation.	1	2	3	4	5
7. My confidence motivates me to prepare well.	1	2	3	4	5
8. Hoping for success, I'm motivated to invest a lot of effort.	1	2	3	4	5

Appendix 3f: Perceived performance

*These questions refer to **your performance** during the match. Words in brackets give some examples to explain aspects of your performance. Please answer all questions **honestly**.*

Please rate your **performance** during the match…	Worst I Could Perform				Average						Best I Could Perform
1. Technical (e.g. skill execution)	0	1	2	3	4	5	6	7	8	9	10
2. Tactical (e.g. using knowledge of your sport to your advantage)	0	1	2	3	4	5	6	7	8	9	10
3. Physical (e.g. stamina, speed, strength)	0	1	2	3	4	5	6	7	8	9	10
4. Psychological (e.g. concentration, attitude, regrouping after poor performance)	0	1	2	3	4	5	6	7	8	9	10
5. Overall (e.g. compared to your **typical** performance)	0	1	2	3	4	5	6	7	8	9	10

Appendix 4 – Experimenter Sheets and Questionnaires for Study 4

Appendix 4a: Experimenter sheet for task group

Experimental condition

Task Ego Control

1. Thank participants for agreeing to participate and introduce yourself.
2. Emphasise importance of completing the questionnaire honestly.

"When completing the questionnaire please read all instructions and questions carefully. It is very important that you answer all questions honestly. Later in the experiment we will ask you to think about the experience of the task when answering the questions. Remember, all data is confidential so please be honest when answering the questions."

3. Has participant read the information sheet? Do they have any questions?
4. Sign consent form, and complete section **1.1 and 1.2** of questionnaire.
5. Set up ladder. Cone at the top and bottom of the ladder, 100 cm from outside edge of last rung of ladder to the outside edge of the cone.
6. Participant warm up. 100m and back, high knees, heel flicks, and side step.
7. Task explained and diagram shown to participants. Tango Drill demonstrated and diagram shown to participants. Check understanding.

"Today you will participate in the Speed Agility Quickness ladder task. The drill I would like you to perform is the Tango Drill. You start behind the white line with both feet outside of the ladder on the left. Then, place your left foot in the rung of the ladder. Next, step outside of the ladder to the right with your right foot and then your left foot. Next, put your right foot in the rung of the ladder, then step outside of the ladder to the left, with your left and then right foot. Then repeat this sequence all the way up the ladder. Essentially, you cross your outside foot into the rung of the ladder then step outside of the ladder with your other foot, and then bring the foot that was in the rung, outside of the ladder. There is a 1-2-3 rhythm to the movement."

8. Participants complete sections **2.1 to 2.4** of questionnaire.
9. Participants given 2 reps to jog through.
10. Practice block instructions delivered.

"You will now have the opportunity to practice the drill for three trials. For the rest of the study please complete the task as fast as possible while making as few errors as possible. An error is classified as touching the ladder and causing it to move or an incorrect foot sequence. Errors will result in a 1 second time penalty. If you make a foot sequence error, step outside of the ladder and restart the foot sequence. Each trial will consist of four repetitions of the ladder. You will complete trials one after the other and you will be given three minutes rest between trials. Please do not practice between trials. We will record your performance but we are not interested in this information and will not compare your scores. Remember, this is your opportunity to practice the drill."

11. Participants complete practice block. Make a note of all times.

Trial 1 _____	Trial 1 _____
Trial 2 _____	Trial 2 _____
Trial 3 _____	Trial 3 _____

12. Participants complete sections **3.1 to 3.4** of questionnaire.
13. Rest for 5 minutes.
14. Competition instructions and achievement goal manipulation.

"Now you will compete against each other over three trials, after which you will receive feedback on your performance. Research shows that people can **improve** their performance on this drill with practice. You will now have the opportunity to **improve** your **own performance** on the Tango Drill. **Try to focus on doing the steps as well as you can, and try as hard as you can to improve your performance**. The outcome of the competition is **not that** important. The **important thing** is that you **do the steps as well as you can** and that you **try hard to improve your own performance**."

15. Participants complete sections **4.1 and 4.2** of questionnaire.
16. Participants complete competition block. Make a note of all times.

Before Trial 1 – "Try to focus on doing the steps **as well as you can** and **try hard to improve your own performance"**.

Trial 1 _____	Trial 1 _____

Before Trial 2 – "Try to focus on doing the steps **as well as you can** and **try hard to improve your own performance"**.

Trial 2 _____	Trial 2 _____

Before Trial 3 – "Try to focus on doing the steps **as well as you can** and **try hard to improve your own performance"**.

Trial 3 _____ Trial 3 _____

17. Participants complete sections **5.1 to 5.6** of questionnaire.
18. Feedback delivered to participants.

"_____, you won, your time was _____.
_____ , you lost, your time was _____."

19. Participants complete sections **6.1 to 6.6** of questionnaire.
20. Debrief and end.
    a. We will not compare times of participants. We will look at group differences between task, ego, and control groups. We gave you these instructions to create a competitive environment.
    b. Instructions before the task on what to focus on were used to get you to adopt either a task or an ego goal.
    c. Very important that you do not tell other students what the experiment is about! Can affect the results if people know what to expect.

Appendix 4b: Experimenter sheet for ego group

Experimental condition

Task **Ego** Control

1. Thank participants for agreeing to participate and introduce yourself.
2. Emphasise importance of completing the questionnaire honestly.

"When completing the questionnaire please read all instructions and questions carefully. It is very important that you answer all questions honestly. Later in the experiment we will ask you to think about the experience of the task when answering the questions. Remember, all data is confidential so please be honest when answering the questions."

3. Has participant read the information sheet? Do they have any questions?
4. Sign consent form, and complete section **1.1 and 1.2** of questionnaire.
5. Set up ladder. Cone at the top and bottom of the ladder, 100 cm from outside edge of last rung of ladder to the outside edge of the cone.
6. Participant warm up. 100m and back, high knees, heel flicks, and side step.
7. Task explained and diagram shown to participants. Tango Drill demonstrated and diagram shown to participants. Check understanding.

"Today you will participate in the Speed Agility Quickness ladder task. The drill I would like you to perform is the Tango Drill. You start behind the white line with both feet outside of the ladder on the left. Then, place your left foot in the rung of the ladder. Next, step outside of the ladder to the right with your right foot and then your left foot. Next, put your right foot in the rung of the ladder, then step outside of the ladder to the left, with your left and then right foot. Then repeat this sequence all the way up the ladder. Essentially, you cross your outside foot into the rung of the ladder then step outside of the ladder with your other foot, and then bring the foot that was in the rung, outside of the ladder. There is a 1-2-3 rhythm to the movement."

8. Participants complete sections **2.1 to 2.4** of questionnaire.
9. Participants given 2 reps to jog through.
10. Practice block instructions delivered.

"You will now have the opportunity to practice the drill for three trials. For the rest of the study please complete the task as fast as possible while making as few errors as possible. An error is classified as

touching the ladder and causing it to move or an incorrect foot sequence. Errors will result in a 1 second time penalty. If you make a foot sequence error, step outside of the ladder and restart the foot sequence. Each trial will consist of four repetitions of the ladder. You will complete trials one after the other and you will be given three minutes rest between trials. Please do not practice between trials. We will record your performance but we are not interested in this information and will not compare your scores. Remember, this is your opportunity to practice the drill."

11. Participants complete practice block. Make a note of all times.

_____	_____
Trial 1 _____	Trial 1 _____
Trial 2 _____	Trial 2 _____
Trial 3 _____	Trial 3 _____

12. Participants complete sections **3.1 to 3.4** of questionnaire.
13. Rest for 5 minutes.
14. Competition instructions and achievement goal manipulation.

"Now you will compete against each other over three trials, after which you will receive feedback on your performance. We will **employ a handicap system** that will create a **fair competition**. Research shows that some people have more **natural sporting ability** than others. You will now have the opportunity to **show how good you are compared to others** on the Tango Drill. **Try to focus on beating your opponent,** and try to show that **you are the best**. Improving performance is **not that** important. The **important thing** is that you **win this competition** and show that you have **high natural sporting ability**.

15. Participants complete sections **4.1 and 4.2** of questionnaire.
16. Participants complete competition block. Make a note of all times.

Before Trial 1 – "Try to focus on **beating your opponent,** and show **that you have high natural sporting ability**.**"**

_____	_____
Trial 1 _____	Trial 1 _____

Before Trial 2 – "Try to focus on **beating your opponent,** and show **that you have high natural sporting ability"**.

Trial 2 _____ Trial 2 _____

Before Trial 3 – "Try to focus on **beating your opponent,** and show **that you have high natural sporting ability"**.

Trial 3 _____ Trial 3 _____

17. Participants complete sections **5.1 to 5.6** of questionnaire.
18. Feedback delivered to participants.

"_____, you won, your time was _____.
_____ , you lost, your time was _____."

19. Participants complete sections **6.1 to 6.6** of questionnaire.
20. Debrief and end.
    a. We will not compare times of participants. We will look at group differences between task, ego, and control groups. We gave you these instructions to create a competitive environment.
    b. Instructions before the task on what to focus on were used to get you to adopt either a task or an ego goal.
    c. Very important that you do not tell other students what the experiment is about! Can affect the results if people know what to expect.

Appendix 4c: Experimenter sheet for control group

Experimental condition

Task Ego **Control**

1. Thank participants for agreeing to participate and introduce yourself.
2. Emphasise importance of completing the questionnaire honestly.

"When completing the questionnaire please read all instructions and questions carefully. It is very important that you answer all questions honestly. Later in the experiment we will ask you to think about the experience of the task when answering the questions. Remember, all data is confidential so please be honest when answering the questions."

3. Has participant read the information sheet? Do they have any questions?
4. Sign consent form, and complete section **1.1 and 1.2** of questionnaire.
5. Set up ladder. Cone at the top and bottom of the ladder, 100 cm from outside edge of last rung of ladder to the outside edge of the cone.
6. Participant warm up. 100m and back, high knees, heel flicks, and side step.
7. Task explained and diagram shown to participants. Tango Drill demonstrated and diagram shown to participants. Check understanding.

"Today you will participate in the Speed Agility Quickness ladder task. The drill I would like you to perform is the Tango Drill. You start behind the white line with both feet outside of the ladder on the left. Then, place your left foot in the rung of the ladder. Next, step outside of the ladder to the right with your right foot and then your left foot. Next, put your right foot in the rung of the ladder, then step outside of the ladder to the left, with your left and then right foot. Then repeat this sequence all the way up the ladder. Essentially, you cross your outside foot into the rung of the ladder then step outside of the ladder with your other foot, and then bring the foot that was in the rung, outside of the ladder. There is a 1-2-3 rhythm to the movement."

8. Participants complete sections **2.1 to 2.4** of questionnaire.
9. Participants given 2 reps to jog through.
10. Practice block instructions delivered.

"You will now have the opportunity to practice the drill for three trials. For the rest of the study please complete the task as fast as possible while making as few errors as possible. An error is classified as touching the ladder and causing it to move or an incorrect foot sequence. Errors will result in a 1 second time penalty. If you make a foot sequence error, step outside of the ladder and restart the foot sequence. Each trial will consist of four repetitions of the ladder. You will complete trials one after the other and you will be given three minutes rest between trials. Please do not practice between trials. We will record your performance but we are not interested in this information and will not compare your scores. Remember, this is your opportunity to practice the drill."

11. Participants complete practice block. Make a note of all times.

Trial 1 _____	Trial 1 _____
Trial 2 _____	Trial 2 _____
Trial 3 _____	Trial 3 _____

12. Participants complete sections **3.1 to 3.4** of questionnaire.
13. Rest for 5 minutes.
14. Competition instructions and achievement goal manipulation.

"Now you will compete against each other over three trials, after which you will receive feedback on your performance. Speed agility ladders are usually 4 meters long and consist of a number of 45 cm squares. Ladder agility drills are used in many sports including rugby, football, hockey, netball, badminton, and American football. They are an integral part of many speed, agility, and quickness training programs. Speed agility ladders can be arranged in a number of formations and so can be used for a wide variety of drills. The ladders are very durable and can last for up to seven years."

15. Participants complete sections **4.1 and 4.2** of questionnaire.
16. Participants complete competition block. Make a note of all times.

Before Trial 1 – "Speed agility ladders can be arranged in a number of formations and so can be used for a wide variety of drills.**"**

Trial 1 _____	Trial 1 _____

Before Trial 2 – “Speed agility ladders can be arranged in a number of formations and so can be used for a wide variety of drills**”**.

Trial 2 _____ Trial 2 _____

Before Trial 3 – “Speed agility ladders can be arranged in a number of formations and so can be used for a wide variety of drills**”**.

Trial 3 _____ Trial 3 _____

17. Participants complete sections **5.1 to 5.6** of questionnaire.
18. Feedback delivered to participants.

“_____, you won, your time was _____.
_____ , you lost, your time was _____.”

19. Participants complete sections **6.1 to 6.6** of questionnaire.
20. Debrief and end.
    a. We will not compare times of participants. We will look at group differences between task, ego, and control groups. We gave you these instructions to create a competitive environment.
    b. Instructions before the task on what to focus on were used to get you to adopt either a task or an ego goal.
    c. Very important that you do not tell other students what the experiment is about! Can affect the results if people know what to expect.

Appendix 4d: Demographics questionnaire items

Please give us some information about yourself.

1. Date of Birth:	2. Sex (please circle): Male / Female
3. Main Sport:	4. Years playing this sport:

5. What is the highest level you have competed at in your main sport? Please circle one

a) International b) National c) County d) Regional e) Club

6. How many hours a month do you spend doing speed or agility training? _____

7. How often have you used Speed Agility Quickness ladders in the last year? (Please Circle)

Never	Once a Year	Once Every Six Months	Once Every Few Months	Once a Month	Once a Fortnight	Once a Week	More Than Once a Week

Appendix 4e: Pre-practice and pre-competition excitement and anxiety from Sport Emotion Questionnaire (Jones et al., 2005)

Please indicate **how intensely you feel this emotion right now, at this moment,** in relation to the **upcoming task**. At this moment, I feel…

	Not at all	A Little	Moderately	Quite A Bit	Extremely
Uneasy	0	1	2	3	4
Exhilarated	0	1	2	3	4
Tense	0	1	2	3	4
Excited	0	1	2	3	4
Nervous	0	1	2	3	4
Enthusiastic	0	1	2	3	4
Apprehensive	0	1	2	3	4
Energetic	0	1	2	3	4
Anxious	0	1	2	3	4

Appendix 4f: Post-practice and post-competition happiness and dejection from Sport Emotion Questionnaire (Jones et al., 2005)

Please indicate **how intensely you feel this emotion right now, at this moment,** in relation to the **last three trials**. At this moment I feel…

	Not at all	A Little	Moderately	Quite A Bit	Extremely
Upset	0	1	2	3	4
Pleased	0	1	2	3	4
Sad	0	1	2	3	4
Joyful	0	1	2	3	4
Unhappy	0	1	2	3	4
Cheerful	0	1	2	3	4
Disappointed	0	1	2	3	4
Happy	0	1	2	3	4
Dejected	0	1	2	3	4

Appendix 4g: Post-practice and post-competition perceived performance

Please rate **your performance over** the last three trials.

	Not At All True Of Me			Somewhat True Of Me			Very True Of Me
1. I completed the drill quickly	1	2	3	4	5	6	7
2. I did the steps correctly	1	2	3	4	5	6	7
3. I moved my feet quickly	1	2	3	4	5	6	7
4. I had good rhythm	1	2	3	4	5	6	7
5. I changed direction quickly	1	2	3	4	5	6	7
6. I completed the drill accurately	1	2	3	4	5	6	7
7. Overall I performed optimally	1	2	3	4	5	6	7

Appendix 4h: Manipulation Check

Please state in your own words what your goal was in the previous task.

_____

_____