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Hannah Davis

AUTEUR DE LA THÈSE / AUTHOR OF THESIS

Ph.D. (Clinical Psychology)

GRADE / DEGREE

School of Psychology

FACULTÉ, ÉCOLE, DÉPARTEMENT / FACULTY, SCHOOL, DEPARTMENT

*Predispositional and Situational Processes Underlying Choking under Pressure:
An Application of the Self-determination theory*

TITRE DE LA THÈSE / TITLE OF THESIS

Luc Pelletier

DIRECTEUR (DIRECTRICE) DE LA THÈSE / THESIS SUPERVISOR

CO-DIRECTEUR (CO-DIRECTRICE) DE LA THÈSE / THESIS CO-SUPERVISOR

Charles Collin

Michelle Fortier

Geneviève Mageau (Université de
Montréal)

Penny Werthner

Gary W. Slater

Le Doyen de la Faculté des études supérieures et postdoctorales / Dean of the Faculty of Graduate and Postdoctoral Studies

*Predispositional and situational processes underlying choking under pressure: An application of
the Self-Determination Theory*

Hannah Davis

School of Psychology
University of Ottawa

Thesis submitted to the Faculty of Graduate Studies as partial fulfilment of the requirements for
Doctor of Philosophy

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ABSTRACT

The purpose of this dissertation was to use a multidimensional approach to explain choking, via an incorporation of dispositional and situational variables to expand on Baumeister and Showers' (1986) initial conceptualization of choking. This objective was achieved through a series of four studies using the Self-Determination Theory (SDT). In Study 1 (n = 268) we created a taxonomy of pressure contexts using an online survey. Autonomous sport motivation predicted a positive perception of performance under pressure. Study 2 (n = 138) consisted of a laboratory experiment using a 2 (high vs. low motivation) x 2 (self-awareness manipulation) by 3 (performance on basketball arcade game trials) mixed-factorial design. Results revealed that as pressure to perform increased, performance decreased. Participants in the self-awareness condition performed significantly worse than their counterparts. We unexpectedly found that high self-determined participants performed significantly worse across all three trials compared to low self-determined participants. Study 3 (n = 34) was conducted with swimmers competing at the Canadian Olympic Trials. We found significant relationships between sport motivation and performance whereby autonomous sport motivation was negatively associated with performance decrements in participants' most important events. Study 4 (n = 40) consisted of an online survey with athletes to explore quantitative and qualitative differences between perceived best and worst performances using a within-participant design. In line with SDT, in descriptions of their best performances, participants reported focusing on the task itself, being less distracted, and simply enjoying what they were doing. In contrast, participants' emphases were on being distracted by their environment/others, too much/not enough motivation, and lacking confidence/increased anxiety in descriptions of their worst performances. Overall, this program of research extends the original criteria of choking using SDT. Results emphasize the importance of studying skilled

athletes and provide insight into the situational variables that increase pressure (e.g., self-awareness, goals, focus). Future research should focus on further developing an integrated model of choking using SDT as a theoretical framework with skilled athletes evaluated over time in order to determine specific dispositional and situational variables that increase the likelihood of choking under pressure.

TABLE OF CONTENTS

Acknowledgements	ii
Abstract	iii
Table of Contents	v
List of Tables	viii
List of Figures	x
List of Appendices	xi

CHAPTER ONE

General Introduction	1
<i>Statement of the Problem</i>	1
Components of Choking	7
<i>Motivation to perform well</i>	7
<i>Competitive context requiring optimal outcome: On the Role of Pressure and Self-Awareness</i>	11
<i>Performing up to one's skill level</i>	16
<i>Why do motivation and self-awareness affect performance under pressure?: The mediating role of goals</i>	17
General Goals, Hypotheses and Overview of Present Project	21
<i>Study 1</i>	22
<i>Study 2</i>	23
<i>Study 3</i>	24
<i>Study 4</i>	25

CHAPTER TWO

Study 1: The Relationship between Sport Motivation and Perception of Performance under Pressure	27
Method	29
<i>Participants</i>	29
<i>Procedure</i>	31

<i>Measures</i>	32
<i>Results</i>	39
<i>Discussion</i>	42

CHAPTER THREE

Study 2: The Relationship between Motivation and Performance under Pressure in a Laboratory Setting	45
<i>Method</i>	46
<i>Participants</i>	46
<i>Procedure</i>	47
<i>Materials and Measures</i>	49
<i>Results</i>	53
<i>Discussion</i>	63

CHAPTER FOUR

Study 3: The Relationship between Motivation, Goals, and Performance under Pressure in a Competitive Pressure Situation	68
<i>Method</i>	70
<i>Participants</i>	70
<i>Procedure</i>	70
<i>Measures</i>	71
<i>Results</i>	74
<i>Discussion</i>	80

CHAPTER FIVE

Study 4: What are Athletes Perceptions of their Best versus their Worst

Performances under Pressure?	84
Method	86
<i>Participants</i>	86
<i>Procedure</i>	86
Measures	87
Results	89
Discussion	96

CHAPTER SIX

General Discussion	100
Summary of Findings	100
<i>Study 1</i>	101
<i>Study 2</i>	101
<i>Study 3</i>	102
<i>Study 4</i>	103
Theoretical Contributions and Applications	105
Limitations	109
References	113

LIST OF TABLES

	Page
1. Frequency of Participants in All Sport Categories (Study 1)	29
2. Exploratory Factor Analyses on the Pressure Context Subscales (Study 1)	36
3. Exploratory Factor Analyses on the “General Perception” Subscale (Study1)	37
4. Descriptive Statistics for the Perception of Performance under Pressure Survey Subscales (Study 1)	38
5. Correlations between Autonomous Sport Motivation, Controlled Sport Motivation, and Perception of Performance under Pressure Survey Subscales (Study 1)	38
6. Mean Differences between High and Low Self-Determined Participants on Pre-Task Variables (Study 2)	56
7. Mean Differences between Experimental Conditions on Pre-Task Variables (Study 2)	57
8. Correlations between Pre-Task Variables and Trial Three Misses (Study 2).....	58
9. Mean Differences in Trial One and Trial Two on Baskets Missed Per Experimental Condition (Study 2)	58
10. Mean Differences between Conditions on Post-Task Questions (Study 2)	63

11. Participant Identified Most Important Event (Study 3)	75
12. Descriptive Statistics for Pre-Trial Focus Items (Study 3)	77
13. Correlations between Motivation, Goal Orientation, Post-Event Variables and the Discrepancy Score (Study 3)	78
14. Mean Comparisons for Task and Ego-Involved Focus Items between Best and Worst Performances (Study 4)	92
15. Differences on Situational Variables Between Best and Worst Performances (Study 4)	93
16. Categories, Themes, and Exemplar Meaning Units for Worst Performance (Study 4)	95
17. Categories, Themes, and Exemplar Meaning Units for Worst Performance (Study 4)	96

LIST OF FIGURES

	Page
1. The Self-Determination Continuum adapted from Ryan and Deci (2000) .	9
2. Hypothesized model of the relationship between sport motivation and perceived performance in specific pressure contexts and under pressure in general. (Study 1)	29
3. Structural equation model for sport motivation, pressure contexts and general perception of performance under pressure (Study 1)	42
4. Interaction between missed baskets across arcade game trials, conditions, and self-determination (Study 2)	61

LIST OF APPENDICES

	Page
A. Measures Used in Study 1.....	136
B. Measures Used in Study 2.....	143
C. Measures Used in Study 3.....	152
D. Measures Used in Study 4.....	162

CHAPTER ONE

GENERAL INTRODUCTION

Problem Statement

Pressure to perform occurs in everyday life in many different domains including academics, occupation, and sport settings. In particular, in the context of sport, pressure from coaches, family, teammates, and peers, and the significance attributed to victories and defeats renders athletic competition extremely stressful (Donahue, Miller, Crammer, Cross, & Covassin, 2007; Gould, Jackson, & Finch, 1993). From sinking a tournament winning 2-foot putt in golf to making the game winning “buzzer-beating” shot in basketball, sport competitions are replete with pressure situations. Some athletes thrive under pressure while others do not. Performance excellence is not always achieved and many athletes struggle with their performance when the stakes are high. In other words, athletes often find themselves choking under pressure (hereafter we simply refer to “choking” because pressure is subsumed in the definition and is redundant).

The phenomenon of choking has long plagued athletes and it is widely recognized in the vernacular of sport. It can be one of the most discouraging and humiliating experiences in sport competition and is often feared by many athletes. Gould, Eklund, and Jackson (1992) reported that 30% of the US wrestlers at the 1988 Olympic Games said that their worst performance was in their most crucial match. Although choking is widely recognized, prevalence rates are unknown.

Many well-known athletes have publicly choked in top competitions in the presence of worldwide media coverage. It has become common to use labels such as “queen of the center court choke” and “choke artist”, which are highly associated with a negative public image and can be detrimental to an athlete’s psychological well-being (i.e., increased

anxiety and diminished enjoyment). Choking has been described as a relatively “universal and situational” phenomenon (Galluci, 2008), yet it is often based on speculation and conjecture.

Choking has been broadly accepted as a performance decrement (i.e., sub-optimal level of performance) under performance pressure (Baumeister, 1984; Baumeister, Heatherton Tice, 1984, & Baumeister & Showers, 1986). More specifically, it has been viewed as an example of self-regulatory failure (Baumeister, 1984). Self-regulation is broadly defined as any effort by an individual to exert control and alter one’s thoughts, feelings, desires, and performances (Carver & Scheier, 1978). In this context, choking is explained as a situation of self-regulatory failure in that individuals are highly motivated to perform well but in trying hard to perform well it becomes counterproductive, producing the opposite of the desired effect. Choking has therefore been coined a “paradoxical incentive effect”. Baumeister and Showers (1986) have identified three essential components of choking: 1) the performer must be motivated to perform well, 2) the situation requires optimal outcome as opposed to a practice situation, and 3) the performer must have adequate skill and subsequently fails to perform in relation to his/her individual skill level at that time. These three criteria will be revisited later in the text.

Archival studies across multiple sporting contexts have provided mixed support for choking amongst elite athletes. For example, Clark (2002a) examined a sample of professional golfers playing for a spot in a professional golf tour. No significant differences were found among the final round scores of players who were several strokes better than players either at the cut-off for receiving a tour card or several strokes behind the cut-off. These findings were consistent with Clark (2002b) who found that across several professional golf tours there were no significant differences between athletes who were

either leading or several strokes away from the lead. Clark also found that the top positioned players won most of the time. However, Wright, Jackson, Christle, McGuire, and Wright (1991) found support for choking. They examined performance of British and foreign players who were nine strokes behind the leaders in British Opens between 1964 and 1980. They found that performances of British players were more likely to deteriorate more from round 1 to round 4 compared with the performances of foreign players, supporting a home-course disadvantage.

Archival studies of the Stanley Cup Championship series have also yielded mixed findings. Gayton, Mathews, and Nickless (1987) compared earlier games to the last game in the semi-final and final Stanley Cup Championship series between 1960 and 1985. Results supported a home-ice advantage. In contrast, Wright, Voyer, Wright, and Roney (1995) suggested a home-ice disadvantage, reporting that the home team tended to win Games 1 and 3 of the Stanley Cup playoffs but lost the last game. The same mixed findings have been detected in archival studies of baseball. For example, Baumeister & Steinhilber (1984) provided support for a “home-choke” when they reviewed outcomes of the World Series between 1924 and 1982. They found that the home team won 60% of the time in the first two games but only 41% of the time in the last game and when a series went to seven games the home team only won 39% of the time. However, Schlenker, Phillips, Boniecki, and Schlenker (1995) updated findings from Baumeister and Steinhilber (1984) including World Series from 1985 to 1993 and found that a home-field disadvantage was no longer present.

As the aforementioned paragraphs demonstrate it appears that for every archival study that supports choking there is one to discount the phenomenon. The authors of these studies used different definitions of choking (e.g., home advantage/disadvantage, coming

from behind, being ahead, etc), supporting Weinberg & Gould's (2000) proposition that choking is a difficult concept to define and measure. Therefore, findings of these archival studies should be interpreted with caution given the inconsistent definitions of choking, lack of statistical rigour and the variance in performance variables measured. Additionally, several important mechanisms were not controlled for (e.g., level of skill, differences in course difficulty) and the use of archival studies necessarily precludes any direct assessment of internal psychological states that may explain changes in objective performance.

In attempt to better understand choking, previous researchers have suggested dispositional characteristics that may help explain individual differences in choking propensity (e.g., Adegbesan, 2007; Baumeister, 1984). It has been reported that some athletes are "psychologically resilient" and react adaptively to pressure whereas others respond more maladaptively to pressure and are "choking susceptible" (Masters, Polman, & Hammond, 1993; Mesagno, Marchant, & Morris, 2008; Wang, Marchant, & Morris, 2004). Choking susceptible athletes are suggested to have high self-consciousness and trait anxiety, and use an approach (versus avoidant) coping style.

Krane and Williams (2006) identified a psychological profile associated with peak performance. Peak performance is defined as the "superior use of human potential" (Privette, 1981, pg. 51) associated with intense joy and aligned with fulfillment (Privette & Bundrick, 1991). This psychological profile included feelings of high self-confidence and expectations of success, being energized yet relaxed, feeling in control, having total concentration, focusing on the present task, having positive thoughts/attitudes about performance, and being strongly determined and committed. Additionally, cognitive and behavioural skills associated with peak performance included goal setting, facilitative

interpretations of anxiety, attentional control and refocusing skills. In contrast, they identified feelings of self-doubt, lacking concentration, being distracted and overly focused on competition outcome/score, and feeling overly/under-aroused to be associated with poor performance.

Previous studies have also focused on various individual sets of situational mechanisms. Previous research on cognitive tasks has shown that presenting the task as ego-relevant has led to choking (e.g., Deffenbacher, 1978, Dunn, 1968, Sarason, 1961). Leith (1988) found that negative performance in basketball free throws was elicited by a simple brief talk about choking prior to performance. Anxiety and negative emotions have also been suggested as factors related to choking (Baumeister & Leith, 1996; Vickers & Williams, 2007). Lewis and Linder (1999) reported that as a result of high motivation to perform well, choking is an extreme manifestation of performance anxiety. Among elite athletes ranked in the top four of their sport in the United States, 13.7% report being panicked-stricken prior to performances, 18.4% report extreme anxiety during performances, and 49.6% report becoming increasingly anxious as they make mistakes (Mahoney, Gabriel, & Perkins, 1987). Masters (1992) reported that choking may be caused by increases in anxiety, diverting attention to either internal (e.g., worry, “butterflies”, or increased heart rate) or external task-irrelevant cues (e.g., audience presence, or watching an opponent’s score). Wang, Marchant, Morris, and Gibbs (2004) proposed that individuals who are high in somatic anxiety (i.e., perceptions of physiological feelings, shakiness, sweating, increased heart rate, and/or “butterflies”) are likely to direct attention to physiological changes under pressure, disrupting performance, supporting previous studies that suggest that too much anxiety leads to performance decrements (Arent & Landers, 2003; Hall, Kerr, & Matthews, 1998; Woodman & Hardy, 2003; Wrisberg, 1994; Vickers

& Williams, 2007; Yerkes & Dobson, 1908). Alternately, Baumeister, Heatherton and Tice (1993) suggest that people with high self-esteem may be vulnerable to distractions that challenge their self-esteem prior to and during performances in service of self-enhancement. For example, when college students with high self-esteem were challenged to prove that they would not choke and were capable of competing at challenging video games, they performed quickly but inaccurately (Baumeister et al., 1993).

In sum, several dispositional and situational mechanisms have been proposed to explain choking. However, we are suggesting that choking may be more complex in that what causes choking may begin before the performance has even started and may interact with situational determinants. We are therefore proposing a multidimensional approach to explain choking that uses both dispositional (i.e., individual difference variables) and situational (i.e., contextual) variables.

Researchers in other psychosocial domains have investigated behavioural outcomes using multidimensional approaches (Agnew, Thompson, & Gaines, 2000). These approaches emphasize the importance of exploring the interaction between individual differences (i.e., distal and predispositional factors) and situational variables (i.e., proximal and contextual factors). For example, Abramson, Metalsky, and Alloy (1989) identified distal (i.e., depressonogenic inferential styles about the self) and proximal (i.e., lack of social support) variables as important predictors of depression. Boggiano (1992; 1998) proposed a diathesis-stress model of motivational orientation and helplessness in school-aged children and found that motivational orientation is a more reliable predictor of helplessness than either attributions or perceptions of competence. We are proposing a similar multidimensional approach to the study of choking via an exploration of both dispositional and situational factors.

Components of Choking

As previously mentioned, choking has been described as a failure of self-regulation (Baumeister, 1984). Within the context of self-regulatory failure, Baumeister and Showers (1986) have identified three essential components of choking: 1) the performer must be motivated to perform well, 2) the situation requires optimal outcome as opposed to a practice situation, and 3) the performer fails to perform in relation to their individual skill level at that time. Each component is examined in the following subsections.

Motivation to Perform Well

As previously mentioned, the first component of Baumeister and Showers' (1986) criteria for choking is that athletes need to be motivated to perform well. Moran (1999) proposed that athletes who choke are highly motivated but perform poorly and paradoxically choking seems to occur when athletes try too hard to perform well. Accordingly, a classically defined "choke" will not occur in individuals who are not motivated to achieve optimal performance. Although it may be accurate to state that being motivated to perform well is a necessary condition for choking to occur, it is not clear what is meant by being motivated to perform well.

Baumeister's (1984) original definition and subsequent research has only focused on the quantity of motivation (i.e., the importance of having a high level of motivation) for choking to occur. For example, in a series of laboratory studies, Baumeister (1984) demonstrated that participants who were offered external rewards (i.e., implicit competition, cash incentive, and audience-induced pressure) for improved performance did worse than participants who were not offered such rewards, suggesting that choking occurs when external incentives are provided to motivate participants. We are proposing that it is not sufficient to simply state that an individual needs to be motivated to perform well. In

other words, choking is not simply a matter of being “too” motivated to perform well as it implies that too much motivation can be dysfunctional and that it can be problematic when it is time to regulate behaviours in important situations. In our opinion, the way that motivation has been conceptualized thus far in a choking context is misleading for two reasons. First, it implies a simple dichotomy and focuses solely on *quantity* of motivation; an athlete is either motivated or not motivated and too much motivation can lead to choking. Second, this consideration does not take into account that an athlete’s motivation for optimal performance can be due to various sources of motivation (e.g., for pure enjoyment, to fit in with others, to impress the coach, to win, or to gain a reward). As such, certain athletes may be more motivated by external elements of competition (e.g., to win a gold medal) compared to more internal elements (e.g., for the pure enjoyment), which subsequently may lead to self-regulatory success/failure. Therefore, given that various sources of motivation impact the regulation of behaviour in different ways, *quality* of motivation needs to be investigated (Deci, 1975; Ryan & Deci, 2000; Vansteenkiste, Lens, De Witte, & Feather, 2005; Vansteenkiste, Lens, & Deci, 2006; Vansteenkiste, Sierens, Soenens, Luyckx, & Lens, 2009). We are suggesting that investigating the different reasons for which individuals engage in activities (i.e., quality of motivation) will provide more depth to Baumeister and Showers’ assertion that motivation in choking is important.

In order to determine the role that quality of motivation has on choking, we are proposing that a theoretical framework of motivation and self-regulation be implemented in the investigation of choking. Several theoretical approaches have been applied to the field of self-regulation, and they lead to different ideas on the mechanisms through which individuals either succeed or fail at self-regulation. One theoretical approach that may be useful in the understanding of self-regulatory failure is the Self-Determination Theory

(SDT; Deci & Ryan, 1985). The multi-dimensional approach of SDT brings a unique theoretical understanding above and beyond other theories. Specifically, SDT addresses why people choose goals and provides a foundation to understand individual differences in the pursuit of goals and the outcomes associated with different levels of motivation.

SDT extends the dichotomous intrinsic versus extrinsic motivation and includes different reasons for which an activity is being pursued. These reasons are categorized into six different types of regulations aligned on a continuum: intrinsic, integrated, identified, introjected, extrinsic, and amotivation (see Figure 1). According to Deci and Ryan (1985), the more autonomous forms of motivation are intrinsic regulation (i.e., participating in an activity for pure interest and inherent satisfaction), integrated regulation (i.e., participation in activity based on personally endorsed values that are already part of the self), and identified regulation (i.e., reasons for engaging in an activity are judged valuable by the person). In contrast, the more controlled forms of motivation include introjected regulation (i.e., engaging in an activity because one would feel guilty otherwise), external regulation (i.e., being motivated in order to receive reward or avoid punishment), and amotivation (i.e., acting without intention and lacking a sense of purpose).

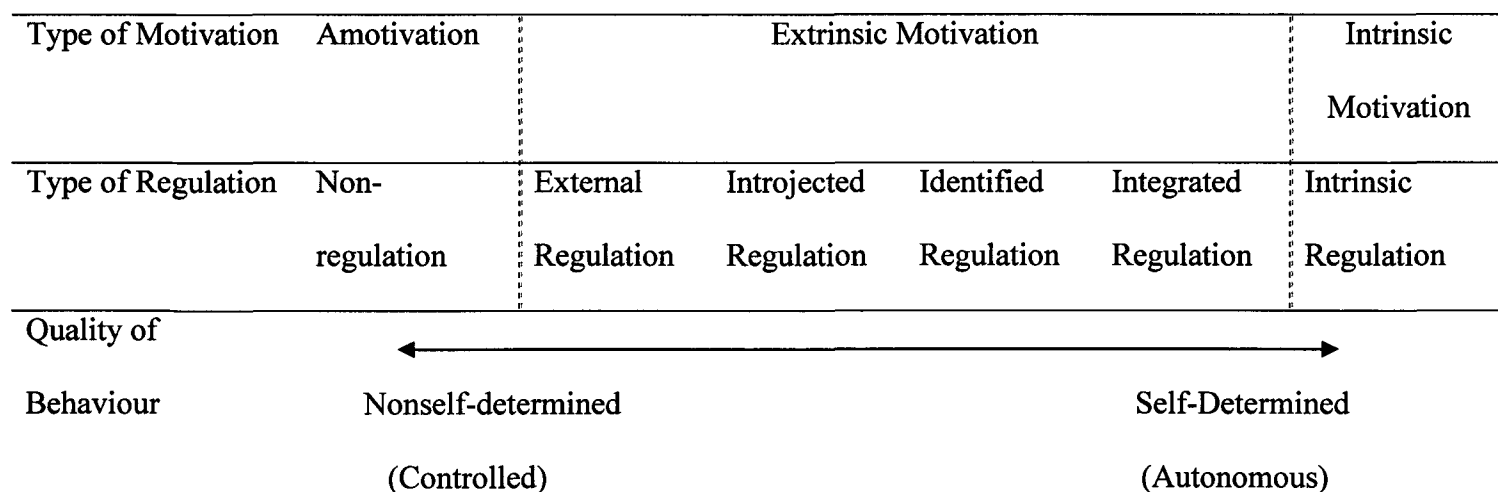


Figure 1. The Self-Determination Continuum adapted from Ryan and Deci (2000).

SDT outlines different behaviours related to one's level of self-determination and the cognitive, affective, and behavioural consequences that are associated with different types of motivation. SDT's different types of regulation have been substantiated in various contexts including interpersonal relationships, education, workplace, health care, and sport (Vallerand, 1997). It has been suggested that individuals with more autonomous forms of motivation seek opportunities to fulfill a sense of autonomy and competence, which subsequently provides energy to perform tasks (Deci & Ryan, 1992; 2000). SDT's continuum of motivation has been shown to predict effort, persistence, well-being, and the quality of subjective experience (Pelletier & Sarrazin, 2007; Pelletier, Vallerand & Sarrazin, 2007; Reinboth & Duda, 2006; Ryan & Deci, 2000; Ryan & Lynch, 1989).

Autonomous motivation has been shown to be positively related to self-regulatory success including long-term retention in exercise settings (Ryan, Frederick, Lepes, Rubio, & Sheldon, 1997), lower attrition and higher retention in classrooms (Vallerand et al., 1997), attitudes about good sporting behaviour (Vallerand & Losier, 1999), quality of experiences and sport attitude (Pelletier et al., 1995), feelings of energized focus, full involvement, success in sport participation (Kowal & Fortier, 1999; 2000), and persistence/less dropout in sport settings (Pelletier, Fortier, Vallerand, & Briere, 2001; Sarrazin, Tessier, Pelletier, Trouilloud, & Chanal, 2006; Sarrazin, Vallerand, Guillet, Pelletier, & Cury, 2002). It has also been shown that athletes with more autonomous forms of sport motivation are less likely to experience pre-competitive anxiety (Chiung-Huang & Likang, 2007), and are more likely to have a better return to sport following injury (Podlog & Eklund, 2007).

More controlled forms of motivation are associated with self-regulatory failure including decreased participation and effort when extrinsic rewards and reinforcements are not available (Vallerand & Losier, 1999). Individuals with controlled forms of motivation

experience higher levels of performance anxiety, are more easily distracted, exhibit lower levels of skill learning relative to those with more autonomous forms of motivation (Vallerand & Losier, 1999; Weiss & Ferrer Caja, 2002), and are also more likely to burnout over time (Lemyre, Treasure, & Roberts, 2006). Given the aforementioned findings, we are proposing that having more autonomous motivation may be more conducive to self-regulatory success and subsequent successful performance under pressure. In contrast, we are suggesting that an individual with controlled motivation may be more susceptible to self-regulatory failure and subsequent choking.

In sum, we are provided with little insight into choking when solely exploring quantity of motivation (e.g., the necessity to be highly motivated in order to choke). Rather, this criterion should be expanded to include quality of motivation in order to identify individual motivational differences that may help explain choking. SDT provides a solid theoretical context and an over-arching view of motivation and self-regulation to facilitate the expansion of Baumeister and Showers (1986) choking criterion of motivation.

A Competitive Context Requiring Optimal Outcome: On the Role of Pressure and Self-Awareness

The second component of Baumeister and Showers' (1986) definition of choking is that the context requires an optimal outcome and that it is not solely a practice situation. Specifically, Baumeister and Showers propose that in order for choking to occur, the individual needs to be in a competitive context requiring optimal outcome such as winning a medal or placing in an event. From our perspective, it is not sufficient to simply state that an individual needs to be in a competitive context in order to choke. Rather, to better understand what conditions and specific situational variables evoke choking under pressure, it is important to investigate the specific characteristics of a competitive situation

that differ from a practice situation. Given that the definition of choking alone constitutes the need for pressure to perform, what makes a situation induce pressure and the role that individuals have in the perception of pressure should be incorporated in the investigation of choking.

Individuals feel performance pressure to the extent that they care deeply about the outcome of their performance and they perceive that their performance is instrumental for the attainment of a desired outcome. Performance pressure has been defined as an anxious desire to perform at a high level in the presence of situational incentives for optimal, maximal, and superior performance (Baumeister & Showers, 1986). Several sources of pressure have been proposed including competitive situations contingent on rewards or punishment (Baumeister, 1985; Baumeister & Showers, 1986), the importance of achieving success (Kleine, Sampedro, & Lopes, 1988), expectations of negative consequences (Paulus, 1983), and public expectations/presence of an evaluative audience (Baumeister, 1984). Studies examining the accuracy of golf putting in various pressure contexts have shown that participants perform significantly worse as pressure (e.g., audience/reward) increases (Beilock, Berthenthal, Hoerger, & Carr, 2008; Beilock, Bertenthal, McCoy, & Carr, 2008; Beilock & Carr, 2001; Lewis & Linder, 1997).

Although the presence of a context requiring optimal performance outcome creates pressure, the effect of these contexts on performance may be better explained by the fact that pressure situations may increase self-awareness. Performing under pressure renders some individuals to become more self-aware, therefore focusing on what is automatized when the situation is important. Self-awareness is a situationally-determined variable. It has been conceptualized as attention focused inward (Carver & Scheier, 1978), or concentrating attention on an aspect of the self (Duval & Wicklund, 1972). Investigating

public self-awareness (i.e., a focus of attention on the self as a social object and one's impact on others; the self as seen by others; Fenigstein, Scheier, & Buss, 1975; Carver & Scheier, 1981) may facilitate a better understanding of the pressure context. Zajonc (1965) proposed that in the context of complex tasks, the mere presence of others might create pressure impacting performance. By processing information from the environment there is a possibility that an altered goal (e.g., to impress the crowd) differing from the original goal (e.g., to play my best) may become more salient. Previous researchers using a series of laboratory experiments have found that increased public self-awareness, via a mirror and a live observer, led to increased doubt which subsequently negatively influenced performance (Baumeister, 1984; Scheier & Carver, 1983).

Athletes are often faced with situations that target public self-awareness (e.g., audience presence, presence of evaluators/scouts, videotaped performance, or a televised game). Based on the definition of public self-awareness, the *automatic execution hypothesis* states that choking is due to misregulation of resources under pressure via increased attention to the self leading to failure to exert control in a way that brings about a desired outcome, ultimately leading to performance decrements (e.g., Baumeister, 1984; Baumeister & Showers, 1986; Nideffer, 1992; Weinberg & Gould, 1999). Athletes may be distracted through either internal (e.g., overarousal, situational appraisals, self-control, low expectations of success) or external sources (e.g., expectations of coaches/spectators/teammates, fear of success/failure; Adegbesan, 2007; Anshel, 1995; 1997; Baumeister, 1984; Dohmen, 2006; Singer, 1986).

Proponents of the automatic execution hypothesis suggest that performance is inhibited via increased self-awareness through slowing down of response automaticity that interferes with skill execution (Baumeister, 1984; Beilock & Carr, 2001; Jackson, Ashford,

& Norsworthy, 2006; Lewis & Linder, 1997; Masters, 1992; Wilson, Chattington, Marple-Horvat, Smith, 2007) and that pressure creates increased attention to internal performance (i.e., increased self-awareness) through conscious processing of explicit rules (Masters, 1992). Paradoxically, monitoring the step-by-step procedures can disrupt processes of high-level skills (Beilock & Carr, 2001; Jackson et al., 2006). In a series of laboratory experiments, Beilock and Carr (2001) found that participants in an increased self-awareness condition (videotape) were more likely to exhibit performance decrements and suggested that choking results from maladaptive explicit monitoring of step-by-step movements in response to increased self-awareness and achievement anxiety. Furthermore, they found that practicing under self-awareness conditions may inoculate individuals against the effects of choking such that with practice individuals under increased self-awareness focused less on the execution of movements.

It has also been suggested that heightened self-awareness leads to increased attention on task-irrelevant factors (i.e., internal distractions of anxiety and self-doubt), rather than focusing on consciously monitoring and controlling movements. A focus on task-irrelevant factors leads to changes at physiological (e.g., increase muscle tension, heart rate) and attentional (e.g., attentional narrowing and internal focus) levels, which in turn leads to performance decrements (Beilock et al., 2004; Nideffer, 1992; Nideffer & Sagal, 1998). According to Nideffer (1992), as arousal increases, athletes become increasingly self-aware and therefore are too internally immersed in task-irrelevant thoughts. Subsequently, individuals fail to attend to important cues rendering individuals to focus on what is already automatic when the situation is important or when under perceived pressure. In a recent review, Wallace, Baumeister, and Vohs (2005) suggested that

supportive audiences increase self-focus and ultimately disrupt the automatic execution of skills.

Performance degradation as a result of increased self-awareness ultimately disrupts the tempo of automatic skill execution due to attending to the dual-task nature of attending to oneself and attending to the environmental cues. Additionally, when high expectations are accompanied by increased self-awareness, performance pressure increases which can lead to choking (Lewis & Linder, 1997). Previous researchers (e.g., Hardy, Mullen, & Martin, 2001; Mullen, Hardy, & Tattersall, 2005) have suggested that anxiety-related cognitions (e.g., worry) and explicit instructions do not individually diminish performance, but may exceed a threshold of attentional capacity and “together they may have operated additively and depleted the attentional resources available to maintain performance” (Hardy et al., 2001, p. 946). Some researchers report that when becoming self-aware, athletes are more likely to be impulsive and abandon game plans or strategies (e.g., Leith & Baumeister, 1996) whereas others report that athletes become overly deliberative or slow in making decisions (Butler & Baumeister, 1998; Heaton & Sigall, 1991) and focus on avoiding losing rather than on winning (Wallace, Baumeister, & Vohs, 2005). Jordet and Hartman (2008) conducted a video analysis of performance in soccer penalty shootouts held in professional soccer championship games. They examined the relationship between shot valence, avoidance behaviour, and shootout performance. Results revealed that avoidance behaviour (e.g., looking away from the goalkeeper, preparing shot quickly) occurred more frequently with missed shots than with winning shots.

Paying attention to yourself, what you are doing, and how you are doing shifts focus and ultimately interferes with task execution, regardless of whether this is due to distractions on task-irrelevant cues and/or to the slowing down of skill execution.

Therefore, increases in self-awareness may represent a central and key situational processing variable in the understanding of when individuals choke under pressure. From this perspective, we are suggesting that further investigating self-awareness will provide us with a better understanding of when athletes choke under pressure, which will ultimately expand Baumeister and Showers' (1986) criteria of choking pertaining to competitive context requiring optimal outcome in which choking will occur.

Performing Up to One's Skill Level

The third criterion proposed by Baumeister and Showers (1986) is that an individual who chokes does not perform up his/her skill level at the time. Therefore, choking is not likely to occur in situations where the individual does not have a particular skill or is in the process of learning a new skill. When learning a new skill, one often pays close attention to the particular movements to ensure proper execution. With practice, these movements become smooth and automatic, without conscious direction. Relatively speaking, an individual is said to be skilled when execution involves doing a task without thinking about it or without attending to the particular details of the process. The conscious mind therefore interferes with automatic skill execution (Beilock & Carr, 2001; Beilock et al., 2008). In other words, the fact that an individual is capable of executing a task and performing this task without thinking too much about it also represents necessary conditions for choking to occur. In situations where individuals choke under pressure, they have the appropriate skill set, yet cannot maximize the use of these skills. Beilock and colleagues (2001; 2008) have found that performance decrements occur in complex, sensorimotor tasks such as golf putting and not in a less complex, declaratively based alphabet arithmetic task suggesting that choking occurs when skill has become proceduralized.

Given the aforementioned discussion of Baumeister and Showers' (1986) first two criteria of choking, we are suggesting that identifying which characteristics individuals bring to the situation and exploring the characteristics of the situation itself should be studied in combination to better understand the underlying mechanisms of choking.

In sum, there appears to be universal agreement that some athletes faced with pressure situations will not rise to the occasion and will essentially perform worse than how they perform in the absence of pressure. However, there does not appear to be a universal consensus on the etiology of choking. The criteria for choking proposed by Baumeister and Showers' (1986) have not yet been systematically investigated. It is not clear what is meant by being motivated to perform well and it is not clear how the three criteria (i.e., athlete's motivation, context requiring optimal outcome and skill set) interact. Specifically, the processes that lead to success and failure outcomes are unclear. It remains to be determined which factors predispose athletes to choke, and why one athlete chokes in a particular competitive circumstance but not in others.

Why Do Motivation and Self-Awareness affect Performance under Pressure?: The Mediating Role of Goals

As previously stated, we are suggesting that some individuals may have a dispositional risk of choking because of their motivational orientation and that choking is more likely to occur as a result of increased public self-awareness. However, we also are suggesting that it is important to include additional information on "why" this performance may be affected. Therefore, we are proposing to include a second line of research closely associated with SDT. This line of research may be useful to facilitate a better conceptualization of why individuals with different motivational orientations may be more inclined to focus on different types of goals when they face pressure situations that lead

them to become more self-aware. This line of research is within the achievement goal orientation theory (Ames, 1992a; Dweck, 1986, 1999; Nicholls, 1984, 1989). Achievement goals are defined as the purpose of, or reason for competence-relevant activity (Ames, 1984; Maehar, 1989). In general, achievement goals represent a combination of general goals or purposes, as well as more specific criteria for which performance is judged (i.e., progress or self-improvement versus better performance than others). These goals reflect how individuals define success. Achievement goals are presumed to influence how individuals interpret, feel about, and react to achievement-related endeavours. Goal orientations are assumed to reflect an organized schema used to approach and evaluate performance in an achievement context (Pintrich, 2000).

Nicholls (1984) articulated the distinction between task and ego-involved goal orientations. Individuals vary in their degree of task and ego-involved goal orientations (Duda & Nicholls, 1992; Nicholls, 1989). Individuals with task goal orientations focus on mastery (i.e., learning) and skill improvement, whereas individuals with ego-involved goal orientations are self-focused where failure/success is directly related to the perception of self in comparison to others (Duda, 2001; Duda & Hall, 2001; Duda & Nicholls, 1992). When targeting task goals, individuals are assumed to become immersed in the intrinsic value of learning and are on a quest to discover strategies to meet the demands of the activity and further enhance their competence. In contrast to ego-involved goals, individuals endorsing task goals are absorbed in the process of improving and therefore are less preoccupied with proving their competences to others. Previous research has provided support for these goal orientations yielding different outcomes on performance and well-being (e.g., Newton, Duda, & Yin, 2000). Reinboth and Duda (2006) found that increased

task orientations reported by varsity athletes positively predicted changes in subjective vitality.

Goal orientations can be activated a priori and they can also be influenced by specific contexts. Similar to cognitive schematic representations, across different contexts individuals may be more likely to approach the situation using either a task or an ego-involved goal orientation. However, it has been found that specific contexts can influence the individual to activate different goals than they would normally access (Pintrich, 2000). Therefore, goal orientations can be viewed as cognitive representations that are stable but also can be viewed from a state-like perspective (i.e., what an athlete focuses on during competition) depending on the demands of the situation.

The conceptual link between SDT and achievement goal orientations exists in the dichotomous association between autonomous and controlled forms of motivation and task and ego-involved goal orientations (Ntoumanis, 2001). Because the emphasis is on mastering the task, and the perceptions of demonstrated competence are self-referenced, a task orientation fosters the development of perceived ability and therefore supports autonomous forms of motivation and feelings of autonomy, all factors that facilitate intrinsic interest and enjoyment. An ego-involved goal orientation, on the other hand, is associated with controlled forms of motivation in that it entails a concern with the adequacy of one's ability level in relation to extrinsic factors, antithetical to intrinsic motivation (i.e., being "the best" or beating others; Nicholls, 1989). In contrast to the pursuit of task goals, pursuing ego-involved goals has an undermining effect on intrinsic motivation (Deci & Ryan, 1985; Dweck, 1985; Nicholls, 1989). In a meta-analytic review, Rawsthorne and Elliot (1999) found that the pursuit of ego-involved goals produced significantly less free-choice persistence, self-reported interest and enjoyment than did the

pursuit of task goals. Ego-involved sport environments have been found to thwart autonomy, ultimately decreasing intrinsic motivation (Reinboth & Duda, 2006).

Additionally, individuals with ego-involved orientations have perceptions of competence that are more fragile given the emphasis on the adequacy of one's ability in comparison to task goal orientations where perceptions of competence are fostered (Duda & Hall, 2001).

Given that individuals who have ego-involved goal orientations are more likely to focus on outcomes, they are also more likely to give up in the face of failure and to manifest learned helplessness when perception of ability is low (Duda, 1989; Dweck & Leggett, 1988). Having an ego-involved goal orientation can lead to maladaptive achievement behaviours such as choosing activities that are too easy or too difficult, and not trying hard, which results in poor performance and lack of persistence (Duda, 1989). Individuals with an ego-involved goal orientation are therefore more susceptible to evaluative pressures and performance anxiety which subsequently can lead to lack of effective focus under pressure. Consequently, having an ego-involved goal orientation increases the probability of feeling incompetent (especially in the case of those who already doubt their ability), which can therefore have a negative effect on performance.

In summary, SDT provides a solid theoretical framework to delineate what Baumeister and Showers (1986) meant by being "motivated to perform well". Furthermore, the achievement goal orientation literature provides additional direction on the specifics of goals as they pertain to one's ability to successfully self-regulate under pressure. The relationship between self-regulation, self-awareness, and achievement goal orientation is important in the context of performance situations. How individuals are motivated (i.e., autonomous versus controlled motivation) ultimately guides their thoughts, emotions, and behaviours under various conditions. Specifically, we are suggesting that whether an

individual is autonomously motivated versus controlled motivated dictates how they view success and how they view pressure to perform. How individuals perceive performance pressure, ultimately influences the impact that self-awareness and goals have on performance under pressure in competitive contexts.

GENERAL GOALS, HYPOTHESES, AND OVERVIEW OF THE PRESENT PROJECT

In order to better understand the underlying mechanisms of choking via dispositional and situational factors we proposed that it was imperative to specifically explore Baumeister and Showers (1986) three criteria of choking. Firstly, we were interested in further delineating “being motivated to perform” (i.e., a dispositional factor). Specifically, we were interested in determining if quality of motivation and “how” individuals are motivated determined which individuals were more likely to choke under pressure. Secondly, it was important to define the characteristics of the pressure situation in terms of specific contextual factors that could contribute to the understanding of “when” individuals choked under pressure. More specifically, given that competitive situations are fraught with pressures from various sources to perform well, which can lead to increased self-awareness and performance decrements, we proposed that increased public self-awareness (i.e., situational factors) should be explored to better understand the pressure situation. Finally, we proposed that an investigation of goals and factors that individuals have when under pressure would help us better understand why these particular components lead to choking.

We therefore designed a series of four studies to examine Baumeister and Showers’ (1986) criteria of choking (e.g., individual motivation, performance requiring optimal outcome, and skill level). Specifically, an investigation of dispositional motivation was

conducted to better understand characteristics that may put people at risk of choking under pressure. With respect to the specific pressure context, we were interested in identifying the role that specific situational variables (i.e., self-awareness, specific goals/foci, and perceptions of the situation including perceived anxiety and pressure) has on performance under pressure. Related to the third criterion based on skill level, we were interested in exploring how the combination/interaction of dispositional and situational factors may lead to choking with skilled individuals. In other words, individuals may enter a pressure situation with a set of dispositional risk factors/vulnerabilities that interact with situational and contextual conditions leading individuals to fail to perform at an expected level based on their skill level at the time.

The structure of this thesis was multi-method whereby dispositional and situational variables were explored via online quantitative and qualitative questionnaires (Study 1 and Study 4), in a laboratory setting (Study 2), and in a competitive field setting (Study 3). All data were cleaned and screened based on standards in accordance with Tabachnick and Fidell (2001). Analyses were computed using Statistical Package for the Social Sciences (SPSS, Version 16). Software-based content analysis, using the QSR NVIVO program was used for the qualitative analyses in Study 3.

Study 1

The purpose of Study 1 was twofold; 1) to create a perceived performance under pressure survey and use this questionnaire to create a taxonomy of pressure contexts based on external reward, public expectations, and audience presence (Baumeister, 1984) and 2) to determine the relationship between autonomous and controlled sport motivation and perceived performance under pressure. Specifically, we were interested in determining if quality of motivation is important in the prediction of performance under pressure. It was

hypothesized that a taxonomy of pressure situations would be created using a subjective self-report survey based on items obtained from previous definitions of pressure.

Specifically, we hypothesized that two distinct subscales would be created to examine: 1) perceived pressure from others and 2) perceived pressure from specific time constraints and external rewards. With respect to motivation, we expected that participants who were more autonomously motivated towards their sport would perceive themselves better at performing under pressure compared to participants who had more controlled reasons to participate in their sport.

Study 2

On the basis of findings from Study 1 we created a laboratory study that would allow us to manipulate pressure in order to more objectively determine the relationship between motivation and quantifiable/objective performance rather than subjectively perceived performance under pressure. Therefore, based on the taxonomy of pressure contexts and results obtained from Study 1, the purpose of Study 2 was to introduce pressure contexts (i.e., pressure in the presence of others/self-awareness and time pressure) into a controlled laboratory setting to more objectively explore the relationship between motivation and performance under pressure. This study was conducted in a laboratory with an undergraduate student sample. It was a 2 (self-determination: high vs. low) x 2 (self-awareness vs. no self-awareness) x 3 (laboratory performance trials) mixed-factorial design.

It was hypothesized that there would be a significant difference within participants across performance trials. Specifically, it was expected that performance would deteriorate as pressure across the three trials increased. It was also hypothesized that there would be a main effect for experimental condition. We were expecting that participants in the self-

awareness condition would perform worse than participants in the control condition. In agreement with Study 1, it was expected that a self-determined orientation would have a moderating effect on performance in the self-awareness condition. We were expecting that increased self-awareness would have less of an effect on performance for the higher self-determined (i.e., more autonomous motivation) participants compared to the lower self-determined (i.e., more controlled motivation) participants. In other words, higher self-determined participants would perform better than lower self-determined participants in the self-awareness condition.

Study 3

Based on the findings and limitations of Study 2, we created a field study with the purpose of selecting experts instead of novices as our sample. Additionally, we were interested in obtaining further information on goal orientation and competition focus to better understand the relationship between motivation and performance under pressure.

The primary purpose of this study was to explore dispositional (i.e., sport motivation and goal orientation) and situational factors (i.e., pre-competition goals, perceived anxiety and perceived pressure) in the prediction of performance in a competitive pressure situation with swimmers competing at the Canadian Olympic Trials.

With respect to motivation and in line with findings from Study 1, we were expecting that autonomous sport motivation would be positively associated with performance and that controlled sport motivation would be negatively associated with performance.

With respect to motivation and goal orientations and in line with previous research, we were expecting that autonomous sport motivation would be positively associated with a task goal orientation and that controlled sport motivation would be positively associated

with an ego-involved goal orientation. Additionally, we hypothesized that a task goal orientation would mediate the relationship between autonomous sport motivation and performance under pressure. We hypothesized that an ego-involved goal orientation would mediate the relationship between controlled sport motivation and performance under pressure.

We were also expecting that autonomous sport motivation would be positively associated with pre-competition task focus and that controlled sport motivation would be positively associated with pre-competition ego-involved focus. Additionally, we hypothesized that pre-competition task focus would mediate the relationship between autonomous sport motivation and performance under pressure. We hypothesized that pre-competition ego-involved focus would mediate the relationship between controlled sport motivation and performance under pressure.

Finally, we were interested in exploring the relationship between sport motivation, subjectively reported feelings of pressure (i.e., anxiety and pressure before and during the event) and performance. Given that participants with controlled motivation might be more likely to be influenced by external sources, we expected that being motivated for controlled reasons, would lead to more perceived anxiety and pressure before and during the event and subsequently would lead to participants performing worse than their personal bests. We were also expecting to find a negative relationship between autonomous sport motivation and perceived anxiety and pressure.

Study 4

Based on findings and limitations of the previous studies, we were interested in obtaining a deeper understanding of specific within-subject variables that may facilitate a deeper comprehension of situational variables associated with choking. We therefore

conducted an online study using a mixed-method design with high level athletes from various sports to explore intra-individual differences related a perceived best versus worst performance over the course of their athletic careers. The main objective of Study 4 was to target individual differences in motivation, goals, focus, and self-awareness between an athlete's best and worst performance via qualitative themes.

Based on findings from the previous studies, it was expected that there would be a positive relationship between autonomous sport motivation and task orientation and a positive relationship between controlled sport motivation and ego orientation. We were also expecting that participants would report more ego-involved foci in describing their worst performances and more task foci in describing their best performances. Given that when individuals have more task goals, they are more likely to focus on the specific task and subsequently are less self-aware, we were expecting that participants would report less interference by distractions in their best performances compared to their worst performances. Subsequently we were expecting that positive situational variables (i.e., decreased anxiety, perceived pressure, current self-consciousness, and increased confidence) would be reported more frequently in their best performances compared to their worst performances.

We were also interested in identifying broad themes based on internal and external sources as representative of autonomous motivation/task orientation and controlled motivation/ego-involved orientation, respectively. It was expected that the focus would be more on external sources in the description of the worst performance in comparison to the description of the best performance.

CHAPTER 2

STUDY 1

The Relationship between Sport Motivation and Perception of Performance under Pressure

Overview and Objectives

As previously stated, based on SDT we are suggesting that it is not sufficient to state that an individual's motivation is related to performance. Rather, it is important to identify the quality of motivation. Specifically, we are interested in investigating "how" an individual is motivated and how different sources of motivation either enhance or interfere with performance under pressure.

Study 1 had two main objectives. To our knowledge, a scale targeted at performance under pressure does not exist. Therefore, the first objective of this study was to create a scale that assessed perceived performance under pressure and subsequently to derive a taxonomy of pressure situations based on previous research on performance pressure (e.g., Gibson & Sachau, 2000; Pargam, 2006) and on previous sources of pressure including competitive situations contingent on rewards or punishment (Baumeister, 1985; Baumeister & Showers, 1986), the importance of achieving success (Kleine, Sampedro, & Lopes, 1988), expectations of negative consequences (Paulus, 1983), and public expectations/presence of an evaluative audience (Baumeister, 1984). Secondly, the purpose of this study was to determine the relationship between autonomous and controlled sport motivation and perceived performance under pressure using the newly devised scale.

Hypotheses

We were interested in developing a taxonomy of pressure situations via a subjective self-report survey based on items obtained from previous research on performance. We hypothesized that a subscale pertaining to focus on time pressure and external rewards (i.e.,

“time/rewards pressure” subscale) and a subscale pertaining to focus on others/increased self-awareness (i.e., “others pressure” subscale) would be detected within the self-report survey.

Based on SDT, we expected that participants who were more autonomously motivated towards their sport would perceive themselves better at performing under pressure compared to participants who participated in their sport for more controlled reasons. The hypothesized model is presented in Figure 2. Specifically, it was hypothesized that autonomous sport motivation would predict a positive perception of performance under specific pressure contexts (i.e., “time/rewards” and “others pressure” subscales) and under pressure in general (i.e., “general perception” subscale). It was also hypothesized that controlled sport motivation would predict a negative perception of performance under specific pressure contexts (i.e., “time/rewards” and “others pressure” subscales) and under pressure in general (i.e., “general perception” subscale). Finally, we expected that positive perceptions of performance under pressure contexts (i.e., “time/rewards” and “others pressure” subscales) would lead to a positive perception of performance under pressure in general.

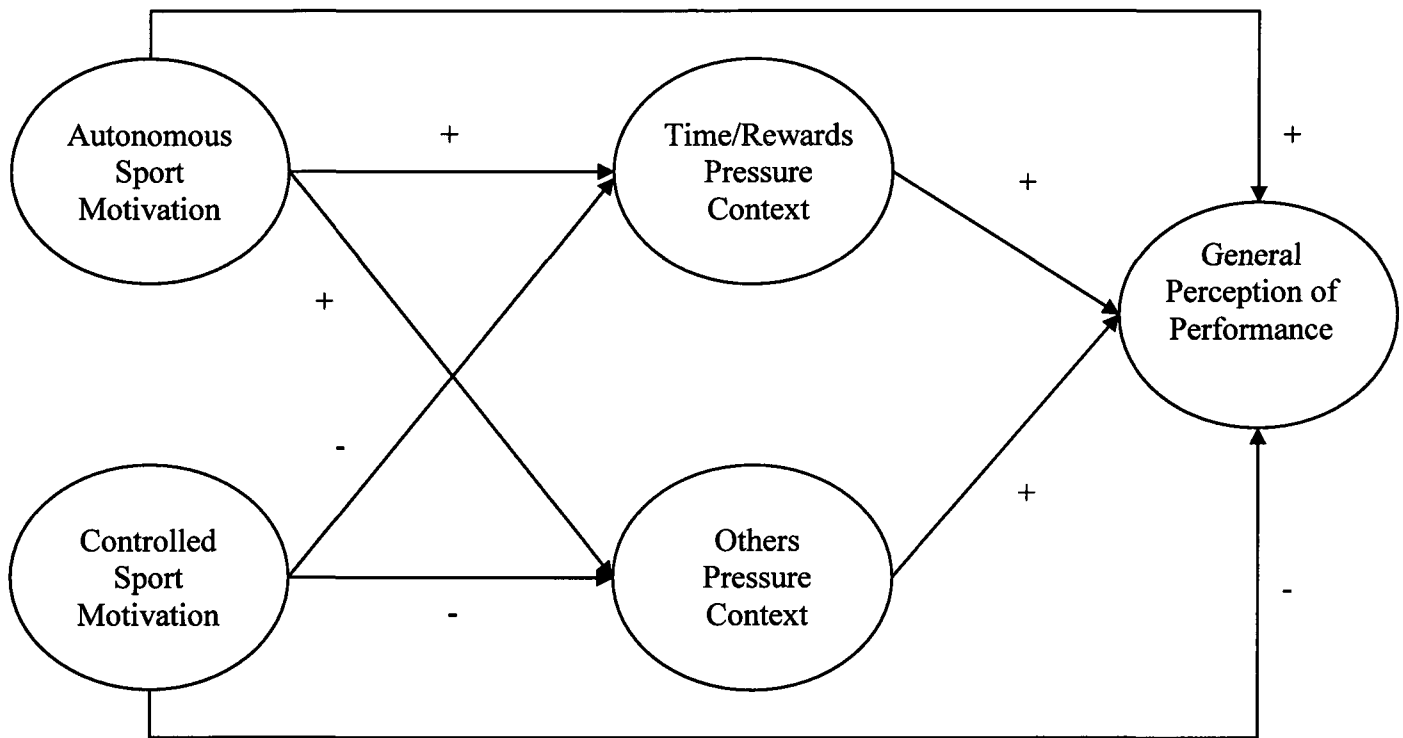


Figure 2. Hypothesized model of the relationship between sport motivation and perceived performance in specific pressure contexts and under pressure in general.

Method

Participants

Two hundred eighty-nine undergraduate students were recruited from two first-year psychology courses for partial credit using the School of Psychology Integrated System of Participation in Research (ISPR) at the University of Ottawa. The inclusion criterion for participation was that participants must currently play an organized sport.

A total of 288 participants completed the study. However, 20 cases were deleted after screening and cleaning. Specifically, two were deleted as a result of extreme score violations, 14 for incomplete questionnaire completion, and four for not being involved in sport competitively. The final sample therefore consisted of 268 participants (168 female and 100 male; 83.52% Anglophone) with a mean age of 18.68 years old (SD = 1.49; range 17 to 29).

Sport Participation. Participants were involved in a variety of sports. The most frequently endorsed sports were soccer (n = 55), hockey (n = 52), and basketball (n = 25). See Table 1 for a list of all sport categories. Participants reported playing their sport for an average of 8.92 years (SD = 4.28), with a range from 1 to 18 years. Participants also reported several competitive levels of sport participation. The most frequently reported category was a general competitive category (38.06%), followed by premier division/ “A” level (21.64%), varsity (14.18%), provincial/regional level (10.07%), house league/club (9.70%) and lastly international/national level (6.72%).

Table 1.

Frequency of Participants in All Sport Categories

Sport	N
Soccer	55
Hockey	52
basketball	25
volleyball	22
Dance	14
Rugby	13
football	12
baseball/softball	12
track and field	8
swimming	8
alpine racing	7
martial arts	6

figure skating	4
synchronized swimming	4
equestrian	4
badminton	4
gymnastics	3
Ringette	3
Curling	2
lacrosse	2
cross-country skiing	2
ultimate frisbee	2
Rowing	2
Tennis	1
speed skating	1
Fencing	1

Procedure

The following procedure was conducted in accordance with the approval from the Research Ethics Board of the University of Ottawa. This study was comprised of two online phases. During phase one, as part of the pre-test for the ISPR, participants were asked to complete a measure of sport motivation. Phase two consisted of completing an online survey that measured perceived performance under pressure. See Appendix A for all measures and materials used in this study.

Measures

Sport Motivation Scale (SMS; Brière, Vallerand, Blais, & Pelletier, 1995; Pelletier, Fortier, Vallerand, Tuson, Brière, & Blais, 1995; Pelletier & Sarrazin, 2007; Pelletier, Vallerand, & Sarrazin, 2007). The SMS is a 24-item scale based on SDT and designed to assess contextual motivation. The SMS has been revised from the original 28-item scale (Pelletier et al., 1995) to include a measurement of integrated regulation and has collapsed the three types of intrinsic motivation (to know, to accomplish, to experience stimulation) to provide a more global measure of intrinsic motivation.

Athletes respond to the item “*Why do you practice your sport?*”. The SMS consists of seven subscales with four items attached to each. The participation motives ranging from the most to the least self-determined include intrinsic motivation (IM; e.g., “for the excitement I feel when I am really involved in the activity”); integrated regulation (INTEG; e.g., “because practicing my sport reflects the essence of who I am”); identified regulation (IDENT; e.g., “because in my opinion, it is one of the best ways to meet people”); introjected regulation (INTRO; e.g., “because I must do sports regularly”); external regulation (EXT; e.g., “to show others how good I am at my sport”); and amotivation (AMO; e.g., “it is not clear to me anymore; I really don’t think my place is in sport”). Support for the simplex-like pattern of the SMS indicates that that subscales situated closer to one another on the self-determination continuum are more strongly and positively associated, while subscales farther apart are negatively related (e.g., Chatzisarantis et al., 2003; Li & Harmer, 1996). These findings suggest that the quality of motivation as defined by identified regulation is closely aligned with that of intrinsic motivation. The SMS has strong psychometric properties with internal consistency estimates acceptable for all subscales ($\alpha = .74$ to $.85$; Pelletier et al., 1995; Vallerand & Losier, 1999; Li & Harmer,

1996; Marten & Webber, 2002; Pelletier et al., 2007). Previous research has also found support for the relationship between the SMS and goal orientations in sport (Brunel, 1999; Ntoumanis, 2001; Petherick & Weigand, 2002).

Previous research has provided support for collapsing subscales to create two distinct subscales including autonomous motivation (i.e., IM, INTEG, IDEN) and controlled motivation (INTRO, EXT) in order to explore the independent contributions of autonomous versus controlled motivation (Pelletier & Sarrazin, 2007). In order to effectively evaluate the unique contributions of each subscale an aggregate self-concordance variable (i.e., SMS index) is computed by summing the three autonomous motivation ratings and then subtracting the two controlled motivation ratings. Previous research has supported the construct validity of an aggregate self-concordance variable using the global SMS index (e.g., Pelletier et al., 2007). Therefore the equation for the SMS index = $IM + INTEG + IDEN - INTRO + EXT$. A higher score on this index is indicative of a more autonomous motivational profile. In other words, a higher score implies that the participant considers autonomous forms of motivation more important in the explanation of why he or she practices the sport compared to more controlled reasons.

In the current study, the global SMS index yielded excellent internal consistency ($\alpha = .87$) with excellent internal consistency estimates across all subscales, ranging from $\alpha = .79$ for the identified regulation subscale to $\alpha = .87$ for the integrated regulation subscale.

Perceived Performance under Pressure Survey (PPUPS). The PPUPS is 17-item survey based on past studies that have examined choking under pressure. It was designed to measure how individuals perceive themselves to perform in various pressure contexts and under pressure in general. Prior to asking participants about perceived ability to perform under pressure, a four-item section (i.e., Section A) was created to ensure participants

chose one particular sport to answer the survey. Participants are asked to identify a sport that they feel competent in and then report at which level they play the sport, and for how long they have played the sport. They are also asked to rate how competitive they feel in their sport on a Likert scale ranging from 1 (not at all) to 7 (extremely). Six categories of competition levels were derived by the researchers (competitive, international/national, provincial/regional, varsity, premier division/ "A" level, and house league/club) based on participants' free-responses when asked about their current level of participation in their sport.

Section B and C follows the above section and contains questions about general performance under pressure and performance under specific pressure contexts. The development of the PPUPS pressure situations was based on previous research on performance (e.g., Gibson & Sachau, 2000; Pargam, 2006) and on previous definitions of pressure situations (Baumeister, 1984; Baumeister & Showers, 1986; Kleine, Sampedro, & Lopes, 1988; Paulus, 1983). Themes were generated based on situations suggested by Baumeister (1984) and were contingent on external reward, public expectations, and audience presence. Specific items were compiled in collaboration with other researchers who were also interested in motivation, goals, and performance. Subsequently, a list of 13 items was generated and the scale was then divided into 3 subscales (Section B (2 subscales), and Section C (1 subscale)).

Section B consists of nine items pertaining to perceived successful performance in different pressure contexts. Each item is prefaced with "*I perform at my best when...*". This section is broken down into two subscales. The first subscale titled, "Time/Rewards Pressure Context" contains six items pertaining to pressure contexts based on time/rewards as external pressures (e.g., "I perform at my best when there is opportunity for

advancement/promotion on the team”). The second subscale titled, “Others Pressure Context” contains three items pertaining to pressure contexts involving performing in front of others/implications on others (e.g., “I perform at my best when being observed.”). Participants are asked to rate to which extent they agree with each item on a Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree).

Section C consists of four items pertaining to *global/general perception* of performing under pressure (e.g., “To which extent do you look forward to performing under pressure?”). These items are compiled to create the “General Perceptions” subscale. Participants are asked to rate to which extent they endorse each item on a 7-point Likert scale ranging from 1 (not at all/never) to 7 (extremely/always).

Reliability and Factor Analyses of PPUPS Subscales

Time/Rewards Pressure and Other Pressure Subscales

The internal consistency of the “Time/Rewards Pressure Context” subscale (i.e., items 11, 12, 14, 15, 16, 17) was acceptable ($\alpha = .79$). The internal consistency of the “Others Pressure” subscale (i.e., items 9, 10, 13), was acceptable ($\alpha = .68$). To ensure proper categorization, we conducted a maximum likelihood exploratory factor analysis with oblimin rotation on all subscale items. Potential solutions were examined in terms of Kaiser criteria ($\lambda > 1$) and the scree test. It was indicated that as expected, one factor should be extracted for both subscales. Item loadings (see Table 2) in the factor pattern matrix were examined in order to assess the unique contribution of each item to the factor. Only item with loadings of .50 and greater were statistically significant at $p < .05$ were retained for all analyses.

Table 2.

Exploratory Factor Analyses on the Pressure Context Subscales

	Time/Rewards $\lambda = 2.30$	Others Pressure $\lambda = 1.43$
Eigenvalue		
% of variance explained	38.35%	35.72%
Cronbach's alpha	.79	.68
<hr/>		
Items		
Last opportunity	.63	
Only one opportunity	.61	
Time crunch	.61	
Opportunity to advance on team	.53	
Selected for a position	.70	
Medal/title	.63	
Observation		.65
Audience of evaluators		.55
Implications on others		.75

General Perception of Performance Subscale

The internal consistency of the "General Perceptions" subscale (i.e., items 5, 6, 7, 8) was excellent ($\alpha = .84$). To ensure proper fit for this subscale, maximum likelihood exploratory factor analyses with oblimin rotation were performed on the four items. Potential solutions were examined in terms of Kaiser criteria ($\lambda > 1$) and the scree test. It was indicated that as expected, one factor should be extracted. Item loadings (see Table 3)

in the factor pattern matrix were examined in order to assess the unique contribution of each item to the factor. Only items with loadings of .50 and that were statistically significant ($p < .05$) were retained for all analyses.

Table 3.

Exploratory Factor Analyses on the "General Perception" Subscale

<i>Eigenvalue</i>	$\lambda = 2.28$
% of variance explained	57.11%
Cronbach's alpha	.84

Items	
Performing under pressure is fun	.78
Perform well under pressure	.67
Look forward to performing under pressure	.83
Confident in performing under pressure	.73

Descriptive statistics for all three PPUPS subscales are presented in Table 4. Participants reported moderately agreeing that they perform well under in both specific pressure contexts and under pressure in general. The correlations among the three subscales are positive and their moderate values (.36 to .60) suggest that the subscales are conceptually different from each other. Table 5 displays all pearson-r correlations between autonomous sport motivation, controlled sport motivation, and the three PPUPS subscales. Both autonomous sport motivation and controlled sport motivation were significantly correlated with pressure contexts and general perception of performance under pressure.

Table 4.

Descriptive Statistics for the Perception of Performance under Pressure Survey

	No. of items	<i>M</i> (<i>SD</i>)	Skewness	Kurtosis
Time/Rewards Pressure	6	5.12 (1.10)	-.40	-.35
Others Pressure	3	4.87 (1.11)	-.38	.39
General Perception	4	4.75 (1.15)	-.36	-.18

Table 5.

Correlations between Autonomous Sport Motivation, Controlled Sport Motivation, and Perception of Performance under Pressure Survey Subscales

	1	2	3	4	5
1. Autonomous Motivation	-				
2. Controlled Motivation	.27**	-			
3. Others Pressure	.39**	-.26**	-		
4. Time/Rewards Pressure	.34**	-.27**	.58**	-	
5. General Perception	.42**	-.24**	.36**	.75**	-

* $p < .05$; ** $p < .001$.

Results

Preliminary Analyses

Extreme scores and missing data. The distribution of standardized scores for each variable in the data set was examined for the presence of univariate outliers. Less than 5% of the cases had standardized scores of 3.29 or greater on one or more variables (Tabachnick, & Fidell, 1996). Since univariate outliers occur normally in a large sample, only cases identified subsequently as extreme multivariate outliers were deleted. Both Mahalanobis' and Cook's distances were used to detect multivariate outliers. No case had a Cook's distance of 1.0 or greater, but two cases displayed significant Mahalanobis' distances (χ^2 (df = 5) > 20.52, $p < .001$). An additional 14 participants completed less than 50% of all questionnaire package/completed random responses, and four participated in sport at a non-competitive level. Therefore, the final sample size consisted of 268 participants.

Normality. Descriptive statistics satisfied the assumption of normality. The means and standard deviations indicated that the variables show acceptable dispersion (as displayed in Table 4 for the PPUPS). The SMS subscales also displayed appropriate dispersion: IM (M = 5.34, SD = 1.17); INTEG (M = 4.49, SD = 1.50); IDEN (M = 4.72, SD = 1.32); INTRO (M = 3.35, SD = 1.35); EXT (M = 3.00, SD = 1.28); Autonomous Motivation (M = 4.85, SD = 1.17); and Controlled Motivation (M = 3.18, SD = .99). Skewness values ranged from -.75 (IM) to .07 (Controlled Motivation), while kurtosis values ranged from -.64 (INTRO) to .14 (Autonomous Motivation). The examination of the expected normal probability plots provided additional support that our variables met the assumption of normality.

Linearity, multicollinearity and singularity. The bivariate scatterplots between pairs of randomly selected variables revealed the absence of nonlinear relationship. There was no evidence of multicollinearity or singularity; all Person correlations between subscales' items were all inferior to .90.

Descriptive Statistics

Participants reported feeling very competitive in their sport ($M = 6.45$, $SD = .72$; range = 4 to 7). Overall, participants tended to report more self-determined ($M = 13.30$, $SD = 3.84$) reasons to practice their sport. As displayed in Table 4, participants reported perceiving a moderate ability to perform well within the others context, time/rewards context, and the general perception subscale.

Structural Equation Modeling

Structural equation modeling (SEM) was conducted using AMOS statistical program, version 17.0.

Testing the hypothesised model: Assessment of model fit

The root-mean-square error of approximation (RMSEA; Steiger, 1990) was the selected measure of absolute model fit, which reflects the size of the residuals that occur when using the model to predict the data, adjusting for model complexity. The RMSEA measures the discrepancy per degree of freedom, with the value representing the goodness-of-fit that could be expected if the model were estimated in the population (as opposed to the sample). Smaller values thus indicate better fit: an RMSEA of .49 or lower is thought to indicate "close fit", whereas a value between .05 and .08 represents "reasonably close fit" (Brown & Cudeck, 1989). An RMSEA above .10 represents an unacceptable model. The comparative fit index (CFI; Bentler, 1990) was chosen as a practical measure of relative fit based on the chi-square statistic. The CFI indicates how much better the proposed model's

chi-square fits the data as compared to that of the “null” model, which assumes that sampling error alone explains the covariation among observed measures. CFI values range between 0 and 1 and a value between .9 and 1 is deemed acceptable. Values above .95 are generally considered as indicative of good fit (Hu & Bentler, 1999).

The statistical hypotheses corresponding to the structural portion of the model are presented below. First, the regressions of autonomous motivation on Time/Rewards Pressure Context, Others Pressure Context, and General Perception subscales were hypothesized to be significantly positive. The regressions of controlled motivation on Time/Rewards Pressure Context, Others Pressure Context, and General Perception subscales were hypothesized to be significantly negative. Finally, the regression coefficients of both pressure contexts on general perception of performance were expected to be significantly positive.

Results revealed that the hypothesized model displayed a good fit to the data ($\chi^2_{(81, 268)} = 114.88, p < .01$; CFI = .98; RMSEA = .04; RMSEA confidence interval = 0.02, 0.06). Also as hypothesized, Time/Rewards Pressure Context was positively predicted by autonomous motivation ($R^2 = .27, p < .01$). The parameter between controlled motivation and Time/Reward Pressure Context was in the expected direction, but non-significant. The Others Pressure Context was positively predicted by autonomous motivation ($R^2 = .30, p < .01$). The parameter between controlled motivation, and Others Pressure Context was in the expected direction, but non-significant. As expected, perception of performance under pressure was positively predicted by autonomous motivation and negatively predicted by controlled motivation ($R^2 = .38, p < .01$). Results of the SEM are depicted in Figure 3.

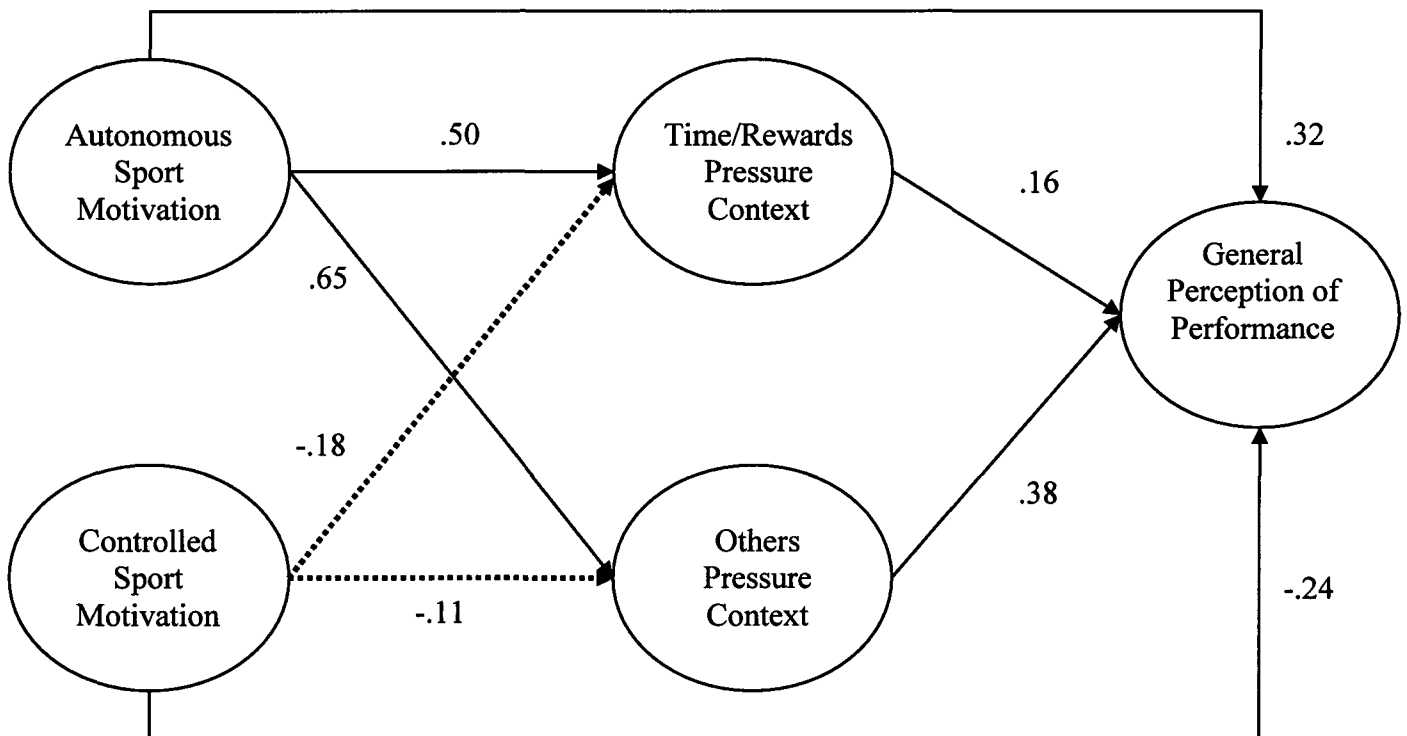


Figure 3. Structural equation model for sport motivation, pressure contexts and general perception of performance under pressure. Note. Maximum likelihood estimates are presented. Dotted arrow signifies non-significant relationships. Solid arrow signifies significant relationships.

Discussion

The primary goal of this study was to create a survey that could measure perceived performance under pressure and from this survey create a taxonomy of pressure contexts. As expected, a taxonomy of pressure situations was created using the PPUPS whereby two pressure contexts were created: Time/Rewards Pressure Context and Others Pressure Context.

The secondary goal of this study was to determine if sport motivation could predict perceived successful performance under different pressure contexts and under pressure in general. Our results provide support for the importance of exploring the quality of

motivation and its impact on performance under pressure. Specifically, analyses suggest that as hypothesized both pressure contexts were predicted by autonomous sport motivation. In others words, participants who endorsed more autonomous reasons to engage in their sport were more likely to perceive themselves as performing well when faced with specific pressure situations such as performing in front of others and being faced with time pressures and external rewards. In contrast, despite being in the expected direction, controlled motivation did not significantly predict the specific pressure contexts. However, significant correlations were detected suggesting that there is a negative relationship between controlled sport motivation, specific pressure contexts, and performance under pressure. Based on these results, it is plausible that autonomous motivation may be a better predictor of performance under pressure than controlled motivation. With respect to general perception of performance under pressure, participants who were more autonomously motivated towards their sport were more likely to perceive themselves as being able to successfully perform when faced with pressure whereas participants who were more motivated for controlled reasons in their sport were less likely to perceive themselves performing well under pressure.

In sum, this study provides strong support for sport motivation as defined by SDT in the prediction of perceived performance in specific pressure contexts and under pressure in general. This study however does have some limitations. Firstly, the PPUPS has not been validated with other samples. Therefore, the generalizability of these results may be somewhat tenuous. Along the same lines, given that these findings were based on subjective self-report only, this study does not permit us to determine if the relationship between sport motivation and perceiving successful performance under pressure occurs when “real-life” pressure is induced. It can be argued that one’s perception of actions may

be completely different than actions in a real-world context. Additionally, performance was not objectively measured. Nevertheless, this study provides us with important information about the relationship between the quality of motivation and the dimensions of pressure contexts.

The next study was therefore designed to translate motivation and the dimensions created on the PPUPS into an experimental design. Specifically, we designed Study 2 with the purpose of addressing the limitations of Study 1 by testing performance under pressure in a controlled laboratory setting. We attempted to create a “real-life” situation encompassing both pressure contexts as identified by the PPUPS. Namely, in attempt to create a more concrete measure of these pressure dimensions, Study 2 was designed to translate elements from the Time/Rewards Pressure Context (i.e., last opportunity to perform, and time crunch) and from the Others Pressure Context (i.e., a self-awareness manipulation via videotaping) into a controlled laboratory setting.

CHAPTER 3

STUDY 2

The Relationship between Motivation and Performance under Pressure in a Laboratory Setting

Overview and Objectives

Study 1 suggested that autonomous motivation can predict perceived successful performance in specific pressure contexts. Additionally, Study 1 demonstrated that general perception of performance under pressure can be positively predicted by autonomous sport motivation and negatively predicted by controlled sport motivation. Study 2 aimed to build upon the results of Study 1 in several ways. First, from a methodological perspective, Study 2 provides a more controlled environment to test performance under pressure. In order to accomplish this, we created a laboratory experiment whereby participants performed under varying degrees of pressure. Second, instead of using a subjective report of performance under pressure and subjective scenarios, Study 2 obtains objective results in response to the varying levels of performance under pressure and it provides an objective measure of the impact that that increased self-awareness has on performance.

Previous research has found that performance decrements can occur as a result of heightened public self-awareness (e.g., Ames, 1992; Baumeister, 1995; Dweck, 1999; Nicholls, 1989; throughout the remainder of the text public self-awareness will be referred to as self-awareness). However, we are proposing that not all individuals are affected by self-awareness to the same extent. Recent research in our laboratory has found that manipulated self-awareness does not affect the behaviour of high self-determined individuals to the same extent as low self-determined individuals (e.g., Beaudry & Pelletier, 2006). High self-determined individuals are more likely to be able to focus

effectively on the task with less of a focus on potentially intrusive external factors that affect behavioural consequences. However, the relationship between self-determination and self-awareness has yet to be systematically investigated in a performance pressure context.

Hypotheses

The design of this study was a 2 (self-determination: high vs. low) x 2 (self-awareness vs. no self-awareness) x 3 (laboratory performance trials) mixed-factorial design. It was hypothesized that there would be a significant difference within participants across performance trials. Specifically, it was expected that performance would deteriorate as pressure across the three trials increased. It was also hypothesized that there would be a main effect for experimental condition. We were expecting that participants in the self-awareness condition would perform worse than participants in the control condition. It was also expected that a self-determined orientation would have a moderating effect on performance in the self-awareness condition. If self-awareness should increase the likelihood of choking for everybody, the effect should be lower for higher self-determined (i.e., more autonomous motivation) participants than for lower self-determined (i.e., more controlled motivation) participants.

Method

Participants

One hundred and forty-eight undergraduate students were recruited from two first-year psychology courses for partial credit using the School of Psychology ISPR at the University of Ottawa. The procedure was conducted in accordance with the approval from the Research Ethics Board of the University of Ottawa. After cleaning and screening the data, 10 participants were removed from the analyses. Therefore, the final sample consisted

of 138 participants (88 female and 50 male; 85.5% Anglophone) with a mean age of 19.58 years old (SD = 4.44; range 17 to 43).

Organized sport participation

One hundred twenty-four (90%) participants either were currently playing or had participated in some form of organized sport. Sixty-two (44.90%) were currently playing organized sport. One hundred fourteen participants (82.6%) used to participate in an organized sport but were no longer participating in that particular sport. Of those participants that were currently playing organized sport, 36 (25%) were currently playing at a recreational level, 38 (55.1%) were currently playing at a competitive level, and 6 (8.7%) were currently playing at a varsity level. The most frequently endorsed sports were hockey (n = 16), soccer (n = 15), basketball (n = 14). There were no differences between the conditions on current/previous organized sport participation ($\chi^2(1,138) = 0.32, p = .57$), or current competitive level of sport participation ($\chi^2(2, 69) = 1.43, p = .49$). Therefore it can be assumed that any differences found were not as a result of previous athletic ability.

Procedure

As part of the online pre-test for the ISPR, participants completed a global motivation scale. Following completion of the pre-test, participants were given the option to participate in a laboratory study titled, "Sport Strategies and Performance". Participants were invited to the laboratory for one 20-minute session to complete questionnaires and to play a sport performance task (i.e., basketball arcade game).

At the laboratory, following a completion of a short pre-task questionnaire, three trials using the basketball arcade game were conducted. The researcher stood behind the participants (not visible to participants when performing) for all three trials and recorded baskets in and baskets missed using a pen and paper method. In all three trials, participants

were told to try their best to get as many baskets in as they could. Participants were told that trial one (i.e., T1) was a practice trial. During this trial, participants were given time to familiarize themselves with the basketball arcade game by shooting as many baskets as they could. They were told that they had roughly two minutes to practice and were instructed when to start and when to stop. The researcher recorded the two minutes using a stopwatch. In trial two (i.e., T2), participants were told that this trial was also a practice trial except this time they had 60-seconds (i.e., increased pressure), timed using the arcade game timer, visible directly in front of participants. Participants were also able to see the points obtained for each basket they got in the net. Prior to trial three (i.e., T3) to further increase pressure, participants were told that this was their last 60-second trial and that they must beat their score from T2. Participants were randomly assigned into either of two conditions: 1) a time pressure with self-awareness (TPSA) condition or 2) a time pressure only (TP) condition.

Participants in the TP condition were only provided with the above information concerning the last trial. Participants in the TPSA condition were provided with additional instructions. Based on previous research that has shown that increased self-awareness via videotaping decreases performance (e.g., Baumeister, 1984; Jackson et al., 2006; Mesagno, Marchant, & Morris, 2008; Nideffer, 1992; Wang et al., 2004b), participants in the TPSA condition were informed that during the last trial their performance was going to be videotaped.

The procedure for the TPSA condition was based on previous research on self-awareness and performance (e.g., Beilock & Carr, 2001). The webcam was connected to a laptop and was set up on the right hand side of the basketball arcade game visible to participants. Participants were told that the purpose of the videotape was to evaluate

performance through the last minute to gain a better understanding of how people react to increased pressure (i.e., trying to beat previous score). At the end of the instructions, they were reminded again that the goal of this trial was to beat their score from the following trial. The score from T2 remained visible to participants. Following T3, participants completed a post-task survey. Before leaving the laboratory, participants were given a debriefing. They were also given ample opportunity to discuss their reactions and ask any questions that may have arisen during the testing period. See Appendix B for all measures and materials used in this study.

Measures and Materials

Global Motivation Scale (GMS; Pelletier & Dion, 2007; Pelletier et al., 2004; Pelletier et al., 2004). The GMS is an 18-item instrument, titled “General Attitudes” used to assess why individuals globally perform different activities on the basis of the tenets of SDT. It is a measure of motivation at a trait-level. Participants are asked to rate to which extent each item corresponds to their individual motives, measured on a Likert scale ranging from 1 (do not at all agree) to 7 (very strongly agree). There are six subscales (three items per subscale) representing the six subtypes of motivation (i.e., IM, INTEG, IDEN, INTRO, EXT, AMO) as outlined by Deci and Ryan (1985). The reliability and validity of the GMS has been well established (Guay, Mageau, & Vallerand, 2003; Pelletier & Dion, 2007; Pelletier et al., 2004; Pelletier et al., 2007).

We were interested in identifying the difference between self-determined (i.e., IM, INTEG, IDEN) and non-self-determined individuals (i.e., INTRO, EXT). We did not include amotivation given that we were interested in delineating what it means to be motivated to perform well and amotivation assumes a complete lack of motivation. An aggregate self-concordance variable was computed by summing the three self-determined

ratings and then subtracting the two non-self-determined ratings (Sheldon & Elliot, 1999; Sheldon & Kasser, 1998). Previous research has provided support for the construct validity of the aggregate self-concordance variable (e.g., Deci & Ryan, 2000; Koestner et al., 2006; Sheldon, 2002). Therefore for this study the GMS index ($\alpha = .84$) = IM + INTEG + IDEN – INTRO + EXT. The higher the score on this index, the more self-determined individuals are. In other words, a higher score is synonymous with more autonomous reasons to perform daily activities whereas a lower score is depictive of more controlled reasons.

Prescreen Past and Current Sport Involvement. Eight items on past and current level of organized sport involvement were included in the prescreen survey. These items were used to describe the sample in the context of level of organized sport activity, pertaining to type of sport (i.e., “Please list all the sports that you are currently playing”), length of sport involvement (i.e. “For how many years have you played the sport(s)?”), and level of sport involvement (i.e., “At what level of competition do you currently play the sport(s)?”). Participants were also given examples for each question to assist them in their responding.

Laboratory Pre-Task Survey. The pre-task survey is a 7-item survey designed to provide the researchers with additional descriptive information and to determine if participants were relatively similar prior to randomized condition assignment. Two questions about participants’ previous experiences with the basketball arcade game are asked (i.e., “Have you played a basketball arcade like this before?” and “If so, how many times?”). Questions on current level of self-consciousness, motivation, anxiety, task importance, perceived expectancies, and competence about shooting hoops are asked. Participants are asked to rate to which extent they endorse each item on a 7-point Likert scale ranging from 1 (not at all) to 7 (extremely).

Sport Performance Task. Free throw shooting is a fine motor task that requires a relatively narrow focus of attention and moderate arousal level (Leary, 1992; Wrisberg, 1994). Previous research has used free throw shooting to experimentally examine choking under pressure (Leith, 1988; Wang et al., 2004a; Wang et al., 2004b). As such, a basketball arcade game was used as the experimental task. The SO Classic Sport X0604 Indoor Arcade Hoops Cabinet Basketball Game was chosen as the sport performance task and installed in the Human Motivation Laboratory at the University of Ottawa. It measures 29 1/2" x 85 5/8" x 88 7/8". The game folds out into a 7' ball cloth return ramp with mesh on both sides to keep the balls from falling on the floor. Using infrared scoring, the apparatus also keeps track of score and time (i.e., counting down from 60 seconds) electronically. This electronic scoreboard is visible to participants. Three 7-inch mini basketballs that come with the game were used.

Trial misses was chosen as the dependent variable for all main analyses. Participants in all trials were given the instructions to "... try your best to sink as many baskets as possible...". Given that the goal of this dissertation was to explore performance decrements under pressure (i.e., negative performance), it was logical to use baskets missed as the dependent variable because to miss a basket is the closest representation of choking. In other words to miss a basket, is representative of self-regulatory failure and not being able to perform at the level that was required (i.e., to get it in). Previous experimental research has also focused on negative performance in order to measure choking such as distance away from the putting target (Beilock et al., 2008; Beilock & Carr, 2001) and missed penalty shootouts (Jordet & Hartman, 2008).

Self-awareness manipulation. Based on previous research using videotape to induce self-awareness (e.g., Carver & Scheier, 1981; Davies, 2005; Dollinger, Greening, & Lloyd,

1987; George & Stopa, 2008; Ellett & Chadwick, 2007; Mizuta, 1986; Plant & Ryan, 1985), a black tripod Gamtech web camera was used as the self-awareness manipulation. The web camera was attached via Velcro on the right side of the basketball arcade game. The web camera was only attached to the arcade game prior to the third trial. It was not visible during the condition without videotape and was not visible to participants prior to this trial (it was stored underneath the basketball arcade game out of participant view). The web camera was subsequently attached via a USB cord to a laptop located on a desk to the right of the arcade game. The laptop was positioned on a desk so that it was visible to participants. When the web camera was plugged in to the laptop, a green light directly underneath the view finder was visible to participants which demonstrated to participants that their performance was being recorded. A red recording signal on a black screen was also visible to participants on the screen of the laptop. However, recording was not actually occurring. To ensure that participants believed that their performance was videotaped for evaluative purposes, the researchers explicitly told participants that their performance was being evaluated.

Laboratory Post-Task Survey. The post-task survey consists of 5 questions pertaining to perceived competence of overall task completion, level of anxiety, self-consciousness, and perceived pressure during trial 3 (e.g., “How much pressure did you feel in the last trial?”). Each item corresponds to a Likert scale ranging from 1 (e.g., extremely poorly) to 7 (e.g., extremely well). Participants are also asked “Which trial did you feel the most pressure?” and have a forced-choice option between trials 1, 2, or 3.

Results

Preliminary Analyses

Extreme scores and missing data. Preliminary analyses revealed that five cases (3.62%) had some data missing on the GMS. They were imputed using expectation maximization in SPSS.

The distribution of standardized scores for each variable in the data set was examined for the presence of univariate outliers. Less than 5% of the cases had standardized scores of 3.29 or greater on one or more variables (Tabachnick, & Fidell, 1996). Both Mahalanobis' and Cook's distances were used to detect multivariate outliers. No case had a Cook's distances of 1.0 or greater, and significant Mahalanobis' distances (χ^2 (df = 1) > 10.83, $p < .001$) were not detected.

Determined level of skilled performance

To ensure skilled performance and to avoid floor effects, a total of 10 participants were removed from analyses because they failed to reach the 30% successful shooting in the baseline testing condition. Although this criterion is slightly lower than previous research using baseline cut-offs scores of 50% (e.g., Lewis & Linder, 1997; Masters et al., 1993, Wang et al., 2004a; Wang et al., 2004b) we lowered the cut-off based on the fact that participants were not experts at this novel task and we were interested in achieving an average accuracy score of 50% across all participant. Therefore the total sample consisted of 138 participants with a mean accuracy score of 52.03% (SD = 9.80), with accuracy scores ranging from 33.33% to 76.67%.

Normality. Descriptive statistics satisfied the assumption of normality. The means and standard deviations indicated that the variables show acceptable dispersion. The GMS subscales displayed appropriate dispersion: IM (M = 4.98, SD = 1.06); INTEG (M = 4.30,

SD = 1.32); IDEN (M = 5.30, SD = .94); INTRO (M = 3.44, SD = 1.50); EXT (M = 4.18, SD = 1.29); GMS (M = 10.95, SD = 2.86). Skewness values ranged from -0.26 (IM) to .07 (GMS), while kurtosis values ranged from -.57 (IDEN) to .60 (GMS). Examination of the expected normal probability plots and expected normal probability plots provided additional support that our variables met the assumption of normality.

Linearity, multicollinearity and singularity. The bivariate scatterplots between pairs of randomly selected variables revealed the absence of nonlinear relationships. There was no evidence of multicollinearity or singularity; all Person correlations between subscales' items were all inferior to .90.

Covariate Analyses

Given that there are often sex differences in motor performance tasks, we conducted a 2(sex) X 3(trial misses) mixed-factorial ANOVA to determine if we needed to control for sex in the subsequent analyses. There was no between-subjects main effect for sex, $F(1, 136) = 0.30, p = .58, \text{partial } \eta^2 = .00$. Sex was therefore not controlled for in the subsequent analyses.

In accordance with Baumeister and Showers' (1986) definition of choking, we controlled for perceived pre-task importance to perform well and pre-task level of perceived competence/expectations of performance. Therefore, a control variable was created using pre-task importance to perform well and expectations to perform well. Given that these two variables were correlated ($r = .69, p < .001$), the values were averaged and a new control variable importance/expectations for performance was created. This variable was used as a control variable in all subsequent analyses.

Participants in the TPSA condition (M = 3.92, SD = 1.08) were significantly less anxious to shoot baskets compared to participants in the TP condition (M = 4.32, SD =

1.10) prior to the experimental manipulation ($t(137) = -2.18, p < .001$). However, overall, anxiety to shoot baskets was not correlated with baskets missed in T1 ($r = .07, p = .44$), T2 ($r = .09, p = .27$), or T3 ($r = .01, p = .89$). Nevertheless, given these group differences in anxiety to shoot hoops, this variable was controlled for in subsequent analyses. In sum, two variables were controlled for in subsequent analyses: importance/expectations for performance and pre-task anxiety.

Descriptive Statistics

Through random assignment, 69 participants were assigned to the TPSA condition and 69 participants were assigned to the TP condition. There were an equal number of males and females assigned to both conditions (Female: $n = 44$; male: $n = 25$ in both TPSA and TP conditions).

Over half of participants had previously played a similar type of arcade game (66.7%) and of those participants the mean frequency range was between 3 to 5 times. Prior to commencing the task, participants endorsed moderate levels of anxiety to shoot baskets ($M = 3.88, SD = 1.11$) and moderate level of current self-consciousness ($M = 4.56, SD = 1.69$). Participants also reported that it was moderately important to them to perform well ($M = 3.89, SD = 1.39$), they expected to perform moderately well ($M = 4.78, SD = 1.08$), and that they were somewhat motivated to perform well ($M = 3.13, SD = 1.58$).

Mean differences between high self-determined (HSD) and low self-determined (LSD) participants on the pre-task variables are displayed in Table 6. LSD participants reported being significantly more motivated to perform well than HSD participants ($t(137) = 2.09, p < .05$). However, motivation to perform well was not correlated with baskets missed in T3 (see Table 8) and therefore was not taken into consideration in further statistical analyses. With the exception of motivation to perform well, there were no

significant differences between HSD and LSD participants on these variables ($ts < 0.94, p > .35$), suggesting that the participants did not significantly differ prior to the induction of the experimental task.

Table 6.

Mean Differences between High and Low Self-Determined Participants on Pre-Task Variables

Pre-task Variables	Self Determination		<i>t</i>	<i>p</i>	95% CI ^a
	Low (<i>n</i> = 68) M (SD)	High (<i>n</i> = 70) M (SD)			
Importance of performing well	3.89 (1.44)	3.89 (1.35)	0.05	.96	-0.46/0.48
Expectations to perform well	4.71(1.16)	4.86(1.01)	-0.82	.42	-0.52/0.21
Anxiety about shooting hoops	4.21 (1.04)	4.03 (1.17)	0.94	.35	-0.20/0.55
Motivated to perform well	3.41 (1.59)	2.87(1.53)	2.09	.04	0.30/1.08
Current self-consciousness	3.44 (1.42)	3.44 (1.92)	-0.72	.47	-0.76/0.35

Note. ^a 95% CI = 95% confidence interval.

Mean differences between the TPSA and TP conditions on the pre-task variables are displayed in Table 7. Prior to the induction of the experimental conditions, with the exception of anxiety, there were no differences on these variables between the TPSA and the TP conditions ($ts < 0.77, p > .44$), suggesting that the participants did not significantly differ prior to the experimental manipulation.

Table 7.

Mean Differences between Experimental Conditions on Pre-task Variables

Pre-task Variables	Condition		<i>t</i>	<i>p</i>	95% CI ^c
	TPSA ^a (n = 69)	TP ^b (n = 69)			
	M (SD)	M (SD)			
Importance of performance	3.84 (1.35)	3.94(1.44)	-0.43	.67	-0.57/0.37
Expectation to perform well	4.83(1.06)	4.74 (1.12)	0.47	.64	-0.28/0.45
Anxiety to shoot baskets	3.92 (1.08)	4.32 (1.10)	-2.18	.03	-0.77/-0.04
Motivation to perform well	3.23 (1.54)	3.03 (1.63)	0.75	.45	-0.33/0.74
Current self-consciousness	3.42 (1.52)	3.84 (1.86)	-0.15	.88	-0.61/0.53

Note. ^a TPSA = Time Pressure and Self-Awareness; ^b TP = Time Pressure; ^c 95% CI = 95% confidence interval.

Correlations between items on the pre-task questionnaire and T3 misses are displayed in Table 8. As this table illustrates, the pre-task questions (i.e., importance to perform well, expectations to perform well, anxiety about shooting baskets, motivation to perform well, and current self-consciousness) were not significantly related to T3 misses suggesting that any changes in T3 are not based on these variables and is more likely a result of the instructions and the TPSA manipulation conducted prior to T3.

Table 8.

Correlations between Pre-Task Variables and Trial Three Misses

	1	2	3	4	5	6
1. Importance of Performance	-					
2. Expectation to perform well	.69**	-				
3. Anxiety about shooting baskets	.32**	.33**	-			
4. Motivation to perform well	.34**	.33**	.12	-		
5. Current self-consciousness	.21*	.09	-.02	.16	-	
6. T3 misses	.10	.14	.01	.01	-.10	-

* $p < .05$; ** $p < .01$.

As illustrated in Table 9, significant differences in performance between conditions were not detected prior to T3 on baskets missed in T1 or baskets missed in T2.

Table 9.

Trial One and Trial Two Mean Differences on Baskets Missed Per Experimental Condition

Baskets Missed	TPSA ^a	TP ^b	<i>t</i>	<i>p</i>	95% CI ^c
	(<i>n</i> = 69)	(<i>n</i> = 69)			
	M (SD)	M (SD)			
Trial 1 ^d	14.60 (5.64)	13.80 (4.47)	0.38	.70	-1.26/1.90
Trial 2	17.32 (5.60)	17.17 (4.66)	0.17	.87	-1.59/1.88

Notes. ^a TPSA = Time Pressure and Self-Awareness; ^b TP = Time Pressure; ^c 95% CI = 95% confidence interval; ^d average across 1 minute of the 2 minute trial to provide a better mean comparison with the following trials.

Main Analyses

Main effects and interaction. A 2 (TPSA versus TP) x 2 (HSD versus LSD) x 3 (T1, T2, T3) analysis of covariance (ANCOVA) was conducted to evaluate the effects of self-determination on performance (baskets missed) across all three trials, controlling for importance of performance/expectations to perform well, and pre-task anxiety. Specifically, the ANCOVA tested our hypotheses that 1) there would be a within-participant difference across all three trials, with more trials missed in T3 in comparison to T2 and T1, 2) there would be a main effect for condition, such that participants in the TPSA condition would perform worse (i.e., miss more baskets) than participants in the TP condition, 3) there would be a main effect for self-determination, such that HSD participants would perform significantly better than LSD participants under pressure, and 4) there would be an interaction between condition and self-determination, such that LSD participants would perform worse in the SA condition compared to HSD.

As hypothesized, results indicated a significant within-participant main effect of baskets missed across all three trials, $F(2, 134) = 85.40, p < .001$, partial $\eta^2 = .39$. Post-hoc comparisons indicated that participants missed more baskets in T3 ($M = 14.20, SD = 5.09$) compared to T2 ($M = 17.25, SD = 5.13$), $F(1, 137) = 33.68, p < .001$, partial $\eta^2 = .20$ and compared to T1 ($M = 20.53, SD = 7.34$), $F(1, 137) = 138.34, p < .001$, partial $\eta^2 = .50$. There was also a significant difference between T2 and T1, $F(1, 137) = 87.40, p < .001$, partial $\eta^2 = .39$.

A significant between-subjects main effect was not found for condition, $F(1, 134) = 2.53, p = .11$, partial $\eta^2 = .02$. However, post-hoc separate between-subjects ANCOVAs were subsequently run using T1, T2, and T3 misses as the DV and condition as the IV. Significant differences between the TPSA and the TP conditions were not found at T1 ($M =$

14.60, SD = 5.04; M = 13.80, SD = 4.47, respectively), $F(1, 136) = 0.85, p = .36$, partial $\eta^2 = .01$. Significant differences were also not found between the TPSA and TP conditions at T2 (M = 17.32, SD = 5.60; M = 17.17, SD = 4.66, respectively), $F(1, 136) = 0.03, p = .87$, partial $\eta^2 = .00$. As expected, significant between-subject differences were found between the TPSA and TP conditions at T3, $F(1, 136) = 5.74, p < .01$, partial $\eta^2 = .04$, whereby participants in the TPSA missed more baskets (M = 22.00, SD = 8.21) than participants in the TP condition (M = 19.06, SD = 6.06). These results suggest that the experimental manipulation was effective in creating differences between the two groups.

As hypothesized, results indicated a significant between-subjects main effect for motivation, $F(2, 134) = 10.83, p < .001$, partial $\eta^2 = .08$. However, results revealed that the direction was not as expected whereby HSD participants missed significantly more baskets across all three trials. At T1, HSD participants (M = 15.21, SD = 5.67) missed significantly more baskets than LSD participants (M = 13.16, SD = 4.19), $F(1,136) = 5.82, p < .01$, partial $\eta^2 = .04$. At T2, HSD participants (M = 18.46, SD = 5.12) missed significantly more baskets than LSD participants (M = 16.00, SD = 4.87), $F(1,136) = 8.33, p < .01$, partial $\eta^2 = .06$. At T3, HSD participants (M = 22.20, SD = 7.90) missed significantly more baskets than LSD participants (M = 18.81, SD = 6.04), $F(1,136) = 7.73, p < .01$, partial $\eta^2 = .05$.

Contrary to our hypotheses, the interaction term was not significant, $F(2, 134) = 3.78, p = .05$, partial $\eta^2 = .03$. Given that there was a trend that was close to significance ($p = .05$), post-hoc analyses on the interaction term were conducted to determine where the potential difference was observed (see Figure 4).

An analysis of simple effects showed that the effect of condition by self-determination was significant for T3 misses, $F(1,135) = 6.03, p < 0.05$, partial $\eta^2 = .01$, but not for T1 $F(1,135) = 0.88, p = 0.35$, partial $\eta^2 = .00$, and not for T2 misses, $F(1,135) =$

0.03, $p = .87$, partial $\eta^2 = .01$. Therefore, there is evidence to suggest that self-determination does play a role when self-awareness is introduced under pressure. However, contrary to our hypotheses, it appears that in this case, it is not LSD participants that perform worse under pressure when being made self-aware. Rather, HSD participants in the TPSA condition ($M = 24.60$, $SD = 9.03$) missed significantly more baskets than HSD participants in the TP condition ($M = 17.74$, $SD = 6.32$). There was a non-significant difference between LSD participants in both the TPSA condition ($M = 18.41$, $SD = 4.89$) and the TP condition ($M = 18.29$, $SD = 5.77$). These results suggest that participants who missed the most baskets under pressure were HSD participants with increased self-awareness. However, participants who missed the least amount of baskets were the HSD participants in the TP condition.

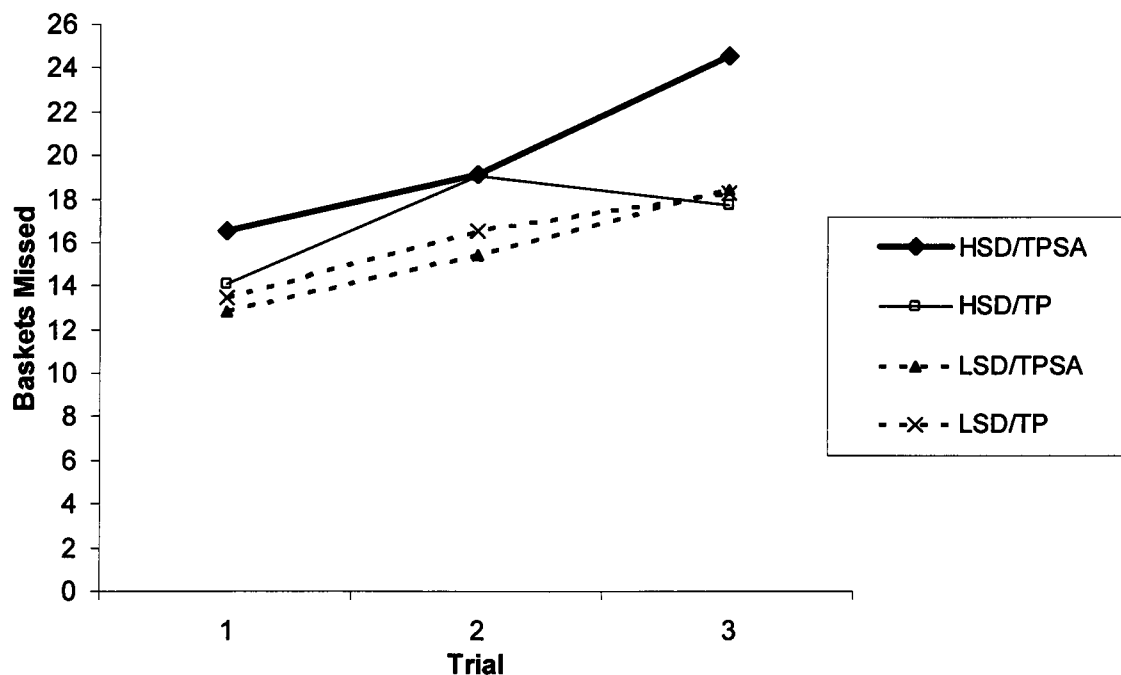


Figure 4. Interaction between missed baskets across arcade game trials, conditions, and self-determination.

Post-Hoc Differences Between Conditions

We were interested in determining if the detected differences between conditions could be further explained by post-task variables (i.e. competence, anxiety, pressure, self-consciousness). It was found that participants in the TPSA condition reported more self-consciousness, anxiety, and pressure and reported less perceived competence in comparison to participants in the TP condition. However, only competence was significant (see Table 10) with participants in the TP condition reporting significantly more perceived competence in T3 than participants in the TPSA condition. However, given that these questions were asked directly after their performance, it is difficult to determine the validity of these questions because participants may have been answering these questions either to justify their performance or perhaps responding in a defensive manner. Note that there were no significant differences on these variables when HSD and LSD participants were compared ($t_s < 1.36, p > .18$).

Table 10.

Mean Differences between Conditions on Post-Task Variables

	Condition		<i>t</i>	<i>p</i>	95% CI ^c
	TPSA ^a (n=69)	TP ^b (n=69)			
Post-task Variables	M (SD)	M (SD)			
Competent in last trial	4.82 (1.19)	5.23 (1.20)	-2.06	.04	-0.82/-0.02
Anxious in last trial	3.82 (1.37)	4.00 (1.74)	-0.33	.75	-0.62/0.44

Self-conscious in last trial	4.15 (1.57)	4.32(1.98)	-0.57	.57	-0.78/0.43
Pressure in last trial	3.58 (1.42)	3.78 (1.85)	-0.72	.47	-0.76/0.35
Well overall	4.64 (1.10)	4.84 (1.08)	-1.10	.28	-0.57/0.16

Note. ^a TPSA = Time Pressure and Self-Awareness; ^b TP = Time Pressure; ^c 95% CI = 95% confidence interval.

Discussion

The global purpose of this study was to introduce pressure contexts from Study 1 into a laboratory setting and to more objectively determine the relationship between motivation and performance under pressure. This study provided support for pressure created in the laboratory and demonstrated performance decrements occur when pressure is introduced. Specifically, participants missed the least amount of baskets in T1 (practice trial), missed slightly more in T2 (timer trial) and subsequently missed the most in T3 (timer + pressure to beat last score). This finding is consistent with Lewis and Linder (1997) who demonstrated that novice student golf putters exhibited performance decrements when extra experimental credit for success was offered. Although pressure variables were created (i.e., one/last opportunity to perform well, time crunch, and controlling instructions) in the laboratory context, limitations exist in determining which variable specifically created pressure, it is relatively comparable to real-world situations where athletes are often faced with numerous pressures in competitive situations. As expected and in line with previous research (e.g., Baumeister, 1984; Jackson et al., 2006; Mesagno et al., 2008; Nideffer, 1992; Wang et al., 2004a; Wang et al., 2004b), the experimental manipulation was successful, whereby participants in the TPSA condition performed significantly worse than participants in the TP condition. This finding is more specifically in line with previous research using the distraction model of choking (i.e.,

Beilock et al., 2004; Nideffer, 1992) whereby the self-awareness manipulation may have shifted attention from task-relevant to irrelevant cues resulting in performance decrements. However, given that separate ANCOVAs were conducted, this finding needs to be interpreted with caution.

Consistent with findings from Study 1, this study suggests that quantity and quality of motivation are important in the context of performance under pressure. However, the relationship that we found between global motivation and performance in a laboratory pressure situation was not as we expected. HSD participants performed worse than LSD participants, which is contrary to perceptions of performance found in Study 1. Several possible explanations exist for this finding including competence, measure of global motivation, differences between perception and actual performance, and skill level of participants. These explanations are further discussed in the following paragraphs.

HSD participants reported lower perceived competence following T3 compared to low self-determined participants. While this finding is difficult to interpret as it was measured post performance and therefore is subject to biases. Nevertheless, it does support previous findings in the choking literature that state that believing in the self (Baumeister & Showers, 1986) and sport confidence (i.e., Curry & Maniar, 2003; Psychountaki & Zervas, 2000) are important constructs in the prediction of successful regulation of performance under pressure. Furthermore, a substantial body of literature in Cognitive Evaluation Theory shows that contexts or events that are perceived as controlling (autonomy-thwarting) undermine intrinsic motivation. Thus, expected rewards (Deci, Koestner, & Ryan, 1999), deadlines (Amabile, DeJong, & Lepper, 1976) imposed goals (Mossholder, 1980), surveillance (Lepper & Greene, 1975; Plant & Ryan, 1985), competition (Deci, Betley, Kable, Abrams, & Porac, 1981) and threats of punishment (Deci & Cascio, 1972)

have all been shown to decrease intrinsic motivation on a state level. In addition, positive feedback (competence support) can also enhance intrinsic motivation (Fisher, 1978; Ryan, 1982). Thus, in order to promote intrinsic motivation in others, one should minimize the use of controlling strategies and attempt to support feelings of competence. In this study, the instructions were controlling, competence was not enhanced and subsequently may have played a role in why HSD participants performed significantly worse in trial three. However, this does not explain why HSD individuals performed worse on the task overall.

Global motivation (i.e., why a participant engages in certain various life activities) may be too broad of a measure and may be too distal of a predictor when exploring situational variables in a pressure context. We were unable to determine if participants' motivation to perform well was consistent with their overall performance in daily activities. Additionally, results revealed that LSD participants were significantly more motivated to perform well on the task than HSD participants. Although this finding does not facilitate our understanding of motivational quality, it does provide interesting insight into the importance of the quantity of motivation in line with Baumeister and Showers' (1986) original definition of choking. It is possible that participants who are generally more self-determined in daily activities did not see this task as relevant in their daily schema and therefore were not as motivated to perform well and subsequently performed worse overall in comparison to participants who tend to be lower in self-determination. However, given that we did not ask questions related to the relevance of this activity in their daily schema, we cannot determine if this is necessarily the case. However, it is important to note that although there was a significant difference between groups, both HSD and LSD participants were only somewhat motivated to perform well. Both groups reported that it was moderately important to them to perform well on this task.

It could also be argued that more self-determined individuals may only perceive themselves to perform better under pressure and when it comes to a real-life event their self-perceptions are not confirmed or supported. Additionally, previous research in the SDT literature has suggested that more self-determined motivation is associated with more positive outcomes over time (e.g., well-being, less rates of burnout/dropout; Lemyre et al., 2006; Pelletier & Sarrazin, 2007; Pelletier et al., 2001; Sarrazin et al., 2002; Treasure, Lemyre, Kuczka, & Standage, 2007). Therefore, it is plausible that LSD individuals may perform better initially in the short-term, but HSD individuals may indeed perform consistently better over time.

With respect to the task, although we attempted to choose a task that was relatively easy to perform and was novel enough to avoid any performance differences due to previous practice, participants may not have been sufficiently skilled at the task. Although two minutes of practice time did allow participants to become familiar with the task, this may not have been enough time to deem them “experts” at the task and subsequently the findings may therefore be different due to the skill level of participants in general. Cognitive theories of skill acquisition and automaticity suggest that novel skill performance differs from expert skill performance in that the former operates in working memory whereas the latter operates from proceduralized/automatized performance processes due to the difference in attention and control (Anderson, 1983, 1993; Brown & Carr, 1989; Fitts & Posner, 1967; Keele, 1986; Keele & Summers, 1976; Masters, 1992; Proctor & Dutta, 1995). It has been shown that the response to attentional manipulations varies depending on skill level (e.g., Beilock, Burthenthal, Hoerger, & Carr, 2008; Beilock, Carr, MacMahon, & Starkes, 2002; Castaneda & Gray, 2007; Gray, 2004; Jackson, Ashford, & Norsworthy, 2006; Ford, Hodges, & Williams, 2005; Perkins-Ceccato, Passmore, & Lee, 2003).

Because novice execution demands attentional resources that skilled performance does not, conditions that direct attention away from primary task execution hurt novices more than skilled performers (Beilock, Jellison, Rydell, McConnell, & Carr, 2006) and the time available for skill execution impacts performances differently depending on skill level (Beilock et al., 2004). Subsequently, the dependent variable (i.e., baskets missed) may have been subject to inconsistent variability that may have directly impacted our results.

The next study was designed to address the aforementioned limitations. Specifically, with respect to motivation, rather than using global motivation we included a measure of situational motivation. Study 3 used “motivation for sport” which may be more situationally-relevant and thus more valid in the context of performing under pressure. We were interested in testing performance under pressure with experts rather than novel performers and therefore Study 3 was conducted with national level swimmers competing at the Canadian Olympic Trials. Furthermore, a more stringent and objective criterion for our dependent variable was deemed necessary. Therefore Study 3 used a standardized point system that would allow for comparison across all participants regardless of skill level. Furthermore, we thought that it was important to obtain additional information on why performance differences may occur and therefore included an investigation of goals in addition to motivation in the context of performance under pressure.

CHAPTER 4

STUDY 3

The Relationship between Motivation, Goals, and Performance under Pressure in a Competitive Pressure Situation

Results from Study 2 suggest that both quantity and quality of motivation are important in the context of performance under pressure. However, unexpectedly, it was found that HSD participants performed worse than LSD participants, contrary to perceptions of performance found in Study 1. Several limitations may have resulted in this finding including using a measure of global motivation with unskilled participants. Furthermore, Study 1 and Study 2 did not explore the “why” of performance decrements which could be investigated via different types of goals that individuals have. As previously discussed, there is a conceptual link between SDT and the achievement goal orientation theory (Ntoumanis, 2001). We are therefore suggesting that different goals could mediate the relationship between motivation and performance, and thus may better explain the relationship between these two variables. Therefore, Study 3 included task and ego involved goals in addition to sport motivation in the context of performance under pressure.

Overview and Objectives

Interestingly and particularly pertinent to this dissertation is that competition is often thought of as “special type” of extrinsic activity, whereby winning is said to be “endogenous” to the game and competence is often measured by competing with others. It has been previously suggested that the process of competition is “inherently threatening” because it compares performance against a particular standard, providing information about success/failure which subsequently is an evaluation (Adegbesan, 2007; Martens, 1976).

When events are important and significant to athletes' careers, they tend to be highly motivated to perform well. However, some athletes may have a more autonomous motivational orientation compared to others with a more controlled motivational orientation which subsequently may impact their perception of the event (i.e., specific situational goals, anxiety and pressure), which may then impact performance. Therefore, we are suggesting that when an athlete focuses mainly on the outcome of winning or beating an opponent, rather than on the process of doing the activity well or enjoying the activity, the behaviour is extrinsically motivated, rather than the activity itself being extrinsic.

Hypotheses

The primary purpose of this study was to explore dispositional (i.e., sport motivation and goal orientation) and situational factors (i.e., pre-competition goals, perceived anxiety and perceived pressure) in the prediction of performance in a context of a competitive pressure situation.

With respect to motivation and in line with findings from Study 1, we were expecting that autonomous sport motivation would be positively associated with performance and that controlled sport motivation would be negatively associated with performance.

With respect to motivation and goal orientations and in line with previous research, we were expecting that autonomous sport motivation would be positively associated with a task goal orientation and that controlled sport motivation would be positively associated with an ego-involved goal orientation.

We were also expecting that autonomous sport motivation would be positively associated with a pre-competition task focus and that controlled sport motivation would be

positively associated with a pre-competition ego-involved focus. Additionally, we hypothesized that pre-competition task focus would mediate the relationship between autonomous sport motivation and performance under pressure. We hypothesized that a pre-competition ego-involved focus would mediate the relationship between controlled sport motivation and performance under pressure.

We were also interested in exploring the relationship between sport motivation, subjectively reported feelings of pressure (i.e., anxiety, and pressure before and during the event) and performance. Given that participants with controlled motivation might be more likely to be influenced by external sources, we expected that being motivated for controlled reasons, would lead to more perceived anxiety and pressure before and during the event and subsequently would lead participants to perform worse compared to previous personal bests. We were also expecting to find a negative relationship between autonomous sport motivation and perceived anxiety and pressure.

Method

Participants

Thirty-four (70.59% Francophone; 29.41% Anglophone) athletes with a mean age of 20.59 (range 16 to 29; 52.94% female) from 13 different swim clubs in the province of Quebec consented to participate in the study. Participants were swimmers that had achieved the qualifying standards to compete at the Canadian Olympic Trials.

Procedure

One week before the Canadian Olympic Trials, participants completed an online survey using SONA Systems. Participants were given a URL address, username and password to access the online survey. At this time, participants completed questionnaires on sport motivation and goal orientation. Participants were also asked to complete a pre-

meet survey, which included identifying up to four events that they were racing in at the Canadian Olympic Trials. For each event, questions on importance, rank, and making the Canadian Olympic team were asked. Participants were also asked to identify what they planned to focus on during the trials.

At the Canadian Olympic Trials, participants were asked to complete an online “post-event survey” in a private pool-side office. Participants were asked to complete the survey as soon as they completed their cool down periods. The researcher was on site to provide assistance to the participants.

Measures

SMS (Brière et al., 1995; Pelletier et al., 1995; Pelletier & Sarrazin, 2007; Pelletier et al., 2007). See description in Study 1.

Task and Ego Orientation in Sport Questionnaire (TEOSQ; Duda & Nicholls, 1992; Duda, Olson, & Templin, 1991). The TEOSQ is a well-established and validated instrument used to assess individual differences in the proneness for task and ego involvement in the athletic realm. The development of this questionnaire was based on previous instruments designed to measure dispositional goals in classroom settings (Nicholls, 1989). The TEOSQ comprises 13 items measured on a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), following the stem, “I feel most successful in sport when...”. Six of the items refer to task goal orientation (e.g., I learn a new skill by trying hard), while seven of the items refer to ego-involved orientation (e.g., I can do better than others.”). The TEOSQ produces two subscale scores reflecting the orthogonal constructs of task and ego oriented definitions of personal success within the sport context.

In their systematic review, Biddle, Wang, Kavussanu and Spray (2003), reported the TEOSQ as the most commonly used measure of goal orientation. Duda and Nicholls

(1992) reported internal consistency coefficients ranging from Cronbach's alpha .81 to .86 for task orientation and from .79 to .90 for ego-involved orientation. Hatzigeorgiadis & Biddle (1999) also revealed satisfactory reliability coefficients for the TEOSQ (task subscale: $\alpha = .72$; ego subscale: $\alpha = .85$). The current study yielded excellent internal consistency for both the task goal orientation ($\alpha = .88$) and ego-involved goal orientation ($\alpha = .89$) subscales.

Pre-Meet Survey. The pre-meet survey is an 8-item survey designed to measure the overall importance of the Canadian Olympic Trials to participants and to obtain a general understanding of what participants plan to focus on during the upcoming Canadian Olympic Trials. Participants were asked to identify up to four events that they were racing in at the Canadian Olympic Trials. For each event, participants are asked to list the time and rank that they would like to achieve and then rate how important it was for them to meet the particular time/rank. Participants are also asked to rank how important it was for them to make the Canadian Olympic team. All response alternatives are based on a Likert scale, ranging from 1 (not at all) to 7 (extremely).

The last section of the questionnaire is on the type of focus that athletes plan to have at the Olympic Trials. This section is comprised of one question prefaced with "*I plan to focus on....*" and has nine focus items which reflect items related to task goal orientation (subscale 1) and ego-involved goal orientation (subscale 2). These items were developed based on previous research on ego and task goal orientations and in consultation with experts in SDT and previous athletes, swimming coaches and the director of the Quebec swimming team. The task-related focus subscale ($\alpha = .70$) consists of five task-related focus items (i.e., improving technique, bodily sensations, body moving through the water, achieving splits, and correcting technical mistakes). The ego-involved focus subscale ($\alpha =$

.81) consists of four ego-involved focus items (i.e., not disappointing others, not looking bad, proving self to others, and pleasing coach). All response alternatives are based on a Likert scale, ranging from 1 (not at all) to 7 (extremely).

Post-Event Survey. The post-event survey is a 4-item survey designed to measure participants' perceptions of anxiety and pressure before and during the events. All response alternatives are based on a Likert scale, ranging from 1 (not at all) to 7 (extremely).

Performance variable. The most important event (MIE) was used as the performance variable. This variable was based on questions on the pre-meet survey (i.e., ratings of how important it was to them to meet time/rank for particular events). The event with the highest rankings was chosen as the MIE.

The performance variable was calculated using Fédération Internationale de Natation (FINA) points for the MIE times via http://www.swimdb.ca/time_stds/. Given that times vary substantially and are dependent on the event and length of the event, FINA points are used to standardize times across all participants, FINA points are obtained through the Canadian Swimming Time Standards. The discrepancy score (DS) = (MIE Personal best FINA point) - (MIE FINA point at the Canadian Olympic Trials). The lowest negative score was added to all values to convert the scale to one that includes only positive values for ease of interpretation. Therefore, a higher DS represents a performance decrement and a lower DS represents a superior performance.

Results

Preliminary Analyses

Extreme scores and missing data. Preliminary analyses revealed that three cases (8.82%) had some data missing. They were imputed using expectation maximization in SPSS.

The distribution of standardized scores for each variable in the data set was examined for the presence of univariate outliers. Less than 5% of the cases had standardized scores of 3.29 or greater on one or more variables (Tabachnick, & Fidell, 1996). Both Mahalanobis' and Cook's distances were used to detect multivariate outliers. No case had a Cook's distances of 1.0 or greater, and significant Mahalanobis' distances (χ^2 (df = 6) > 22.46, $p < .001$) were not detected.

Normality. Descriptive statistics satisfied the assumption of normality. The means and standard deviations indicated that the variables show acceptable dispersion. Skewness values ranged from -.76 (Autonomous Motivation) to .72 (Ego Orientation), while kurtosis values ranged from -.56 (INTRO) to .49 (Autonomous Motivation). The examination of the expected normal probability plots and expected normal probability plots provided additional support that our variables met the assumption of normality.

Linearity, multicollinearity and singularity. The bivariate scatterplots between pairs of randomly selected variables revealed the absence of nonlinear relationship. There was no evidence of multicollinearity or singularity; all Pearson correlations between subscales' items were all inferior to .90.

Descriptive Statistics

Overall participants reported that it was important to achieve a specific time ($M = 5.85$, $SD = 1.09$), to achieve a specific rank ($M = 5.58$, $SD = 1.36$), and relatively important

to make the Olympic team ($M = 4.24$, $SD = 2.39$) thus this context was deemed as an appropriate competitive pressure situation to measure choking. Participant pre-selected MIEs are presented in Table 11. The most frequently reported MIE was 100 butterfly ($n = 5$).

Table 11.

Participant Identified Most Important Event

	<i>N</i>
100 butterfly	5
50 free	3
100 breast	3
200 back	3
200 IM	3
200 free	3
400 IM	2
200 IM	2
200 butterfly	2
200 breast	2
1500 free	2
400 free	2
100 free	1
100 back	1

In order to qualify for the Canadian Olympic team, athletes must first qualify for the A Finals, which requires a finish within the top 8 times. All athletes that finish under a pre-

determined time in the A Finals qualify for the Canadian Olympic team. Of the 34 athletes, 11.76% ($n = 4$) of participants qualified for the Canadian Olympic team. The average desired rank across all participants was 6th place (i.e., to at least race in the A Finals; $SD = 5.67$, ranging from 1st to 25th place). In the MIE, 27 participants (79.41%) raced in the finals. Of the 27 participants that competed in the finals, 15 participants (55.56%) competed in the A Finals and 12 participants (44.44%) competed in the B Finals.

There were a wide range of discrepancy scores (DS) across participants, ranging from 1 to 192. However, the scores were normally distributed with an average DS of 73.10 (skewness = .50 and kurtosis = .35). Sixteen participants (47.05%) performed the same or better than their personal best and 18 participants (52.94%) performed worse than their personal best.

Participants reported significantly more autonomous reasons ($M = 5.01$, $SD = .98$) compared to controlled reasons ($M = 2.78$, $SD = .85$) to swim, $t(33) = 12.70$, $p > .001$. Also, significant mean differences were found between task and ego orientation, $t(33) = 7.90$, $p > .001$, whereby participants reported more task oriented reasons ($M = 3.97$, $SD = .71$) compared to ego oriented reasons ($M = 2.48$, $SD = .84$) to feel successful in their sport. Additionally, participants reported planning to be more task focused ($M = 4.96$, $SD = .96$) than ego-involved focused ($M = 3.30$, $SD = 1.35$) during the trials, $t(33) = 6.12$, $p > .001$. See Table 12 for the descriptive statistics for each item on the task and ego-involved focus subscales. On the task focus subscale, participants reported that they would be focusing most often on mastering technique ($M = 5.18$, $SD = 1.40$). On the ego-involved focus subscale, participants reported that they would plan on focusing most often on not disappointing others ($M = 3.85$, $SD = 1.91$).

Table 12.

Descriptive Statistics for Pre-Olympic Trials Focus Items

	M	SD
Task Related Focus Items		
Improving technique	5.18	1.40
Achieving specific splits	5.03	1.29
Body moving through water	4.91	1.54
Correcting previous technical mistakes	4.88	1.63
Bodily sensations	4.79	1.63
Ego-Involved Focus Items		
Not disappointing others	3.85	1.91
Proving myself to others	3.32	2.03
Pleasing coach	3.21	1.74
Not looking bad	2.62	1.88

Main Analyses

Correlations between sport motivation, goal orientation, pre-trials/post-event variables, and the DS are displayed in Table 13. With respect to our hypotheses regarding sport motivation and the DS, as expected the more autonomously motivated participants were in their sport, the less discrepancy they had between their personal best and their actual performance at the trials ($r = -.30, p < .01$). Although in the expected direction and perhaps due to range-restriction, the relationship between controlled sport motivation and the DS was not significant ($r = .16, p = .33$).

Table 13.

Correlations between Motivation, Goal Orientation, Post-Event Variables, and the Discrepancy Score

	1	2	3	4	5	6	7	8	9	10	11
1. Autonomous motivation	-										
2. Controlled motivation	.36**	-									
3. Ego orientation	.17	.42**	-								
4. Task orientation	.63**	.08	-.00	-							
5. Ego focus ^a	-.00	.47**	.23	-.23	-						
6. Task focus ^a	.30*	-.06	.05	.14	.10	-					
7. Pre- anxiety ^b	.11	.50**	.02	.14	.18	-.12	-				
8. Anxiety during ^b	.10	.33*	-.19	.45	-.08	.00	.78**	-			
9. Pre-pressure ^b	-.02	.36*	.27	.03	.30*	-.01	.81**	.56**	-		
10. Pressure during ^a	.10	.35*	.02	.46*	.04	.11	.75**	.86**	.71**	-	
11. Discrepancy score	-.30*	.16	-.11	-.15	.08	-.36*	.08	.53**	-.21	.30*	-

* $p < .05$; ** $p < .01$. Notes. ^ameasured before commencement of Olympic Trials; ^bmeasured directly after competition.

With respect to our hypotheses regarding sport motivation and goal orientation, as expected autonomous sport motivation was significantly positively correlated with task orientation ($r = .63, p < .01$) and controlled sport motivation was significantly positively correlated with ego orientation ($r = .42, p < .01$).

With respect to our hypotheses regarding sport motivation, pre-competition focus, and the DS, the correlations between autonomous sport motivation and task focus ($r = .30, p < .05$) and between controlled sport motivation and ego focus ($r = .47, p < .05$) were in

the predicted direction. There was not a significant relationship between ego-involved focus and the DS ($r = .08, p = .63$). As hypothesized, the more participants planned to focus on the task, the less discrepancy there was between their personal bests and their MIE performances ($r = -.36, p < .01$).

With respect to our hypotheses regarding sport motivation, situational anxiety and perceived pressure and the DS, as expected, controlled sport motivation was positively associated with pressure before and during the competition, and with anxiety before and during the competition. Also, as expected, anxiety and pressure during the event were both significantly positively associated with the DS. Significant negative relationships were not found between autonomous sport motivation and perceived anxiety and pressure (see Table 13).

A post-hoc exploration of the 10 best performances versus the 10 worst performances

Given the findings on sport motivation, pre-competition focus and performance, we were interested in further exploring these variables in participants who did well versus participants who did not do well at the Canadian Olympic Trials. Group 1 “best performances” consisted of the top 10 participants who performed the best at the Canadian Olympic Trials in comparison to MIE personal bests (3 females and 7 males, mean age = 20.40, SD = 1.90). In this group, 8 participants competed in the A Finals and two participants competed in the B Finals. Group 2 “worst performances” consisted of the bottom 10 participants who performed the worst at the Canadian Olympic Trials in comparison to MIE personal bests (4 females and 6 males, mean age = 22.40, SD = 2.30). In this group, no participants competed in the A Finals and 5 participants competed in the B Finals. There were no differences between FINA points desired prior to the event ($t(18) = 1.59, p = .13$), therefore we can assume that any differences detected between these two

groups was most likely not due to differences in level of skill/ability or expectations.

Independent sample *t*-tests were conducted on sport motivation, pre-competition focus and the DS. The top 10 participants were significantly more autonomously motivated ($M = 5.13$, $SD = .78$) compared to the bottom 10 participants ($M = 4.48$, $SD = .87$; $t(18) = 1.77$, $p < .01$). Significant differences were not detected on controlled motivation ($t(18) = .81$, $p = .43$) or on ego-involved focus ($t(18) = -.29$, $p = .78$). However, the top 10 participants were significantly more task focused ($M = 5.34$, $SD = .60$) compared to the bottom 10 participants ($M = 4.44$, $SD = 1.09$; $t(18) = 2.28$, $p < .05$).

Discussion

The primary purpose of this study was to explore the relationship between autonomous and controlled motivation and performance under pressure with a group of skilled athletes. The secondary purpose of this study was to determine the relationship between sport motivation, goal orientation and more specifically the role that more situational/proximal factors have on performance under pressure.

In terms of group characteristics, and in line with previous research (e.g., Chantal, Guay, Dobreva-Martinova, & Vallerand, 1996; Feltz & Ewing, 1987) we found that participants were more motivated for autonomous reasons compared to controlled reasons to participate in their sport. Participants also tended to report more task orientation than ego orientation and were more task focused than ego-involved focused. The fact that most participants reported relatively high levels of autonomous sport motivation is not surprising given previous research has found that individuals who are more self-determined are more likely to persist over time (Pelletier et al., 2001; Ryan et al., 1997; Sarrazin et al., 2006; Vallerand et al., 1997). Therefore, these athletes may capture the sample of athletes that persist over time because they truly enjoy what they do.

As hypothesized, autonomous sport motivation was positively correlated with task orientation and task focus. These results suggest that autonomously motivated participants are more likely to feel successful in their sport when their goals are task related (e.g., learning a new skill, trying hard). In contrast and as expected, controlled sport motivation was positively correlated with both ego orientation and ego-involved focus suggesting that participants who tend to swim for controlled reasons tend to hinge on their ego to feel successful in their sport and subsequently plan to focus more on ego-involved situations (e.g., proving self to others and not looking bad).

With respect to performance at the Canadian Olympic Trials, we found that as expected that autonomous sport motivation was negatively correlated with the DS. These results suggest that participants who are motivated to swim for more autonomous reasons were more likely to have a smaller discrepancy between their previous personal bests and their performances in their MIE at the Olympic Trials. Similar to and building on findings from Study 1, this result suggests the importance of motivation quality in the exploration of performance under pressure in a competitive context.

With respect to task and ego-involved foci prior to competition, being focused on the task was associated with a smaller discrepancy between MIE previous personal bests and performances at the Canadian Olympic Trials. However, having an ego focus was not significantly related to the DS. Furthermore, post-hoc analyses found that participants who had the best performances (i.e., top 10) at the Canadian Olympic Trials were significantly more autonomously motivated towards their sport and more task-focused compared to participants who performed the worst at the trials (i.e., bottom 10). These findings may suggest that focusing on more task-related elements yields more successful behavioural regulation when in the presence of pressure. In other words, having a plan that focuses on

the race itself rather than on comparing self to others may serve as a buffer against performance pressures. Moreover, participants in this study who swam for more autonomous reasons may be more inclined to focus on their own race plan, rather than on being deterred by the performance of and pressure from others. Subsequently, these participants may perform better than participants who were not as motivated for autonomous reasons and who focused less on the task.

Additionally, we were interested in exploring the relationship between sport motivation, subjectively reported feelings of pressure (i.e., anxiety and pressure before and during the event) and performance. As hypothesized, controlled sport motivation was positively correlated with anxiety and pressure before and during the MIE and subsequently was also positively correlated (although non-significant) with the DS. Despite not finding a negative relationship between autonomous sport motivation and anxiety and pressure, these findings provide further evidence for the importance of athletes to focus more on autonomous reasons to participate in their sports. Our findings suggest that controlled sport motivation is related to negative consequences. Specifically, the relationship between controlled motivation and anxiety provides further insight into the level of anxiety required to perform well under pressure (Arent & Landers, 2003; Hall, Kerr, & Matthews, 1998; Wrisberg, 1994; Yerkes & Dobson, 1908). More specifically, we can assume that not only is too much anxiety detrimental to performance but having controlled motivation may lead to an external focus which subsequently may lead to increased anxiety.

Although this study provides us with important information concerning the relationship between sport motivation and performance under pressure, it does have limitations that need to be addressed. Given the sample size, it is important to note that

findings are based on bidirectional correlations. Results do not suggest direction of relationships and therefore findings should be interpreted with caution. Furthermore, although using a field study provides us with a unique opportunity to assess athletes in real-time under real pressure, there are also several confounds that were out of our control (e.g., coaching staff and peer influences, timing of questionnaire completion, spectators, injuries/illness, etc.) that may have impacted the findings. The findings of this study also cannot be generalized to other athletes as this sample consisted solely of swimmers. Finally, while this study provided important information about the differences between groups (i.e., autonomous versus controlled sport motivation), it did not allow us to compare performances within participants (i.e., important psychosocial variables between an athlete's best versus worst performance). Obtaining such information, may provide further insight into situational variables that increase the likelihood of choking.

Study 4 was therefore created to address some of these limitations and to provide us with a more in-depth analysis of performance under pressure regarding situational factors that influence athletes' best and worst performances. We thought it would be important to design a study that included high level athletes from various sports. We also wanted to add qualitative data to a quantitative dissertation in order to determine: 1) if goals/focus could be further delineated and more clearly defined, and 2) if there were additional variables that we had not identified that could help us further explore the relationship between motivation and performance under pressure in relation to perceived pressure and anxiety. Specifically, we were interested in building on the relationship that we found between controlled sport motivation, pressure, anxiety, and performance decrements, and to determine if specific goals could be measured more specifically that could then be further investigated in future research.

CHAPTER 5

STUDY 4

What are Athletes Perceptions of their Best Versus Worst Performances under Pressure?

Overview and Objectives

Studies in this dissertation thus far have provided some interesting results. We have found that autonomous sport motivation is positively associated with both perceived performance (Study 1) and objective performance (Study 3) under pressure with skilled athletes, while the opposite could be true for novices (Study 2). We have found that the relationship between controlled sport motivation and performance decrements under pressure may either have a direct relationship (Study 1) on performance or may be mediated by situational variables (e.g., anxiety and pressure) as found in Study 3. Finally, we have found some support for exploring the relationship between sport motivation, task/ego-involved focus and performance under pressure. However, it remains unclear exactly which situational variables best predict performance under pressure and how these variables are associated with dispositional variables such as sport motivation and goal orientation.

Previous studies in this dissertation have focused on quantitative methods to target dispositional characteristics and situational variables that may influence performance under pressure. Quantitative designs, however, may not fully explain choking because the experience involves underlying cognitive processes that are not easily quantified. Culver, Gilbert, and Trudel (2003) stated, “When other sources of data relating to human behaviour are combined with interviews to study human activity, it is possible to capture a more complete picture of the processes involved” (p. 7). Furthermore, both quantitative and qualitative research designs have been effective in the study of sport performance (Biddle,

Markland, Gilbourne, Chatzisarantis, & Sparkes, 2001). Therefore, we thought that it was imperative to add an additional qualitative study to identify more specific characteristics of the pressure situation. The objective of the current study was to identify specific factors/common themes that are present in both positive performances (i.e., “best performance”) and negative performances (i.e., “worst performance”) under pressure.

Hypotheses

Based on findings from the previous studies, it was expected that there would be a positive relationship between autonomous sport motivation and task orientation and between controlled sport motivation and ego orientation. In agreement with Study 3, we were expecting that participants would report more task focus in describing their best performances and more ego-involved focus in describing their worst performances. Given that when individuals have more task goals they are less focused on others, we were also expecting that distractions would interfere significantly less with performance in best performances compared to worst performances.

As demonstrated in Study 3, we were also expecting that participants would report feeling less anxious and less pressure in their best performances compared to their worst performances. Furthermore, based on previous findings on self-awareness and performance, we hypothesized that participants would feel more confident and less self-conscious in their best performances compared to their worst performances.

We were also interested in identifying broad themes based on internal and external sources as representative of autonomous motivation/task goals and controlled motivation/ego-involved goals, respectively. It was expected that more internal sources would be detected in descriptions of best performances and more external sources would be detected in the descriptions of worst performances.

Method

Participants

Fifty-two participants were recruited for this study. Twelve participants completed less than half of the survey and therefore the final sample consisted of 40 participants. Participants consisted of 28 female and 12 male (85.00% Anglophone) varsity athletes with a mean age of 20.10 years old (SD = 0.46; range 17 to 32). Participants competed in swimming (n = 17), hockey (n = 6), football (n = 6), soccer (n = 4), volleyball (n = 4), and basketball (n = 3). The average length of competitive years in their sports was 9.03 years (SD = 4.17), ranging from 1 to 24 years. All participants reported competing at a varsity level. An additional six participants reported competing at an international level and five reported competing at a national level.

Procedure

Participants were recruited via email for an online retrospective study of performances under pressure. Recruitment was conducted through interuniversity coaches at the University of Ottawa. We contacted coaches for both male and female teams (where applicable) from the following varsity sports: football, soccer, basketball, volleyball, cross-country, rugby, swimming, and hockey. Coaches were informed that they did not have access to responses from the athletes or to information about which athletes completed the survey. Coaches were informed that they could forward an e-mail request from the researcher directly to the athletes or the researcher could come to one of their practices to provide information to the athletes about the survey at their convenience. All participating coaches chose to forward the e-mail request to their athletes.

Participants were required to access the provided link to the survey monkey survey. To protect their anonymity, it was not necessary to log on to complete the survey and

participant identification numbers were not obtained. All measures and materials used in this study can be found in Appendix D.

Measures

SMS (Brière et al., 1995; Pelletier et al., 1995; Pelletier & Sarrazin, 2007; Pelletier et al., 2007). See description in Study 1.

TEOSQ (Duda & Nicholls, 1992). See description in Study 3.

Reflections on my Best versus my Worst Performance Under Pressure. The “Reflections on my Best versus my Worst Performance under Pressure” survey is based on previous research on peak performance and choking (e.g., Baumeister, 1984; Baumeister & Showers, 1986; Gibson & Sachau, 2000; Kleine et al., 1988; Pargam, 2006; Paulus, 1983) and was derived in consultation with other researchers in the field of sport and motivation. We extrapolated items from previous studies in this dissertation and used Baumeister and Showers’ (1986) criteria of choking.

The survey comprises two sections. Section A consists of 16 items pertaining to a participant identified best performance and Section B consists of the same 16 items pertaining to a participant-identified worst performance. Participants are asked to indicate their specific sports and then they are asked to describe in their own words the particular best/worst performance in that particular sport and identify the date of this performance. Participants are asked to describe why they thought it was their best/worst performance. They are also asked if they had specific goals for this particular performance (yes or no response alternative).

For each performance, participants are asked 7 questions pertaining to the extent to which they felt confident during, anxious before/during, self-conscious before/during, and pressure before/during the performance (e.g., “To which extent did you feel anxious before

the competition?). The anxiety and pressure variables were included based on findings from Study 3 and confidence and self-consciousness were added to provide further details about possible situational variables/self-awareness that may impact performance under pressure. All response alternatives are based on a Likert scale, ranging from 1 (not at all) to 7 (extremely).

Similar to Study 3, one question is prefaced with “*I focused on....*” and is based on items from Study 3. The task-related focus subscale ($\alpha = .50$) consists of three task-related focus items (i.e., improving technique, gaining experience, and trying my best). Note that items specific to swimming and not relevant to other sports were removed from the task-focus subscale (i.e., achieving specific splits and body moving through the water). The ego-involved focus subscale ($\alpha = .78$) consists of four ego-involved focus items (i.e., not looking bad, not disappointing others, proving self to others, and pleasing coach).

Two questions are asked about distraction (i.e., “To which extent were you able to re-focus on your original plan after distractions?” and “To which extent did distractions deter you from focusing on your original plan for the competition?”). All focus and distraction questions are answered on a Likert scale ranging from 1 (not at all/never) to 7 (extremely/always).

Statistical Analyses

Quantitative and qualitative methods were used in subsequent analyses. A qualitative approach was used to examine participants’ perceptions of their own performances and was based on previous qualitative research with athletes (e.g., Gustafsson, Hassmén, Kenttä, & Johansson, 2008; Jackson, Knapp, & Beauchamp, 2008; Kimbell, 2007; Nieuwenhuys, Hanin, & Bakker, 2008). Internal and external sources were chosen as the higher-order categories to identify themes that may be representative of

autonomous motivation/task goals and controlled motivation/ego goals and were also created based on previous research in the attribution literature (e.g., Kerr & Beh, 1995). Data were initially analyzed whereby meaning units were classified in accordance with broad categories based on internal sources and external sources.

Meaning units represent a word, phrase, sentence, or paragraph containing conceptually relevant information (Tesch, 1990). Themes were only created in instances when more than one participant highlighted the prevalence of a particular meaning unit. This was done to provide an overall representation of the most *prominent* (i.e., frequent) themes, as identified by the participants. Such an approach is consistent with recommendations by Miles and Huberman (1994) who state that researchers should identify recurrent themes and “lay aside the more tenuous ones until other informants and observations give them better empirical grounding” (p. 70).

Software-based content analysis, using the QSR NVIVO program, was used to group meaning units into conceptually similar lower-order themes within the two higher-order categories (Berg, 2007). A process of peer review was employed (Krippendorff, 2004; Lincoln & Guba, 1985) whereby two independent raters examined and coded all meaning units. An average consensus rate of 92% was found across the independent raters.

Results

Preliminary Analyses

Extreme scores and missing data. Preliminary analyses revealed that 12 participants completed less than half of the survey and therefore were deleted from the final sample. Two cases (5.00%) had some data missing. They were imputed using expectation maximization in SPSS.

The distribution of standardized scores for each variable in the data set was examined for the presence of univariate outliers. Less than 5% of the cases had standardized scores of 3.29 or greater on one or more variables (Tabachnick, & Fidell, 1996). Both mahalanobis' and Cook's distances were used to detect multivariate outliers. No case had a Cook's distances of 1.0 or greater, and significant Mahalanobis' distances (χ^2 (df = 9) > 27.88, $p < .001$) were not detected.

Normality. Descriptive statistics satisfied the assumption of normality. The means and standard deviations indicated that the variables show acceptable dispersion. The examination of the expected normal probability plots provided additional support that our variables met the assumption of normality.

Linearity, multicollinearity and singularity. The bivariate scatterplots between pairs of randomly selected variables revealed the absence of nonlinear relationship. There was no evidence of multicollinearity or singularity; all Person correlations between subscales' items were all inferior to .90.

Given the nature of choking, we ensured that reported pressure before the event was at a moderate level to ensure that participants followed instructions. Given that participants reported a moderate level of perceived pressure both in their descriptions of their best performances (M = 3.81, SD = 2.29) and their worst performances (M = 4.88, SD = 1.49), we can assume that participants provided examples of competitive situations under pressure as requested in the initial instructions of the survey.

Descriptive Statistics

The average length of time between completion of the survey and the best performance was 1.50 years (SD = 1.31), ranging from less than 6 months to 7 years. The average length of time between completion of the survey and the worst performance was

1.40 years (SD = 1.24), ranging from less than 6 months to 6 years. Similar to Study 3, participants reported significantly more autonomous reasons ($M = 4.92$, $SD = 1.02$) than controlled reasons ($M = 3.13$, $SD = 1.04$) to practice their sports, $t(39) = 11.16$, $p > .001$.

Participants also tended to have more of a task goal orientation ($M = 3.89$, $SD = .81$) than an ego-involved goal orientation ($M = 2.54$, $SD = .92$) in their sport, $t(39) = 6.62$, $p > .001$. Over half of participants (60%) reported having a goal before their best performances, compared to only 37% of participants who reported having a goal before their worst performances.

Main Analyses

As expected, a significant positive relationship was found between autonomous sport motivation and task goal orientation, $r = .48$, $p < .05$. Although the direction was as expected, the relationship between controlled sport motivation and ego-involved goal orientation was not significant, $r = .16$, $p = .33$. Although this correlation is not statistically significant, with a larger sample size this correlation may have reached statistical significance.

As hypothesized, participants reported being significantly more task-focused during their best performances and reported significantly more ego-involved focus during their worst performances. Table 14 displays the mean differences between best and worst performances on task and ego-involved focus subscales. With respect to task focus, in their descriptions of their best performances participants recalled being more focused on improving technique, gaining experience, and trying their best compared to their reflections on their worst performances. With respect to ego-involved focus, participants reported focusing on not looking bad, not disappointing others, proving self to others, and pleasing coach in their best performances compared to their worst performances. As hypothesized,

in best performances, participants reported that distractions deterred them significantly less from their original plan and if distractions were remarkable they were significantly better able to re-focus compared to worst performances.

Table 14.

Mean Comparisons for Task and Ego-Involved Focus Items Between Best and Worst Performance

	Best Performance		Worst Performance		<i>t</i>	<i>P</i>	95% CI ^a
	M	SD	M	SD			
Task-Focus							
Improving technique	3.42	2.08	2.81	2.07	1.95	.05	-0.03/1.26
Gaining experience	4.03	2.37	2.68	1.94	-4.72	.00	0.61/2.10
Trying my best	6.71	.59	5.23	1.38	6.77	.00	0.99/1.97
Ego-Involved Focus							
Not looking bad	2.33	1.62	4.10	2.01	2.23	.03	-2.54/-1.01
Not disappointing others	2.52	1.65	4.90	1.77	6.17	.00	-3.12/-1.66
Proving self to others	3.38	2.26	3.77	2.08	1.93	.05	-1.05/0.28
Pleasing coach	3.00	1.81	5.03	1.60	3.69	.00	-2.70/-1.37
Distraction							
Distraction from plan	3.00	1.55	4.52	.91	-4.41	.08	1.00/2.39
Re-focusing after Distraction	6.23	.90	3.97	1.54	4.82	.00	1.67/2.86

Note.^a 95% CI = 95% confidence interval.

As hypothesized, participants reported significantly more confidence, less self-consciousness, less anxiety, and less pressure in their best performances compared to their worst performances (see Table 15).

Table 15.

Differences on Situational Variables Between Best and Worst Performances

	Best Performance		Worst Performance		<i>T</i>	<i>P</i>	95% CI ^a
	M	SD	M	SD			
Confidence before	5.91	1.19	3.51	1.36	6.69	.00	1.68/3.16
Self-consciousness before	2.85	1.67	3.35	1.86	-1.68	.10	-1.22/0.12
Self-consciousness during	2.18	1.51	4.39	1.93	-6.82	.00	-2.93/-1.58
Anxiety before	3.58	1.95	5.06	1.61	-3.39	.02	.55/2.22
Anxiety during	3.12	1.74	3.94	1.93	-2.35	.03	-1.93/-0.14
Pressure before	3.81	2.29	4.88	1.49	-2.29	.03	.098/1.71
Pressure during	4.00	1.95	4.65	2.06	-1.58	.13	-1.78/0.23

Note.^a 95% CI = 95% confidence interval.

Themes and categories for best and worst performances are displayed in Table 16 and Table 17, respectively, with accompanying exemplar meaning units and frequency counts (n). Including frequency counts enables insight into the more commonly occurring themes highlighted by participants (Mays & Pope, 1995).

Three distinct lower-order themes emerged (i.e., motivation, anxiety/confidence, and task) that best captivated the role of internal sources. More specifically, meaning units reflecting too much/not enough motivation, enjoyment, pleasure, and fun were categorized under the lower-order theme *motivation*. For example, one of the responses for my best

performance was “I was just having fun out there”. Meaning units reflecting stress/relaxation, feeling competent, and feeling comfortable/confident/competent were categorized under the lower-order theme *anxiety/confidence*. For example, one of the responses for my best performance was “I was feeling good about myself and wasn’t too stressed”. Meaning units reflecting being able to focus on ability, task goals, technical aspects of the game/race, and emphasis on game plan were categorized under the lower-order theme *task factors*. For example, one of the responses for my best performance was “I played to the best of my ability”.

Two distinct lower-order themes emerged (i.e., focus/distractions and impact of others) that best captivated the role of external sources. More specifically, meaning units reflecting focus on the race/game, distraction by external events/circumstances, thoughts either about outside events or about the event were categorized under the lower-order theme *focus/distraction*. For example, one of the responses for my worst performance was “my mind was not with me at all”. Meaning units reflecting teammates, specific references to fans, beating/losing opposing teams, support/lack of support from fans/team, pleasing others, were categorized under the lower-order theme *impact of others*. For example one of the responses for my worst performance was “I just couldn’t figure out how to beat him and I wanted to impress my coach”.

As hypothesized, analyses revealed that more responses fit within lower-ordered themes within the external sources higher-order category in the worst performance descriptions compared to descriptions of best performances. The most frequently cited response for best performance was within the task lower-ordered theme (see Table 16) of the internal sources higher-order category, whereby participants reported focusing on the task itself, being less distracted on outside influences, and focusing on skill set.

Lower-order themes distractions and focusing on others within the external sources higher-order category were most frequently cited (see Table 17) in descriptions of worst performances. With respect to role internal sources, too much/not enough motivation was common in describing the worst performance whereas enjoying the competition and feeling relaxed and confident were more frequently cited in descriptions of best performances.

Table 16.

Categories, Themes and Exemplar Meaning Units for Best Performance

Higher-Order Category	Lower-Order Themes (n) ^a	Exemplar Meaning Units
Role of Internal Sources	Motivation (5)	“I was having fun with the game” “...I had lots of fun doing it” “...I was relaxed and excited.”
	Anxiety/confidence (5)	“...At that point, I was nervous just enough... I felt I had nothing to lose so I just went in and did my thing.” “I believed in myself that I could do it...”
	Task (24)	“I was getting open for passing, moving forward, and defending well...” “I played to the best of my ability” “...Just knowing how hard we had game planned and practiced the week prior, and feeling that it was paying off drove rhythm on the court.”
Role of External Sources	Focus/Distractions (8)	“...I didn’t think, my body moved by itself and it did what it was trained to do...” “...I raced the race and didn’t think about what I had done before” “It was fast paced so it allowed me to think very little..”
	Impact of Others (8)	“I had the support from my team...” “Because I was helping my team out...”

Note. ^a multiple responses are possible and response categories are not mutually exclusive.

Table 17.

Categories, Themes and Exemplar Meaning Units for Worst Performance

Higher-Order Category	Lower-Order Themes (n) ^a	Exemplar Meaning Units
Role of Internal Sources	Motivation (13)	“I wanted to do so well that it backfired” “I put too much pressure on myself and didn’t go for it with the same reckless abandon that I normally would” “There was a part of me that wanted nothing to do with that team”
	Anxiety/confidence (6)	“I was too excited and too pumped up” “I think I panicked. I lost a lot of confidence.”
	Task (4)	“...missed turns, bad time...” “...my basic skills were off”
Role of External Sources	Focus/Distractions (21)	“My mind was not with me at all...” “I wasn’t playing my game.”
	Impact of Others (12)	“He was good and I couldn’t grasp how to defeat him.” “...there was a lot of outside influences and negative emotions from others around the pool”

Note. ^a multiple responses are possible and response categories are not mutually exclusive.

Discussion

The overall purpose of this study was to enrich our understanding of the relationship between motivation, goal orientation, and situational variables in the context of performance under pressure. Specifically, we proposed that adding a qualitative component to the previous studies in this dissertation would provide insight and further explanation for previous findings on both dispositional and situational variables and help us design future studies on choking. Therefore, the objective of the current study was to identify specific factors/common situational themes that may contribute to one’s best performance versus one’s worst performance under pressure.

With respect to quantitative findings, results provide additional support for findings from Study 3. Similar to the swimmers in Study 3, this sample was significantly more autonomously motivated towards their sport than controlled motivated and reported significantly more task orientation than ego-involved orientation. These findings may suggest that individuals who persist over time are more likely to portray these characteristics.

Interestingly, when asked if participants had goals prior to performances, only 37% of participants reported having a goal for their worst performances compared to 60% of participants when reporting their best performances. As expected, participants reported significantly more task focus in describing their best performances and significantly more ego-involved focus in describing their worst performances. These findings lend support for the importance of having task oriented goals/focus prior to/during competition in order to increase the likelihood of performing well under pressure.

Similar to findings in Study 3 that suggested that perceived anxiety and pressure are associated with performance decrements under pressure, this study also found that although participants reported a moderate level of anxiety and pressure for both performances, significantly less anxiety and less pressure were reported prior to their best performances compared to their worst performances. Additionally, we found that participants reported significantly more confidence and less self-consciousness prior to their best performances compared to their worst performances. A potential explanation of this finding is that feeling competent may have led to an increased ability to manage/lower levels of self-awareness in the pressure situation and thus participants may have been better able to focus less on the pressure of the event, decreasing anxiety, and subsequently perform well.

With respect to the qualitative data, three lower-order themes (i.e., motivation, anxiety/confidence, and task) emerged that captivated the internal sources higher-order category. Two lower-order themes (i.e., focus/distractions, others) emerged that captivated the external sources higher-order category.

With respect to internal sources, too much motivation or lack of motivation was common in the descriptions of worst performances whereas enjoying the competition and feeling relaxed and confident were more prominent in descriptions of best performances. Within the internal sources category however, the most noteworthy difference is within the task theme whereby participants most frequently reported being focused on the task as the reason for best performances. Interestingly, when participants reported their best performances they reported focusing on the task itself, being less distracted, and simply enjoying what they were doing. These findings suggest that, similar to our previous studies, it is important to be task oriented (rather than letting outside distractions deter from performance) and autonomously motivated (i.e., enjoyment) in order to perform well under pressure.

With respect to external sources, role of distractions and others were found to be particularly salient in the descriptions of worst performances and appeared to be the main reasons as to why participants did not perform as well as they wanted to in their particular performances. In contrast, limited responses were provided that fit the external sources theme for descriptions of best performances.

Based on these findings, it appears that lack of focus and motivation are important indicators of successful performance under pressure. We can extrapolate from these findings that individuals who are more likely to have controlled reasons to participate in

their sport are the ones who may be more distracted by external sources and subsequently may be more likely to succumb to pressure and therefore perform poorly.

Unfortunately, although this study provided additional qualitative information several limitations should be mentioned. Given the small sample size, we were limited in statistical rigour and thus relied on mean differences and correlations. Furthermore, although we are suggesting that worst performances are synonymous to choking, the research question was slightly different and thus may have impacted responses. Additionally, most participants provided relatively short qualitative answers and given that this was an online study, no follow-up questions were conducted to further tease apart what participants were specifically trying to say in their responses. Teasing apart the answers in an interview would have allowed for delineation of themes that emerged. Furthermore, specific situational variables were examined and although extrapolated to identify potential dispositional characteristics related to performance under pressure, it does not provide us with information regarding who is more likely to choke under pressure over time. Lastly, there was a significant time lapse between questionnaire completion and the particular performances and therefore responses are subject to personal reflections, justifications, memory distortions, and opinions from peers, teammates, and/or coaches. These responses might have been altered at different points post-competition. Nevertheless, this study does shed some light on the importance of future research examining sport motivation, in relation to specific situational variables including goals/focus, perceived pressure, anxiety, confidence, and self-awareness in the context of performance under pressure.

CHAPTER SIX

GENERAL DISCUSSION

Summary of Findings

The phenomenon of choking is widely recognized in the sport domain, and several models have been used to help explain this construct. However, previous models and descriptions have focused on one set of mechanisms used to explain choking (e.g., distraction, anxiety). The primary goal of this dissertation was two fold: 1) to further examine the underlying dispositional and situational variables associated with performance under pressure and 2) through the use of dispositional and situational variables, to delineate Baumeister and Showers' (1986) criteria of choking (i.e., motivation to perform well, competitive contexts requiring optimal outcome, and necessary skill).

More specifically, using previous research on SDT, our goal was to identify if “how” individuals are motivated (i.e., the quality of motivation) and if differing goal orientations determine which individuals are more likely to choke. In other words, we were interested in determining dispositional factors that may put individuals at risk of choking. Additionally, we were interested in defining “when” individuals choke by investigating situational characteristics associated with self-awareness and pressure to perform. In other words, we were interested in determining if situational factors make specific contexts more conducive to choking. Lastly, we were interested in exploring how the interaction of these predisposing and situational factors may lead to choking. In order to explore Baumeister and Showers' (1986) criteria in more detail, four studies were created. The specific goals and results of each of these studies are summarized below.

Study 1

The purpose of Study 1 was twofold; 1) to create a perceived performance under pressure survey and use this survey to create a taxonomy of pressure contexts and 2) to determine the relationship between sport motivation and perceived performance under pressure. Specifically, rather than focusing on whether an individual has too much or not enough motivation to perform well (i.e., quantity of motivation), we were interested in determining if quality of motivation (i.e., autonomous versus controlled sport motivation) could predict performance under pressure. Results supported the structure of the survey and the taxonomy that it created. In support of SDT, autonomous sport motivation predicted a positive perception of performance under pressure in both specific pressure contexts and under pressure in general. Controlled sport motivation was negatively associated with perception of performance in specific pressure contexts and under pressure in general. However, controlled sport motivation was not a significant predictor when more rigorous statistical analyses were conducted.

Study 2

On the basis of these findings, we created a laboratory study for Study 2 that would allow us to manipulate pressure in order to determine more objectively the relationship between motivation and performance under pressure. Specifically, we were interested in introducing a more concrete measure of the pressure dimensions obtained from the PPUPS, which included the “time/rewards pressure” context (i.e., last opportunity to perform, and time crunch) and the “others pressure” context (i.e., a self-awareness manipulation via videotaping) into a controlled laboratory setting.

Study 2 was a 2 (motivation: high vs. low) x 2 (self-awareness vs. no self-awareness) x 3 (laboratory performance trials) mixed-factorial design. Results revealed that

a perceived pressure context was created in the laboratory such that participants' performances decreased across trials. Specifically, performance was best in T1 (practice trial), decreased in T2 (timer trial) and subsequently the worst performance was detected in T3 (timer + pressure to beat last score). Results also revealed that our self-awareness manipulation through a camera was successful whereby participants in the TPSA group performed significantly worse than participants in the TP group. With respect to global motivation, we unexpectedly found that HSD participants performed significantly worse across all three trials compared to LSD participants.

Study 3

Based on findings from Study 1 and Study 2 and limitations of Study 2 design, we created a field study with the purpose of selecting experts instead of novices as our sample, using sport motivation instead of global motivation, and using a more controlled measure of performance (standardized points). Additionally, we were interested in obtaining further information on goal orientation and specific a priori task/ego-involved focus to better understand the relationship between motivation, situational variables, and performance under pressure. Therefore, the primary purpose of Study 3 was to explore how sport motivation, goal orientation, and focus were associated with performance in the context of a competitive pressure situation with a group of national swimmers competing at the Canadian Olympic Trials. We were interested in exploring the discrepancy between previously recorded personal bests and performance at the Canadian Olympic trials in a participant identified MIE.

As hypothesized, autonomous sport motivation was positively correlated with less discrepancy between personal bests and their performance at the Canadian Olympic Trials. Additionally, autonomous sport motivation was positively associated with a plan to be

more task focused at the Olympic Trials and subsequently negatively associated with the DS. As expected controlled sport motivation was positively correlated with both ego-involved orientation and ego-involved focus suggesting that participants who tend to swim for controlled reasons tend to hinge on their ego to feel successful in their sport and subsequently plan to focus more on ego-involved situations (e.g., proving self to others and not looking bad). However, these variables were not associated with the DS.

The most parsimonious explanation for the relationship between controlled sport motivation and performance decrements at the Canadian Olympic Trials was indirectly found through its relationship with perceived anxiety and pressure. Specifically, controlled sport motivation was positively correlated with anxiety and pressure before and during the most important event and subsequently was also positively correlated with the DS. Post-hoc analyses revealed that the top 10 performers were significantly more motivated for autonomous reasons and reported more task focus compared to the bottom 10 performers.

Study 4

Based on previous findings and limitations of Study 3, we were interested in exploring specific within-participant situational variables that may influence performance. Therefore, the purpose of Study 4 was to explore both quantitative and qualitative differences between an athlete's best performance and an athlete's worst performance. Specifically, we were interested in within-participant differences with respect to situational variables including motivation, goals, focus, confidence, self-consciousness, anxiety, and pressure. The design of Study 4 was an online study using a mixed-method design with varsity athletes from various sports to explore differences between descriptions of best and worst performances. Results revealed that participants reported significantly more task focus (i.e., the particular technical elements of the sport, competition and their own ability)

in describing their best performances and significantly more ego-involved focus (i.e., distractions from others and focus on self in relation to others) in describing their worst performances.

Qualitative analyses yielded different lower-order themes subsumed under higher-order categories. Specifically, motivation, anxiety/confidence, and task emerged as lower-order themes based on internal sources. In contrast, focus/distraction and others emerged as lower-order themes based on external sources. When participants reported their best performance they reported focusing on the task itself, being less distracted and simply enjoying what they were doing. In contrast, participants' emphases were on being distracted by their environment/others, feeling too much/not enough motivation, and lacking confidence/increased anxiety in describing their worst performances.

In sum, the overall goal of this program of research was to determine dispositional and situational factors associated with performance under pressure. More specifically, the overarching goal was to determine if quality of motivation was important in the understanding of choking and if SDT was a good theoretical model to apply to the area of choking. Overall, results do provide support for the application of SDT to the context of performance under pressure using sport motivation with expert athletes. Namely, autonomous sport motivation and controlled sport motivation do yield different outcomes and autonomous sport motivation is associated with more positive outcomes in comparison to controlled sport motivation. Furthermore, it is important to examine specific goals/focus, anxiety, and confidence as situational variables in the study of performance under pressure. Our findings suggest that all athletes can be motivated to perform well but not all athletes who were motivated to perform well performed poorly under pressure. Therefore, it is important to examine the way in which individuals are motivated, rather than simply

stating that individuals need to be motivated to perform well. Specifically, Theoretical contributions, applications and limitations of this program of research are examined in the subsequent sections.

Theoretical Contributions and Applications

Performance under pressure is a domain that can be explored via several different mechanisms and it is a construct that cannot simply be explained by only one variable. The overall objective of this dissertation was to further conceptualize choking by providing a theoretical background of motivation and self-regulation to investigate decrements in performance under pressure in a more systematic way. From an SDT perspective, we were interested in examining dispositional individual characteristics and under which conditions are individuals more likely to choke.

An important and novel contribution of the current dissertation is that it provides a theoretical framework of motivation to the study of choking. More specifically, the current findings extend Baumeister and Showers' (1986) initial criteria of choking and underscore the importance of having a theoretical framework to better understand the underlying mechanisms of choking. Moreover, current findings suggest that SDT can be used as such a framework. We found significant relationships between autonomous and controlled sport motivation in both subjective and objective measures of performance under pressure. While it appears that there is more of a direct relationship between autonomous sport motivation and performance under pressure. Controlled sport motivation has important implications on performance under pressure via an indirect path that includes situational variables including perceived anxiety and pressure. These findings strongly suggest that it is not sufficient to state that athletes need to be motivated to perform well under pressure nor it is sufficient to imply that pressure increases one's motivation to perform well. Rather, it is necessary to

distinguish between different types of motivation, focusing on quality of motivation. An athlete who is predominantly motivated by winning an external reward (i.e., controlled motivation) versus an athlete who is predominantly motivated by the pure joy of his or her sport (i.e., autonomous motivation) will have different responses and reactions to pressure which ultimately influences the athlete's performance.

Our findings also provide empirical support for the existence of choking amongst elite athletes as previously documented (e.g., Baumeister, 1984; Wright et al., 1991; 1995). Additionally, we extended Baumeister and Showers' (1986) criterion regarding choking amongst skilled individuals. A key insight offered herein, although not an initial goal of this dissertation, was indeed the necessity of being skilled in order to accurately explore choking which supports previous studies on skill and performance under pressure (e.g., Beilock et al., 2002; 2008) and further supports Baumeister and Showers' criterion. We found consistent results across studies that used skilled participants (Study 1 and 3) compared to non-skilled participants (Study 2) which provides support for the notion that different mechanisms are involved when individuals are not experts at the task. With respect to SDT, choking can occur when individuals are not skilled (Study 2) but in these circumstances the role played by autonomous motivation is completely different; autonomous motivation may not facilitate performance in this context, rather it may interfere with it.

Findings also shed light on previous studies examining individual differences in choking propensity (e.g., Adegbesan, 2007; Baumeister, 1984). Previous research has found that "psychologically resilient" athletes are those with low self-consciousness, low trait anxiety and adaptive coping strategies (e.g., Masters et al., 1993; Mesagno et al., 2008; Wang et al., 2004a; 200b). Findings from this dissertation (Studies 1, 2 and 3) suggest that

motivational orientation may explain additional variance in one's propensity to perform under pressure and further expands our understanding of the importance of dispositional characteristics in the context of sport performance.

Current findings yield support for exploring situational variables that contribute to choking under pressure in addition to dispositional variables. Via experimental manipulation (Study 2) of self-awareness and asking particular questions related to the pressure situation (Studies 2, 3 and 4), our findings expand on previous research focusing on situational mechanisms that may explain performance decrements under pressure (e.g., ego-relevance, anxiety, distraction/concentration, negative emotions, and confidence; Arent & Landers, 2003; Baumeister et al., 1993; Baumeister & Leith, 1996; Lewis & Linder, 1997; Mahoney et al., 1987; Masters, 1992). Additionally, previous research has suggested that increased self-awareness has a negative impact on performance. More specifically, it has been suggested that increased self-awareness increases impulsivity and leads to an abandonment of game plans (Leith & Baumeister, 1996), decreases speed of skill execution (Beilock et al., 2008; Butler & Baumeister, 1998; Heaton & Sigall, 1991) and leads athletes to focus on avoiding losing rather than on winning (Wallace, Baumeister, & Vohs, 2005). As demonstrated in Studies 2, 3, and 4, current findings suggest that self-awareness does indeed alter the quality of performance. These findings not only expand the definition of choking but also provide support for the relationship between self-awareness and behavioural consequences. Furthermore, not only did current findings expand and develop the definition and criteria of choking but it also provided insight into the different ways that choking can be examined, tested and observed (i.e., via questionnaires, a controlled laboratory environment, a field study, and a qualitative design).

Findings from this dissertation also have important theoretical contributions to the field of SDT. The majority of research in SDT has been focused on need-fulfillment, well-being, persistence over time, and enjoyment of activities. Researchers using an SDT framework have found important links between the impact of extrinsic rewards on intrinsic motivation and between autonomous motivation and successful self-regulation of behaviour (Deci et al., 1999; Deci & Ryan, 2008). Current findings are therefore important within theory development while also expanding the application of SDT to choking in a sport context.

Current findings broaden the scope between motivation and goal orientations and situational goals. Although significant relationships were found between autonomous sport motivation and task orientation and between controlled sport motivation and ego-involved orientation (Study 3 and Study 4), our findings did not lend specific support for the direct relationship between goal orientations and performance under pressure. Rather, it appears that the tenets and definitions of goal orientations were helpful in the identification of specific components of the competition that athletes focus on (i.e., task focus or ego-involved focus) and the associated performance outcomes, from both qualitative and quantitative perspectives. Specifically, what an athlete tends to focus on is subsequently related to the amount of pressure an athlete may put on him/herself to perform well, which can then increase feelings of self-awareness, ultimately impacting performance.

In sum, findings from the current dissertation offer some insight into both dispositional and situational variables that impact performance under pressure which have important applications for athletes, coaches, and sport psychologists in terms of potential training and intervention goals and strategies. In the choking literature, it has been suggested that athletes may be able to be trained to avoid choking. For example, Liao and

Masters (2001) provided analogous instructions to train table tennis players to more implicitly hit topspin forehands. Wan and Huon (2005) and Beilock and Carr (2001) have demonstrated that subjecting participants to videotape prior to a pressure task facilitates better performance under pressure. However, as Baumeister and Showers (1986) noted, “development of therapeutic techniques for ameliorating choking should wait until this debate [about conceptual models] is over.”(p.377). Therefore, findings from this dissertation can be further developed within the SDT framework to ultimately guide and develop interventions for successful performance under pressure. Current findings therefore provide insight into the necessity of having a clear conceptualization of motivational and self-regulatory processes in the context of performance under pressure. While there needs to be additional research in the area of SDT and choking, our findings do suggest a starting point that may potentially lead to more effective practical strategies to prevent choking, perhaps even facilitate better performance under pressure, and subsequently may enable athletes to achieve more fulfilling and longer athletic careers. Moreover, similar to Mesagno and colleagues (2008), who have tested a theory-matched intervention for choking, the tenets of SDT could be used to derive a similar intervention based on motivation and goals. However, as previously suggested, more research is needed in this area before conducting intervention studies.

Limitations

There are some limitations of this research that should be considered in the interpretation of its results.

While the first questionnaire study (Study 1) demonstrated that athletes who are more autonomously motivated are more likely to perceive themselves to perform well under pressure, both the laboratory study (Study 2) and the field study (Study 3) were point

in time performances and as the last questionnaire study (Study 4) revealed, all athletes can have some great performances and some poorer than expected performances. Subsequently, a limitation of this program of research is that it did not follow the same participants over time to determine patterns of performance, ultimately failing to provide important information about the consistency of performance over time. Future field studies could address this issue by following an athlete's performance throughout the sporting year and competitive season. Future laboratory studies could address this issue by testing participants over several sessions to determine the pattern of responses and then determine participants that are more likely to consistently perform poorly under pressure.

A second methodological shortcoming was the lack of consistency in samples across studies. Specifically, novices were used in the laboratory study whereas experts/skilled athletes were used in the other studies. Along these same lines, the laboratory is a controlled environment and while the basketball arcade game is a close representation to shooting baskets, the mechanics are slightly different, and it is not precisely the same as playing basketball in a naturalistic context. Additionally, we were not solely using athletes in this laboratory study and it is plausible that athletes may react differently to pressure given that they may be better accustomed to competing under pressure. Lewis and Linder (1997) found that college students who practiced putting while being videotaped were inoculated to putt under conditions of heightened self-awareness, and subsequently the high pressure situation did not interfere with accuracy. The generalizability of the laboratory and field studies is somewhat tenuous given that they are very specific sporting contexts. Previous research has reported variability in choking based on sport differences (e.g., Adegbesan, 2007). Therefore, future studies should address the sample shortcoming by following athletes from several sports, and bringing these athletes

into a controlled laboratory setting and recording their performance in a field setting over several sessions over time.

A third shortcoming is that two out of the four studies relied solely on self-report measures of choking and subsequent correlational and mean difference analyses cannot determine directionality or causality. Therefore, these results are thus subject to the various problems pertaining to self-report measures. In order for self-report measures to be accurate, participants must decide to respond honestly and accurately. We hope to have minimized biases such as social desirability by explicitly asking participants to answer the questionnaires as honestly as possible, as well as making them anonymous and confidential. We also kept the questionnaires as short as possible, in order to minimize carelessness. However, we are solely basing findings on their perceptions which may be biased and present as justifications of performances. Furthermore, we based findings on retrospective accounts which are subject to biases including changes in memory and personal reflections.

A further psychometric limitation relates to the scales themselves, some of which were based on only one item, or were not validated. While the PPUPS yielded interesting findings (Study 1) and facilitated the development of a laboratory experiment to test choking in a more controlled environment (Study 2), it is important that the PPUPS be further validated and replicated as a measure of performance under pressure. Additionally, although previous research has provided strong support for the use of SMS, the scale is focused on why athletes participate in their particular sports. This may be different than why athletes compete. Therefore, based on the SMS, future researchers could develop a measure that would be used specifically to address motivation to perform/compete under pressure within an SDT framework. Additionally, although we found significant

relationships between SDT and goal orientations, it might be beneficial for future research to focus on using a more comprehensive model of goal orientation taken from the educational psychology literature whereby task and ego-involved goals can be differentiated into approach and avoidance valence dimensions which may be better predictors of changes in behavioural regulation (e.g., 2x2 achievement goal model; Elliot, 1999; Elliot & McCregor, 2001).

Finally, although outside the scope of this thesis, a shortcoming was not to investigate the coping strategies of athletes and the pre-game planning and preparation components of competition. It is plausible that coping strategies may interact with motivational orientations to help explain performance under varying pressure conditions. Along these same lines, preparation can provide direction and solutions to obstacles that occur over the course of a performance and deliberate practice under competition conditions may serve as a buffer to the effects of the pressure context. Therefore, future research may also include an inventory of coping styles/strategies (e.g., Anshel & Kaissidis, 1997; Gaudreau, & Antl, 2008; Louvet, Gaudreau, Menaut, Genty, & Deneuve, 2009) and explore planning and preparation and how this interacts with self-determination to further explain variations in performance.

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Appendix A
Measures used in Study 1

Sport Motivation Scale (SMS)

WHY DO YOU PRACTICE YOUR SPORT?

Using the scale below, please indicate to what extent each of the following items corresponds to one of the reasons for which you are presently practicing your sport.

1. I used to have good reasons for practicing my sport, but now I am asking myself if I should continue.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

2. Because practicing my sport reflects the essence of whom I am.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

3. I don't know anymore; I have the impression that I am incapable of succeeding in my sport.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

4. Because it allows me to be well regarded by people that I know.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

5. Because, in my opinion, it is one of the best ways to meet people.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

6. Because it is absolutely necessary to practice my sport if one wants to be in shape.

1	2	3	4	5	6	7
<i>Does not</i>			<i>Corresponds</i>			<i>Corresponds</i>
<i>correspond at all</i>			<i>moderately</i>			<i>completely</i>

7. For the prestige of being an athlete.

1	2	3	4	5	6	7
<i>Does not</i>			<i>Corresponds</i>			<i>Corresponds</i>
<i>correspond at all</i>			<i>moderately</i>			<i>completely</i>

8. Because it is one of the best ways I have chosen to develop other aspects of myself.

1	2	3	4	5	6	7
<i>Does not</i>			<i>Corresponds</i>			<i>Corresponds</i>
<i>correspond at all</i>			<i>moderately</i>			<i>completely</i>

9. For the pleasure I feel while improving some of my weak points.

1	2	3	4	5	6	7
<i>Does not</i>			<i>Corresponds</i>			<i>Corresponds</i>
<i>correspond at all</i>			<i>moderately</i>			<i>completely</i>

10. For the excitement I feel when I am really involved in the activity.

1	2	3	4	5	6	7
<i>Does not</i>			<i>Corresponds</i>			<i>Corresponds</i>
<i>correspond at all</i>			<i>moderately</i>			<i>completely</i>

11. Because I must practice my sport to feel good about myself.

1	2	3	4	5	6	7
<i>Does not</i>			<i>Corresponds</i>			<i>Corresponds</i>
<i>correspond at all</i>			<i>moderately</i>			<i>completely</i>

12. For the satisfaction I experience while I am perfecting my abilities.

1	2	3	4	5	6	7
<i>Does not</i>			<i>Corresponds</i>			<i>Corresponds</i>
<i>correspond at all</i>			<i>moderately</i>			<i>completely</i>

13. Because people around me think it is important to be in shape.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

14. Because participating in my sport is an integral part of my life.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

15. Because it is a good way to learn lots of things which could be useful to me in other areas of my life.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

16. For the intense emotions that I feel while I am practicing a sport that I like.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

17. It is not clear to me anymore; I don't really think my place is in my sport.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

18. Because I would feel bad if I was not taking the time to do it.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

19. Because through my sport, I am living in line with my deepest principles.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

20. To show others how good I am at my sport.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

21. Because it is one of the best ways to maintain good relationships with my friends.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

22. Because I must practice my sport regularly.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

23. Because by doing it I am fully expressing my deepest values.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

24. I often ask myself; I can't seem to achieve the goals that I set for myself.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

**Perception of Performance Under Pressure Survey
PPUPS**

SECTION A

1. Please identify a specific competitive sport that you feel competent/skilled (Note that if you are currently participating in more than one sport, please choose the sport that you feel *most* competent in):

2. For how many years have you played the above listed sport?

3. At what level of competition do you *currently* play the above listed sport?

4. How competitive do you feel when you are participating in this sport?

1	2	3	4	5	6	7
<i>Not At All</i>			<i>Somewhat</i>			<i>Extremely</i>

SECTION B

Using the sport you listed in Section A, please indicate the extent to which **you agree in general** with the following pressure situations (If the particular item does not apply to your sport, please circle 0 for Not Applicable (N/A)). NOTE: Pressure in this context is defined as: a situation where you care about the outcome of your performance and that you perceive your performance to be important/instrumental in attaining a desired outcome (i.e., you want to perform at a high level to do well).

5. I perform at my best when being observed

1	2	3	4	5	6	7
<i>Strongly Disagree</i>			<i>Neutral</i>			<i>Strongly Agree</i>

6. I perform at my best when it is my last opportunity to perform well (i.e., championship game)

1	2	3	4	5	6	7
<i>Strongly Disagree</i>			<i>Neutral</i>			<i>Strongly Agree</i>

7. I perform at my best when my I am being selected for a position

1	2	3	4	5	6	7
<i>Strongly Disagree</i>			<i>Neutral</i>			<i>Strongly Agree</i>

8. I perform at my best when there is a time-crunch

1	2	3	4	5	6	7
<i>Strongly Disagree</i>			<i>Neutral</i>			<i>Strongly Agree</i>

9. I perform at my best when I have only one opportunity to be evaluated

1	2	3	4	5	6	7
<i>Strongly Disagree</i>			<i>Neutral</i>			<i>Strongly Agree</i>

10. I perform at my best when there is a medal/title to be won

1	2	3	4	5	6	7
<i>Strongly</i>			<i>Neutral</i>			<i>Strongly</i>
<i>Disagree</i>						<i>Agree</i>

11. I perform at my best in front of an audience of evaluators/experts

1	2	3	4	5	6	7
<i>Strongly</i>			<i>Neutral</i>			<i>Strongly</i>
<i>Disagree</i>						<i>Agree</i>

12. I perform at my best when my performance has implications on colleagues/teammates (i.e., someone else is counting on me)

1	2	3	4	5	6	7
<i>Strongly</i>			<i>Neutral</i>			<i>Strongly</i>
<i>Disagree</i>						<i>Agree</i>

13. I perform at my best when there is an opportunity for advancement/promotion

1	2	3	4	5	6	7
<i>Strongly</i>			<i>Neutral</i>			<i>Strongly</i>
<i>Disagree</i>						<i>Agree</i>

SECTION C

Using the sport you listed in Section A, please answer the following questions about you feel towards performance under pressure *in general*. NOTE: **Pressure** in this context is defined as: a situation where you care about the outcome of your performance and that you perceive your performance to be important/instrumental in attaining a desired outcome (i.e., you want to perform at a high level to do well)

14. To which extent do you find performing under pressure fun?

1	2	3	4	5	6	7
<i>Not At All</i>			<i>Somewhat</i>			<i>Extremely</i>

15. To which extent do you think you perform well under pressure?

1	2	3	4	5	6	7
<i>Not At All</i>			<i>Somewhat</i>			<i>Extremely</i>

16. To which extent do you look forward to performing under pressure?

1	2	3	4	5	6	7
<i>Never</i>			<i>Sometimes</i>			<i>Always</i>

17. To which extent do you feel confident in your performance under pressure?

1	2	3	4	5	6	7
<i>Not At All</i>			<i>Somewhat</i>			<i>Extremely</i>

Appendix B

Measures used in Study 2

Global Motivation Scale (GMS)

“General Attitudes”

Please indicate to what extent each of the following statements corresponds to the reasons why you generally do things.

	Does not correspond at all (1)		Corresponds moderately (4)		Corresponds exactly (7)	
In general, I do things...						
1. ... because by doing them I am fully expressing my deepest values	1	2	3	4	5	6 7
2. ...in order to help myself become the person I aim to be.	1	2	3	4	5	6 7
3. ...because I like making interesting discoveries.	1	2	3	4	5	6 7
4. ...because I would beat myself up for not doing them.	1	2	3	4	5	6 7
5. ...because I want to be viewed more positively by certain people.	1	2	3	4	5	6 7
6...because I chose them as means to attain my objectives.	1	2	3	4	5	6 7
7. ...for the pleasure of acquiring new knowledge.	1	2	3	4	5	6 7
8. ...because they reflect what I value most in life	1	2	3	4	5	6 7
9. ...because otherwise I would feel guilty for not doing them.	1	2	3	4	5	6 7
10. ...although it does not make a difference whether I do them or not.	1	2	3	4	5	6 7
11. ...for the pleasant sensations I feel while I am doing them.	1	2	3	4	5	6 7
12. ...in order to show others what I am capable of.	1	2	3	4	5	6 7
13. ...because I chose them in order to attain what I desire.	1	2	3	4	5	6 7
14. ...even though I do not have a good reason for doing them.	1	2	3	4	5	6 7
15. ...in order to attain prestige.	1	2	3	4	5	6 7
16. ...because by doing them I am living in line with my deepest principles.	1	2	3	4	5	6 7
17. ...because I would feel bad if I do not do them.	1	2	3	4	5	6 7
18. ...even though I believe they are not worth the trouble.	1	2	3	4	5	6 7

Organized Sport Involvement

Please answer the following questions about your *current* and *past* involvement in organized sport.

1. Do you *currently* play any type of organized sport?

Yes *No* (If no, please go directly to question 5)

2. Please list all sports that you are *currently* playing:

3. For how many years have you played the sport(s)?

4. At what level of competition do you *currently* play the sport(s)?

5. Have you played organized sports that you no longer play?

Yes *No*

6. Please list the organized sport(s) that you have played but are no longer playing:

7. For how many years did you play the sport(s)?

8. What was the highest level of competition that you participated in?

Pre-Task Questionnaire

Before we begin the basketball arcade game, please answer the following questions. Circle the response that best represents your current situation.

1. Have you ever played a basketball arcade game like this before?

Yes No

2. If yes, roughly how many times have you played this game?

a. 0-2 b. 3-5 c. 6-8 d. 9-12 e. 13-15 f. 16-18 g. 19+

3. How important is performing well on this task for you?

1	2	3	4	5	6	7
<i>Not At All</i>			<i>Moderately</i>			<i>Extremely</i>
<i>Important</i>			<i>Important</i>			<i>Important</i>

4. How motivated are you to perform well using this basketball arcade game?

1	2	3	4	5	6	7
<i>Not At All</i>			<i>Moderately</i>			<i>Extremely</i>
<i>Motivated</i>			<i>Motivated</i>			<i>Motivated</i>

5. How well do you expect to do at shooting hoops using this basketball arcade game?

1	2	3	4	5	6	7
<i>Extremely</i>			<i>Moderately</i>			<i>Extremely</i>
<i>Poorly</i>			<i>Well</i>			<i>Well</i>

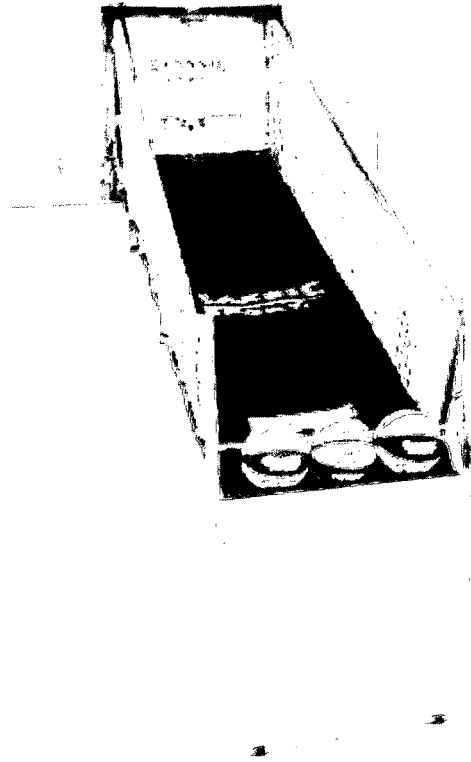
6. How anxious do you feel about shooting hoops using this basketball arcade game?

1	2	3	4	5	6	7
<i>Not At All</i>			<i>Moderately</i>			<i>Extremely</i>
<i>Anxious</i>			<i>Anxious</i>			<i>Anxious</i>

7. How self-conscious do you feel right now?

1	2	3	4	5	6	7
<i>Not At All</i>			<i>Moderately</i>			<i>Extremely</i>
<i>Self-Conscious</i>			<i>Self-Conscious</i>			<i>Self-Conscious</i>

***Sport Performance Task (pictorial representation): The SO Classic Sport X0604 Indoor
Arcade Hoops Cabinet Basketball Game***



LABORATORY SCRIPT

In the office while participant is sitting at desk, All participants will be told the following prior to commencing the trials :

“The task today will consist of 3 separate trials; trial 1 will permit you to practice playing the basketball arcade game, trial 2 will again be a practice trial but this time you will have practice with the basketball arcade game using the timer. There will be a third trial and instructions for this trial will follow after you have completed trial 2. I will be present for all three trials. Do you have any questions before we begin?”

(the researcher will answer any questions at this time. Keep answers brief and if you don't know or if you think it would compromise the testing, simply state that you don't know)

-step outside to arcade game

TRIAL 1:

All participants will be given 2 minutes of practice time, with the researcher timing the trial. All participants will be read the following script:

“You will have a couple minutes to get used to shooting the basketball from this point on the floor (show participant where to stand) “no two handed overhand or underhand” (show participants what you mean with your hands). If a ball falls on the floor, you can just leave it and use the remaining balls. Try your best to sink as many baskets as possible during practice time. I will tell you when to start and when to stop. Please do not start shooting until I say Go.

(stand directly behind participant)

Okay, are you ready...Go.”

TRIAL 2:

All participants will be given 60 seconds of practice time. The practice time will be timed by a visible timer on the basketball arcade game. All participants will be read the following script:

“The next trial is similar to the one you just did, except this time we will put the timer on for 60 seconds (researcher will show participant where the timer is, identifying that the timer is in the middle of the board). Try your best to sink as many baskets as possible during the 60 seconds. Please do not start shooting until I say Go.

Okay, are you ready ...Go.”

TRIAL 3:

Prior to conducting the final 60-second trial,

Participants in the **Time Pressure and Self-Awareness Condition** will be read the following:

*“For the last trial, I will be turning on the webcam. Your shooting technique will be recorded to evaluate your reaction and your performance through the last minute to gain a better understanding of how people react in these conditions. This will be your last 60 second trial and the goal of this trial is to beat your score from the second trial. Your score was **(participant’s score from last trial, point to timer)**. Your score from the 2nd trial will stay on the left hand with the timer in the middle and the new score on the right hand side. So again, you must get higher than **(state the actual value of participant’s score from last trial)**. Because this is the last trial, this is the score that’s going to count.”*

(Before continuing with instructions, researcher will set up the webcam facing participants. Angle camera so that it is at a good angle so that it looks like the view is on their face)

- Go to where the participant is standing look at the participant and then look up at the webcam stating “okay, that should be the right angle.” (if it doesn’t look like the right angle, adjust as necessary and then state that it is the right angle)

“A green light will appear once it is recording. I want you to look at the webcam and let me know when you see a faint green light appear. It will show up right under the grey circle/view finder.”

(Plug webcam into the laptop, open up laptop partially so that the recording image is showing). *“Can you see the green light (participant will say yes), okay good that means we are recording.”*

(if participant can’t see green light, unplug, provide instructions again on where to look and then plug in again)

Okay so as I just mentioned, this is the trial that is going to count and the goal of this trial is to beat your last score.”

Okay, are you ready...Go.”

Note: After trial is finished, unplug webcam and close laptop. Bring participant back into the office to complete the post-task questionnaire.

TRIAL 3:

Participants in the **Time Pressure Only Condition** will be read the following:

*“This will be your last 60 second trial and the goal of this trial is to beat your score from the second trial. Your score was **(participant’s score from last trial, point to timer)**. Your score from the 2nd trial will stay on the left hand with the timer in the middle and the new score on the right hand side. So again, you must get higher than **(state the actual value of participant’s score from last trial)**. Because this is the last trial, this is the score that’s going to count.”*

Please do not start until I say Go. Okay, are you ready... Go.”

Note: After trial is finished, unplug webcam and close laptop. Bring participant back into the office to complete the post-task questionnaire.

Post-Task Questionnaire

We are interested in obtaining a bit more information about your experience during the experiment. Please answer the following questions as best as you can.

1. How competent did you feel while shooting hoops in the *last* trial?

1	2	3	4	5	6	7
<i>Extremely Incompetent</i>			<i>Moderately Competent</i>			<i>Extremely Competent</i>

2. How anxious were you during the *last* trial?

1	2	3	4	5	6	7
<i>Not At All Anxious</i>			<i>Moderately Anxious</i>			<i>Extremely Anxious</i>

3. How self-conscious did you feel during the *last* trial?

1	2	3	4	5	6	7
<i>Not At All Self-Conscious</i>			<i>Moderately Self-Conscious</i>			<i>Extremely Self-Conscious</i>

4. How much pressure did you feel during the *last* trial?

1	2	3	4	5	6	7
<i>No Pressure</i>			<i>Moderate Pressure</i>			<i>A lot of Pressure</i>

5. We would like you to think back to all three trials. Which trial did you feel the most pressure? Please circle only ONE response.

a) Trial 1 (2 minute practice trial)

b) Trial 2 (1 minute trial with the timer)

c) Trial 3 (1 minute trial where you had to beat your score from trial 2)

6. How well do you think you did overall?

1	2	3	4	5	6	7
<i>Extremely Poorly</i>			<i>Moderately Well</i>			<i>Extremely Well</i>

Appendix C
Measures used in Study 3

Sport Motivation Scale (SMS)

WHY DO YOU PRACTICE YOUR SPORT?

Using the scale below, please indicate to what extent each of the following items corresponds to one of the reasons for which you are presently practicing your sport.

1. I used to have good reasons for practicing my sport, but now I am asking myself if I should continue.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

2. Because practicing my sport reflects the essence of whom I am.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

3. I don't know anymore; I have the impression that I am incapable of succeeding in my sport.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

4. Because it allows me to be well regarded by people that I know.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

5. Because, in my opinion, it is one of the best ways to meet people.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

6. Because it is absolutely necessary to practice my sport if one wants to be in shape.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

7. For the prestige of being an athlete.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

8. Because it is one of the best ways I have chosen to develop other aspects of myself.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

9. For the pleasure I feel while improving some of my weak points.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

10. For the excitement I feel when I am really involved in the activity.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

11. Because I must practice my sport to feel good about myself.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

12. For the satisfaction I experience while I am perfecting my abilities.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

13. Because people around me think it is important to be in shape.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

14. Because participating in my sport is an integral part of my life.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

15. Because it is a good way to learn lots of things which could be useful to me in other areas of my life.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

16. For the intense emotions that I feel while I am practicing a sport that I like.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

17. It is not clear to me anymore; I don't really think my place is in my sport.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

18. Because I would feel bad if I was not taking the time to do it.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

19. Because through my sport, I am living in line with my deepest principles.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

20. To show others how good I am at my sport.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

21. Because it is one of the best ways to maintain good relationships with my friends.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

22. Because I must practice my sport regularly.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

23. Because by doing it I am fully expressing my deepest values.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

24. I often ask myself; I can't seem to achieve the goals that I set for myself.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

Task and Ego Orientation in Sport Questionnaire

TEOSQ

Please indicate the extent to which you agree with the following statements.

I feel most successful in sport when...

1. I'm the only one who can do the play or skill

1	2	3	4	5
<i>Do Not</i>	<i>Somewhat</i>	<i>Agree</i>	<i>Almost</i>	<i>Always</i>
<i>Agree at All</i>	<i>Agree</i>		<i>Always Agree</i>	<i>Agree</i>

2. I learn a new skill and it makes me want to practice more

1	2	3	4	5
<i>Do Not</i>	<i>Somewhat</i>	<i>Agree</i>	<i>Almost</i>	<i>Always</i>
<i>Agree at All</i>	<i>Agree</i>		<i>Always Agree</i>	<i>Agree</i>

3. I can do better than my friends

1	2	3	4	5
<i>Do Not</i>	<i>Somewhat</i>	<i>Agree</i>	<i>Almost</i>	<i>Always</i>
<i>Agree at All</i>	<i>Agree</i>		<i>Always Agree</i>	<i>Agree</i>

4. The others can't do as well as me

1	2	3	4	5
<i>Do Not</i>	<i>Somewhat</i>	<i>Agree</i>	<i>Almost</i>	<i>Always</i>
<i>Agree at All</i>	<i>Agree</i>		<i>Always Agree</i>	<i>Agree</i>

5. I learn something that is fun to do

1	2	3	4	5
<i>Do Not</i>	<i>Somewhat</i>	<i>Agree</i>	<i>Almost</i>	<i>Always</i>
<i>Agree at All</i>	<i>Agree</i>		<i>Always Agree</i>	<i>Agree</i>

6. Other "mess-up" and I don't

1	2	3	4	5
<i>Do Not</i>	<i>Somewhat</i>	<i>Agree</i>	<i>Almost</i>	<i>Always</i>
<i>Agree at All</i>	<i>Agree</i>		<i>Always Agree</i>	<i>Agree</i>

7. I learn a new skill by trying hard

1	2	3	4	5
<i>Do Not</i>	<i>Somewhat</i>	<i>Agree</i>	<i>Almost</i>	<i>Always</i>
<i>Agree at All</i>	<i>Agree</i>		<i>Always Agree</i>	<i>Agree</i>

8. I work really hard

1	2	3	4	5
<i>Do Not</i>	<i>Somewhat</i>	<i>Agree</i>	<i>Almost</i>	<i>Always</i>
<i>Agree at All</i>	<i>Agree</i>		<i>Always Agree</i>	<i>Agree</i>

9. I score the most points/goals/hits, etc.

1	2	3	4	5
<i>Do Not</i>	<i>Somewhat</i>	<i>Agree</i>	<i>Almost</i>	<i>Always</i>
<i>Agree at All</i>	<i>Agree</i>		<i>Always Agree</i>	<i>Agree</i>

10. Something I learn makes me want to go and practice more

1	2	3	4	5
<i>Do Not</i>	<i>Somewhat</i>	<i>Agree</i>	<i>Almost</i>	<i>Always</i>
<i>Agree at All</i>	<i>Agree</i>		<i>Always Agree</i>	<i>Agree</i>

11. I'm the best

1	2	3	4	5
<i>Do Not</i>	<i>Somewhat</i>	<i>Agree</i>	<i>Almost</i>	<i>Always</i>
<i>Agree at All</i>	<i>Agree</i>		<i>Always Agree</i>	<i>Agree</i>

12. A skill I learn really feels right

1	2	3	4	5
<i>Do Not</i>	<i>Somewhat</i>	<i>Agree</i>	<i>Almost</i>	<i>Always</i>
<i>Agree at All</i>	<i>Agree</i>		<i>Always Agree</i>	<i>Agree</i>

13. I do my very best

1	2	3	4	5
<i>Do Not</i>	<i>Somewhat</i>	<i>Agree</i>	<i>Almost</i>	<i>Always</i>
<i>Agree at All</i>	<i>Agree</i>		<i>Always Agree</i>	<i>Agree</i>

Pre-Meet Online Questionnaire

Please answer the following questions about what you plan to focus on during the Olympic Trials

Section A

1. Please list all event categories in which you will be racing (e.g., 200 IM)

1 2 3 4

2. Please specify a specific time that you would like to achieve for each event:

Event 1:

Event 2:

Event 3:

Event 4:

3. To which extent is it important to you to achieve this time?

Event 1:.	1	2	3	4	5	6	7
	<i>Not At All</i>			<i>Moderately</i>			<i>Extremely</i>

Event 2:.	1	2	3	4	5	6	7
	<i>Not At All</i>			<i>Moderately</i>			<i>Extremely</i>

Event 3:.	1	2	3	4	5	6	7
	<i>Not At All</i>			<i>Moderately</i>			<i>Extremely</i>

Event 4:.	1	2	3	4	5	6	7
	<i>Not At All</i>			<i>Moderately</i>			<i>Extremely</i>

4. Please specify a specific rank that you would like to achieve for each event:

Event 1:

Event 2:

Event 3:

Event 4:

5. To which extent is it important to you to achieve this rank?

Event 1:.	1	2	3	4	5	6	7
	<i>Not At All</i>			<i>Moderately</i>			<i>Extremely</i>

Event 2:.	1	2	3	4	5	6	7
	<i>Not At All</i>			<i>Moderately</i>			<i>Extremely</i>

Event 3:.	1	2	3	4	5	6	7
	<i>Not At All</i>			<i>Moderately</i>			<i>Extremely</i>

Event 4:.	1	2	3	4	5	6	7
	<i>Not At All</i>			<i>Moderately</i>			<i>Extremely</i>

6. To which extent is it important to you to make the Olympic team?

1	2	3	4	5	6	7
<i>Not At All</i>			<i>Moderately</i>			<i>Extremely</i>

7. To which extent is it important to you to make other national teams?

1	2	3	4	5	6	7
<i>Not At All</i>			<i>Moderately</i>			<i>Extremely</i>

8. During the Olympic trials, *I plan to focus on...*:

i) improving technique

1	2	3	4	5	6	7
<i>Never</i>	<i>Rarely</i>		<i>Sometimes</i>		<i>Most of the time</i>	<i>All the Time</i>

ii) not disappointing others

1	2	3	4	5	6	7
<i>Never</i>	<i>Rarely</i>		<i>Sometimes</i>		<i>Most of the time</i>	<i>All the Time</i>

iii) bodily sensations (e.g., heart rate, muscle tension):

1	2	3	4	5	6	7
<i>Never</i>	<i>Rarely</i>		<i>Sometimes</i>		<i>Most of the time</i>	<i>All the Time</i>

iv) achieving specific splits:

1	2	3	4	5	6	7
<i>Never</i>	<i>Rarely</i>		<i>Sometimes</i>		<i>Most of the time</i>	<i>All the Time</i>

v) not looking bad:

1	2	3	4	5	6	7
<i>Never</i>	<i>Rarely</i>		<i>Sometimes</i>		<i>Most of the time</i>	<i>All the Time</i>

vi) proving myself to others:

1	2	3	4	5	6	7
<i>Never</i>	<i>Rarely</i>		<i>Sometimes</i>		<i>Most of the time</i>	<i>All the Time</i>

vii) my body moving through the water:

1	2	3	4	5	6	7
<i>Never</i>	<i>Rarely</i>		<i>Sometimes</i>		<i>Most of the time</i>	<i>All the Time</i>

viii) pleasing my coach:

1	2	3	4	5	6	7
<i>Never</i>	<i>Rarely</i>		<i>Sometimes</i>		<i>Most of the time</i>	<i>All the Time</i>

ix) correcting previous mistakes I made:

1	2	3	4	5	6	7
<i>Never</i>	<i>Rarely</i>		<i>Sometimes</i>		<i>Most of the time</i>	<i>All the Time</i>

Post-event questions

Please answer the following questions about the event you just completed.

1. To which extent did you feel anxious *right before* the race started?

1	2	3	4	5	6	7
<i>Not At All</i>			<i>Moderately</i>			<i>Extremely</i>
<i>Anxious</i>			<i>Anxious</i>			<i>Anxious</i>

2. To which extent did you feel anxious *during* the race?

1	2	3	4	5	6	7
<i>Not At All</i>			<i>Moderately</i>			<i>Extremely</i>
<i>Anxious</i>			<i>Anxious</i>			<i>Anxious</i>

3. How much pressure did you feel *right before* the race?

1	2	3	4	5	6	7
<i>No</i>			<i>Moderate</i>			<i>A lot of</i>
<i>Pressure</i>			<i>Pressure</i>			<i>Pressure</i>

4. How much pressure did you feel *during* the race?

1	2	3	4	5	6	7
<i>No</i>			<i>Moderate</i>			<i>A lot of</i>
<i>Pressure</i>			<i>Pressure</i>			<i>Pressure</i>

Appendix D
Measures used in Study 4

Sport Motivation Scale (SMS)

WHY DO YOU PRACTICE YOUR SPORT?

Using the scale below, please indicate to what extent each of the following items corresponds to one of the reasons for which you are presently practicing your sport.

1. I used to have good reasons for practicing my sport, but now I am asking myself if I should continue.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

2. Because practicing my sport reflects the essence of whom I am.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

3. I don't know anymore; I have the impression that I am incapable of succeeding in my sport.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

4. Because it allows me to be well regarded by people that I know.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

5. Because, in my opinion, it is one of the best ways to meet people.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

6. Because it is absolutely necessary to practice my sport if one wants to be in shape.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

7. For the prestige of being an athlete.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

8. Because it is one of the best ways I have chosen to develop other aspects of myself.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

9. For the pleasure I feel while improving some of my weak points.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

10. For the excitement I feel when I am really involved in the activity.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

11. Because I must practice my sport to feel good about myself.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

12. For the satisfaction I experience while I am perfecting my abilities.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

13. Because people around me think it is important to be in shape.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

14. Because participating in my sport is an integral part of my life.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

15. Because it is a good way to learn lots of things which could be useful to me in other areas of my life.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

16. For the intense emotions that I feel while I am practicing a sport that I like.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

17. It is not clear to me anymore; I don't really think my place is in my sport.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

18. Because I would feel bad if I was not taking the time to do it.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

19. Because through my sport, I am living in line with my deepest principles.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

20. To show others how good I am at my sport.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

21. Because it is one of the best ways to maintain good relationships with my friends.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

22. Because I must practice my sport regularly.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

23. Because by doing it I am fully expressing my deepest values.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

24. I often ask myself; I can't seem to achieve the goals that I set for myself.

1	2	3	4	5	6	7
<i>Does not correspond at all</i>			<i>Corresponds moderately</i>			<i>Corresponds completely</i>

Task and Ego Orientation in Sport Questionnaire

TEOSQ

Please indicate the extent to which you agree with the following statements.

I feel most successful in sport when...

1. I'm the only one who can do the play or skill

1	2	3	4	5
<i>Do Not</i>	<i>Somewhat</i>	<i>Agree</i>	<i>Almost</i>	<i>Always</i>
<i>Agree at All</i>	<i>Agree</i>		<i>Always Agree</i>	<i>Agree</i>

2. I learn a new skill and it makes me want to practice more

1	2	3	4	5
<i>Do Not</i>	<i>Somewhat</i>	<i>Agree</i>	<i>Almost</i>	<i>Always</i>
<i>Agree at All</i>	<i>Agree</i>		<i>Always Agree</i>	<i>Agree</i>

3. I can do better than my friends

1	2	3	4	5
<i>Do Not</i>	<i>Somewhat</i>	<i>Agree</i>	<i>Almost</i>	<i>Always</i>
<i>Agree at All</i>	<i>Agree</i>		<i>Always Agree</i>	<i>Agree</i>

4. The others can't do as well as me

1	2	3	4	5
<i>Do Not</i>	<i>Somewhat</i>	<i>Agree</i>	<i>Almost</i>	<i>Always</i>
<i>Agree at All</i>	<i>Agree</i>		<i>Always Agree</i>	<i>Agree</i>

5. I learn something that is fun to do

1	2	3	4	5
<i>Do Not</i>	<i>Somewhat</i>	<i>Agree</i>	<i>Almost</i>	<i>Always</i>
<i>Agree at All</i>	<i>Agree</i>		<i>Always Agree</i>	<i>Agree</i>

6. Other mess-up "and" I don't

1	2	3	4	5
<i>Do Not</i>	<i>Somewhat</i>	<i>Agree</i>	<i>Almost</i>	<i>Always</i>
<i>Agree at All</i>	<i>Agree</i>		<i>Always Agree</i>	<i>Agree</i>

7. I learn a new skill by trying hard

1	2	3	4	5
<i>Do Not</i>	<i>Somewhat</i>	<i>Agree</i>	<i>Almost</i>	<i>Always</i>
<i>Agree at All</i>	<i>Agree</i>		<i>Always Agree</i>	<i>Agree</i>

8. I work really hard

1	2	3	4	5
<i>Do Not</i>	<i>Somewhat</i>	<i>Agree</i>	<i>Almost</i>	<i>Always</i>
<i>Agree at All</i>	<i>Agree</i>		<i>Always Agree</i>	<i>Agree</i>

9. I score the most points/goals/hits, etc.

1	2	3	4	5
<i>Do Not</i>	<i>Somewhat</i>	<i>Agree</i>	<i>Almost</i>	<i>Always</i>
<i>Agree at All</i>	<i>Agree</i>		<i>Always Agree</i>	<i>Agree</i>

10. Something I learn makes me want to go and practice more

1	2	3	4	5
<i>Do Not</i>	<i>Somewhat</i>	<i>Agree</i>	<i>Almost</i>	<i>Always</i>
<i>Agree at All</i>	<i>Agree</i>		<i>Always Agree</i>	<i>Agree</i>

11. I'm the best

1	2	3	4	5
<i>Do Not</i>	<i>Somewhat</i>	<i>Agree</i>	<i>Almost</i>	<i>Always</i>
<i>Agree at All</i>	<i>Agree</i>		<i>Always Agree</i>	<i>Agree</i>

12. A skill I learn really feels right

1	2	3	4	5
<i>Do Not</i>	<i>Somewhat</i>	<i>Agree</i>	<i>Almost</i>	<i>Always</i>
<i>Agree at All</i>	<i>Agree</i>		<i>Always Agree</i>	<i>Agree</i>

13. I do my very best

1	2	3	4	5
<i>Do Not</i>	<i>Somewhat</i>	<i>Agree</i>	<i>Almost</i>	<i>Always</i>
<i>Agree at All</i>	<i>Agree</i>		<i>Always Agree</i>	<i>Agree</i>

“Reflections on My Best versus My Worst Performance under Pressure”

SECTION A

At some point during competition, athletes perform **better** than they usually do or that was expected of them in competitive pressure situations. Thinking back over your athletic competitions, please identify one performance that you would classify as “**my best performance under pressure**” .

NOTE: **Pressure** in this context is defined as: a situation where you care about the outcome of your performance and that you perceive your performance to be important/instrumental in attaining a desired outcome (i.e., you want to perform at a high level to do well)

1a. Please identify your sport:

1b. While there might be more than one performance, please choose one best performance that sticks out the most in your mind. Please be as specific as possible when describing the situation:

2. Why do you think this was your best performance?:

3. In which month/year was this performance? (MM/YYYY):

4. Did you have specific goals before this performance?: Y/N

5. To which extent did you feel confident before the competition?

1	2	3	4	5	6	7
Not at All Confident			Moderately Confident			Extremely Confident

6. To which extent did you feel anxious before the competition?

1	2	3	4	5	6	7
Not At All Anxious			Moderately Anxious			Extremely Anxious

7. To which extent did you feel anxious during the competition?

1	2	3	4	5	6	7
Not At All Anxious			Moderately Anxious			Extremely Anxious

8. To which extent did you feel self-conscious before the competition?

1	2	3	4	5	6	7
Not at All Self-Conscious			Moderately Self-Conscious			Extremely Self-Conscious

9. To which extent did you feel self-conscious during the competition?

1	2	3	4	5	6	7
Not at All			Moderately			Extremely
Self-Conscious			Self-Conscious			Self-Conscious

10. How much pressure did you feel before the event?

1	2	3	4	5	6	7
No			Moderate			A lot of
Pressure			Pressure			Pressure

11. How much pressure did you feel during the event?

1	2	3	4	5	6	7
No			Moderate			A lot of
Pressure			Pressure			Pressure

12. During the competition, I *focused* on...:

i) improving technique

1	2	3	4	5	6	7
Not at All			Moderately			Extremely

ii) proving myself to others

1	2	3	4	5	6	7
Not at All			Moderately			Extremely

iii) trying my best

1	2	3	4	5	6	7
Not at All			Moderately			Extremely

iv) not disappointing others

1	2	3	4	5	6	7
Not at All			Moderately			Extremely

v) not looking bad

1	2	3	4	5	6	7
Not at All			Moderately			Extremely

vi) gaining experience

1	2	3	4	5	6	7
Not at All			Moderately			Extremely

vii) pleasing coach

1	2	3	4	5	6	7
Not at All			Moderately			Extremely

13. To which extent did distractions deter you from focusing on your original plan for the competition?

1	2	3	4	5	6	7
Not at All			Sometimes			Always

14. To which extent were you able to re-focus on your original plan after distractions?

1	2	3	4	5	6	7
Not at All			Sometimes			Always

SECTION B

At some point during competition, athletes also perform **worse** than they usually do or that was expected of them in competitive pressure situations. Thinking back over your athletic competitions, please identify one performance that you would classify as “**my worst performance under pressure**” .

NOTE: Pressure in this context is defined as: a situation where you care about the outcome of your performance and that you perceive your performance to be important/instrumental in attaining a desired outcome (i.e., you want to perform at a high level to do well). **Please use the same sport as the one you used to describe your best performance.**

1. While there might be more than one performance, please choose one worst performance under pressure that sticks out the most in your mind. Please be as specific as possible when describing the situation:

2. Why do you think this was your worst performance?:

3. In which month/year was this performance? (MM/YYYY):

4. Did you have specific goals before this performance?: Y/N

5. To which extent did you feel confident before the competition?

1	2	3	4	5	6	7
Not at All Confident			Moderately Confident			Extremely Confident

6. To which extent did you feel anxious before the competition?

1	2	3	4	5	6	7
Not At All			Moderately			Extremely
Anxious			Anxious			Anxious

7. To which extent did you feel anxious during the competition?

1	2	3	4	5	6	7
Not At All			Moderately			Extremely
Anxious			Anxious			Anxious

8. To which extent did you feel self-conscious before the competition?

1	2	3	4	5	6	7
Extremely			Moderately			Extremely Self-
Conscious			Self-Conscious			Self-Conscious

9. To which extent did you feel self-conscious during the competition?

1	2	3	4	5	6	7
Extremely			Moderately			Extremely Self-
Conscious			Self-Conscious			Self-Conscious

10. How much pressure did you feel before the event?

1	2	3	4	5	6	7
No			Moderate			A lot of
Pressure			Pressure			Pressure

11. How much pressure did you feel during the event?

1	2	3	4	5	6	7
No			Moderate			A lot of
Pressure			Pressure			Pressure

12. During the competition, I *focused* on...:

i) improving technique

1	2	3	4	5	6	7
Not at All			Moderately			Extremely

ii) proving myself to others

1	2	3	4	5	6	7
Not at All			Moderately			Extremely

iii) trying my best

1	2	3	4	5	6	7
Not at All			Moderately			Extremely

iv) not disappointing others

1	2	3	4	5	6	7
Not at All			Moderately			Extremely

v) not looking bad

1	2	3	4	5	6	7
Not at All			Moderately			Extremely

vi) gaining experience

1	2	3	4	5	6	7
Not at All			Moderately			Extremely

vii) pleasing coach

1	2	3	4	5	6	7
Not at All			Moderately			Extremely

13. To which extent did distractions deter you from focusing on your original plan for the competition?

1	2	3	4	5	6	7
Not at All			Sometimes			Always

14. To which extent were you able to re-focus on your original plan after distractions?

1	2	3	4	5	6	7
Not at All			Sometimes			Always