

The perception of mental toughness of student-athletes in their academic and sports domains

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Abstract

The purpose of this study was to investigate university student-athletes' perceptions of mental toughness in both their sport and academic domains. This study took a general qualitative approach through a constructivist lens, to allow for student-athletes' perceptions to shape the understanding of mental toughness. There were a total of 10 participants (3 male and 7 female student-athletes) interviewed from a variety of sports and academics programs. Thematic analysis was used to identify four main themes: the dynamic nature of mental toughness, outcomes of mental toughness, resilience, and relationships. Findings highlighted similarities and differences between sports and academics, that allow for a better understanding of mental toughness in general, specifically amongst this demographic. The theme "The dynamic nature of mental toughness" showed that mental toughness fluctuated within different environmental settings or with varying performance outcomes, but in general it improved over time. Outcomes of mental toughness refer to factors such as confidence that resulted when participants experienced high levels of mental toughness, and also included the pursuit and embrace of a challenge to compete at peak performance, staying consistent, and staying focused on the task. Resilience was mutually understood as an essential characteristic of mental toughness within both sports and academics, and was more pronounced amongst student-athletes when their mental toughness state was high. The theme of relationships was a unique finding that showed how personal and professional relationships contribute to mental toughness differently within sports compared to academics. Forming a personal relationship with a teammate/classmate outside of the direct sport/academic setting helped athletes with their mental toughness. Additionally, it helped form a stronger professional relationship within the respective domains as well, aiding their performance. Across all themes, mental toughness was more prominent in

sports than academics, where student-athletes generally described mental toughness as playing a crucial role in their academics. In addition, results showed support for the unidimensional nature of mental toughness through its general applicability described by participants in both domains without restriction of different dimensions. Therefore, the findings of this study indicate that mental toughness is a crucial psychological resource for student-athletes within both sports and academics.

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Chapter 1: Literature Review

Introduction

Mental toughness is a term that is often linked to outstanding athletic performance. It is often used to encompass all of the psychological skills and characteristics athletes possess and excel at to explain their consistent excellence in performance. However, even though this term is frequently used in the media, amongst coaching staff, and in the sport psychology literature, relatively little is known about this phenomenon and the psychological aspects it encompasses (Jones, 2002).

For more than three decades, sport psychology researchers have devoted themselves to clarifying the concept of mental toughness. Amongst coaches, athletes, and sports psychologists, it is often thought that mental toughness is equally as valuable to athletes as their physical performance skills (Weinberg, Freysinger, Mellano, & Brookhouse, 2016). It has been described as the most important of the psychological characteristics an athlete should possess (Gould, Hodge, Peterson, & Petlichkoff, 1987). Thirty-two years ago, a study by Gould et al. (1987) found that 73% of sport psychology practitioners and coaches felt that mental toughness was an essential component of an athlete's performance, illustrating the widespread belief in its importance. However, amongst those 73%, only 9% felt they were able to successfully help athletes develop mental toughness whilst working with them (Gould et al., 1987). Since this first study, research and practice have come a long way to defining mental toughness and understanding the psychological characteristics underlying it.

Mental toughness has since been shown to separate the good from the great athletes, with good athletes achieving elite level performances, but great athletes able to push their

performance to super-elite levels through a tougher state of mind and overall greater levels of behavioural attributes associated with higher levels of mental toughness (Jones, Hanton, & Connaughton, 2007). Since the study highlighting the importance of mental toughness by Gould et al. (1987), empirical studies have been undertaken to understand and define mental toughness, and to identify characteristics and psychological aspects that contribute to it (Crust, 2007; Jones, 2002).

Researchers attempting to understand mental toughness often approached it from an elite or super-elite athlete's point of view (Jones, 2002) and found those who performed better also reported higher levels of mental toughness. Furthermore, elite and super-elite (super-elite referring to athletes that performed at the top level of their respective sports, evident through noted accomplishments, such as winning an Olympic gold medal) athletes reported higher levels of mental toughness compared to athletes competing at a semi-professional or amateur level (Jones, 2002). Given the importance of mental toughness for athletes and the inconsistencies in the extant research, a significant portion of the subsequent literature has focused on understanding and defining mental toughness. Other researchers have examined mental toughness and its underlying characteristics amongst youth and developing athletes, to understand how athletes develop mental toughness. Based on this preliminary wave of research identifying mental toughness characteristics and how it is developed, researchers have implemented interventions to help develop mental toughness in youth athletes (Bell, Hardy, & Beattie, 2013; Gucciardi, Gordon, & Dimmock, 2009).

Defining mental toughness in sports

Despite the fact that mental toughness is a term frequently mentioned within sporting contexts by coaches, athletes, sports psychology practitioners and the media, there was no real

common definition of this phenomenon until Jones (2002) first attempted to define it in an athletic context. Jones (2002) recruited 10 athletes (seven men and three women) competing at an international level (Olympic or Commonwealth Games) to express their perceptions on mental toughness through the help of a three-stage qualitative approach: 1) focus groups; 2) individual interviews; and 3) individual ratings of definitions and ranking of mental toughness attributes. The researchers synthesized the participants' definitions in the focus groups and interviews and proposed a definition that the athletes said highlighted specific aspects of mental toughness:

Mental toughness is having the natural or developed psychological edge that enables you to:

- Generally, cope better than your opponents with the many demands (competition, training, lifestyle) that sport places on a performer.
- Specifically, be more consistent and better than your opponents in remaining determined, focused, confident, and in control under pressure (Jones, 2002, p. 213).

This definition was used by researchers to further understand and define the phenomenon in sports (Bull, Shambrook, James, & Brooks, 2005; Thelwell, Weston, & Greenless, 2005; Thelwell, Such, Weston, Such, & Greenless, 2010). Thelwell et al. (2005) assessed how six professional soccer players competing at the international level defined and understood mental toughness by interviewing them. Although the study generally supported the definition proposed by Jones (2002), the players did not all put forward the same definition as each other or as Jones. For example, three of the players mentioned that mental toughness entails enjoying the pressure associated with the performance. Through assessing mental toughness from the perspective of

these elite athletes, researchers judged Jones' definition to be incomplete (Thelwell et al., 2005). Therefore, to allow for a more broadly accepted understanding and definition of mental toughness, researchers investigated mental toughness from the perspective of super-elite athletes (athletes considered the best in their sport), with assistance from their coaches and sports psychologists (Jones et al., 2007).

Jones and colleagues (2007) investigated athletes' perceptions of mental toughness using the same three stage qualitative approach as Jones (2002). However, for this study, they recruited eight Olympic performers or world champions, three coaches and four sports psychologists. The athletes had won at least an Olympic gold medal or been a world champion in the past. The coaches and psychologists had coached or consulted with an Olympic gold medalist or world champion over a long-term basis. Participants from the super-elite demographic generally agreed with the definition proposed by Jones (2002), with 10 of the 15 participants rating it a 10 out of 10. The athletes also highlighted that mental toughness levels can fluctuate throughout the years they perform in their sport, suggesting that mental toughness needed to be continually worked on in order to prevent these fluctuations (Jones et al., 2007).

The definition proposed by Jones (2002, 2007), however, has not been universally accepted and has been criticized on several grounds. First, it fails to actually define what mental toughness is. Rather, this definition gives insight about what mental toughness enables athletes to do, without providing detail on what makes them mentally tough (Crust, 2007). A further criticism of this definition is that it only takes mental toughness into account in the face of adversity and misses positive aspects of performance, suggesting mental toughness only occurs in difficult or challenging situations. From this perspective, mental toughness is a reaction to

negative situations, rather than occurring in situations that are still challenging, but viewed as positive by the athlete (Gucciardi, Gordon, & Dimmock, 2008).

Gucciardi and colleagues (2008) attempted to overcome these limitations and define mental toughness in both negative and positive situations faced by athletes, whilst trying to encompass both the processes and outcomes of mental toughness. They conducted interviews with 11 elite Australian male football coaches, who also had significant experience performing at the elite level. The interviews were approached from a personal construct psychology framework (Kelly, 1955, 1991, as cited in Gucciardi et al., 2008) to allow for an intimate and holistic understanding of mental toughness. The definition put forward by Gucciardi et al. (2008), and which will be the definition that will be used for the purposes of the present study, is:

Mental toughness is a collection of values, attitudes, behaviours, and emotions that enable you to persevere and overcome any obstacle, adversity, or pressure experienced, but also to maintain concentration and motivation when things are going well to consistently achieve your goals, (p. 278)

This definition was chosen as it includes both negative and positive situations that develop mental toughness, and that addresses the processes and outcomes of mental toughness, unlike previous definitions. Given that all participants came from a single sport and were all male, one concern is that their definition may only apply to male Australian footballers and may not generalise to athletes in all sports. Coulter, Mallett, and Gucciardi (2010) examined the perceptions of elite soccer coaches, players, and parents of elite players on mental toughness through interviews. They found that mental toughness occurs not only when facing adverse, negative situations, but also in positive situations, consistent with Gucciardi et al. (2008). Further, 13 of the 14 characteristics and subcomponents of mental toughness identified by

Gucciardi et al. (2008) were also identified in this study (see below). These highly similar findings provide evidence that this definition is not limited to only athletes playing Australian football, but also generalizes to athletes in other sports. It also suggests that mental toughness does not have varying attributes and characteristics across athletes from different sport disciplines. Through more recent findings, Gucciardi (2017) expanded on this definition to highlight the state-like properties of mental toughness. Gucciardi (2017) defined mental toughness as “a state-like psychological resource that is purposeful, flexible, and efficient in nature for the enactment and maintenance of goal direct pursuits.” (p. 18). This definition highlights mental toughness as a characteristic that can be developed, but that also can differ across time and situation.

Characteristics of mental toughness

A crucial finding in the early research was that mental toughness was a multidimensional construct that encompassed several characteristics (Bull et al., 2005; Jones, 2002; Thelwell et al., 2005). As conceived by Jones (2002) each dimension represented a time period of the overall mental toughness of an athlete, with 13 different characteristics of mental toughness (identified by Jones et al., 2007) within these dimensions (see Figure 1). Their follow-up study 5 years later, using the perceptions of super-elite athletes, expanded on this early list yielding a total of 30 attributes across four different dimensions, further supporting the notion of mental toughness as multidimensional (Jones et al., 2007).

The first dimension was labeled *attitude/mindset* and included the two subcomponents: belief in one’s abilities and focus. The second dimension was labeled *training* and included three subcomponents: using long-term goals as the source of motivation, controlling the environment,

and pushing oneself to the limit. The third dimension was labeled *competition* and included six subcomponents: handling pressure, belief in one's abilities, regulating performance, staying focused, awareness and control of thoughts and feelings, and controlling the environment. The fourth dimension was labeled *post-competition* and included two subcomponents that were labelled handling failure and handling success (Jones et al., 2007).

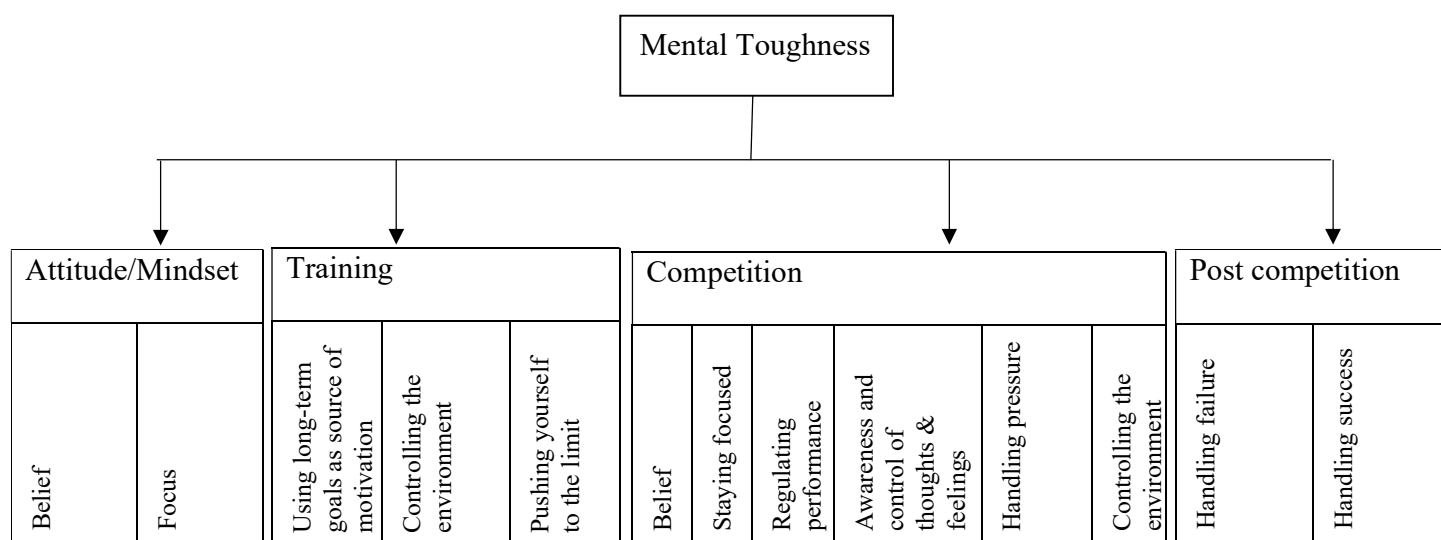


Figure 1: Mental toughness dimensions and characteristics (adapted from Jones et al., 2007)

Following the initial identification of these characteristics of mental toughness, research attempted further refinement. Gucciardi et al. (2008) identified that overall, there were seven characteristics of mental toughness that reoccurred across various studies: self-belief and confidence, attentional control, motivation, commitment and determination, positive and tough attitude, resilience, enjoying and handling pressure, and quality preparation. These characteristics have been further supported in subsequent research (Coulter et al., 2010).

However, researchers have also noted that some characteristics contribute more towards mental toughness than others (Coulter et al., 2010; Jones et al., 2007; Thelwell et al., 2005). In

general, self-belief has been identified by participants as the most important characteristic of mental toughness (citation needed). In addition, the ability to react positively in all situations, stay calm under pressure, and ignore distractions and remain focused all contribute significantly to mental toughness (Butt, Weinberg & Culp, 2010; Crust & Clough, 2011; Parkes & Mallett, 2011). Enjoyment of handling pressure has been identified as the least important contributor (Thelwell et al., 2005). In a study examining characteristics of athletes with high, moderate, and low levels of mental toughness, athletes with high mental toughness scored significantly higher on self-belief, resilience, and attentional control compared to athletes with moderate and low levels of mental toughness (Gucciardi & Jones, 2012).

Evidence supporting the importance of these characteristics underlying mental toughness has been shown. In a study of youth athletes, participants were asked to identify which psychological skills they used on a daily basis and to complete a measure of mental toughness. The three strongest correlations with mental toughness were found to be with self-talk ($r = 0.37$), emotional control ($r = 0.36$), and relaxation ($r = 0.29$; Crust & Azadi, 2010). There was also a strong negative correlation between mental toughness and negative thoughts whilst performing (Crust & Azadi, 2010). A lack of mental toughness has additionally been characterised by self-doubt, laziness, poor integrity and personal philosophy, and a weak attitude (Gucciardi et al., 2008), suggesting that mental toughness is an overall positive psychological construct correlated to self-belief and optimism, rather than pessimism or negative thoughts.

Although Jones et al. (2007) conceptualized mental toughness as multidimensional, Gucciardi, Hanton, Gordon, Mallett, and Temby (2015) more recently provided support that mental toughness is a unidimensional concept. They described mental toughness as an “aggregation of personal resources or assets common to people who share social and

environmental conditions (e.g., biology or culture)” (p. 28). The authors contended that mental toughness is a collection of personal resources or assets, often stemming from their social and environmental surroundings, which are interwoven with the common identifiable process among them, driving consistently high performance subjectively or objectively. One important consequence of this approach is that mental toughness can be seen as a continuous construct ranging from low to high, rather than an all-or-none phenomenon (i.e., mentally tough or not) or having unique profiles (e.g., high in self-belief but low in optimism). Rather than distinguishing between each dimension (i.e., attitude/mindset, training, competition, or post-competition) based on time or each characteristic, these authors found across a series of five studies, that these characteristics demonstrated within separate dimensions correlated strongly to one another, such that having a high level of one was associated with high levels of the others. Table 1 shows key indicators of mental toughness. Support was also provided for a link between mental toughness and both subjective and objective measures of performance across a variety of contexts (e.g., academics, employment, military). Finally, Gucciardi et al. (2017) also provided support that mental toughness is state-like, in that level of mental toughness is not constant across settings or times, but rather it varies across situations or times. If this unidimensional approach is more appropriate, an athlete who scores lower on measures of mental toughness may benefit by improving multiple characteristics underlying mental toughness rather than concentrating on improving characteristics within just one dimension (e.g., competition).

The unidimensional perspective is supported by the notion that individuals will often score similarly on the specific shared characteristics underlying the four dimensions (see Figure 1) put forth by Jones et al. (2007), making the dimensions across different time points (e.g., training, competition) irrelevant (Gucciardi & Jones, 2012; Gucciardi et al., 2015). Further,

Gucciardi et al. (2014) found support for a unidimensional, but not multidimensional, model of mental toughness. Hence, representing mental toughness as a unidimensional construct would seem more appropriate than the multidimensional approach. Although little research has been conducted around the more recent unidimensional approach, the research that has accumulated suggests that a unidimensional approach to mental toughness is better both conceptually and from a measurement perspective (Gucciardi et al., 2015).

Table 1

Indicators of a Core Mental Toughness Construct and Associated Definitions (adapted from Gucciardi et al., 2015).

| Key Dimension | Definition |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Generalized self-efficacy | A belief in your abilities to achieve success in your achievement context |
| Buoyancy | The ability to effectively execute the required skills and processes in response to the challenges and pressures of everyday life |
| Success mindset | The desire to achieve success and ability to act upon this motive |
| Optimistic style | The tendency to expect positive events in the future, and attribute positive causes and outcomes to different events in one's life |
| Context knowledge | An awareness and understanding of the performance context, and how to apply this knowledge in achieving success or reaching one's goal |
| Emotion regulation | An awareness of and ability to use emotionally relevant processes to facilitate optimal performance and goal attainment |
| Attention regulation | The ability to focus on what is relevant while minimizing the intrusion of irrelevant information |

Developing mental toughness

In addition to conceptualising mental toughness and understanding what it means to be mentally tough as an athlete, researchers have also attempted to identify how to develop mental toughness within athletes. As noted in the first definition by Jones (2002), mental toughness is seen as having both natural and developed aspects. Therefore, researchers have been investigating how to develop mental toughness in athletes. Although there is not a lot of research, studies show various approaches that improve mental toughness in athletes including in student-athletes.

Some evidence supports contentions that genetics can play a crucial role in increasing mental toughness in athletes (Crust & Clough, 2011; Lin, Mutz, Clough, & Papageorgiou, 2017). Clough, Newton, Bruen, Earle, Earle, Benuzzi, and Venneri (2010) found that participants with higher amounts of grey matter in their brain scored higher on a mental toughness questionnaire. Further research examining mental toughness comparing identical twins and non-identical twins has shown that mental toughness, similar to other personality traits, does have a genetic component (Horsburgh, Schermer, Veselka, & Vernon, 2009). While this evidence is important, as sport psychologists, it is not possible to use genetics to improve mental toughness. However, Horsburgh et al. (2009) also found that environmental factors (i.e., during critical developmental periods in life) play a large role.

During early stages of an athlete's career, the belief that the environment plays a crucial role in the development of mental toughness was supported through identifying the role family environment plays (Thelwell et al., 2010). In a sample of elite female gymnasts, Thelwell et al. (2010) found the athletes believed family environment, and in particular youth upbringing, had a strong effect on self-beliefs, which is one of the most influential characteristics of mental toughness (Gucciardi et al., 2008). In fact, environmental influences were unanimously reported

by the athletes as playing a part in developing their mental toughness. Additionally, sports psychologists viewed challenging but nurturing environments as an essential starting point for the athletes to successfully develop mental toughness (Weinberg et al., 2016).

Although environmental factors during development (e.g., family relationships) and genetics may impact mental toughness, they cannot be easily manipulated (e.g., through psychological skills training) or changed to immediately affect the state of mental toughness within athletes. Further, Crust and Clough (2011) showed that genetic and environmental influences play a less important role in developing mental toughness compared to directly targeting the established psychological characteristics that underlie mental toughness. Thus, researchers have examined other ways of developing mental toughness.

Thelwell et al. (2010) found that gymnasts who had contact with sports psychologists throughout their careers believed they played a fundamental role in their psychological development, through practicing specific psychological skills that help improve overall mental toughness (e.g., increasing self-belief and helping with competition anxiety). The use of psychological skills to develop mental toughness is further supported through the relationship between psychological skills and higher levels of mental toughness in youth athletes (Crust & Azadi, 2010).

Holland, Woodcock, Cumming, and Duda (2010) interviewed 43 U-16 regional development rugby players, to determine the psychological qualities they believed were important to have as an elite athlete, and techniques they would use in order to develop these psychological aspects of their game. Amongst the mental skills techniques employed by these youth athletes, a number were mentioned that have also been shown to be related to mental toughness. They found that skills such as confidence, attentional focus, and determination were

considered essential qualities to the psychological mindset of elite youth athletes, by both the researchers and the young athletes themselves. Through assessing the essential psychological qualities important to the performance of youth athletes, the authors were in fact understanding qualities contributing to mental toughness.

Several studies have reported that specific mental skills can help improve mental toughness in athletes. Researchers have shown that self-talk contributes to an athlete's mental toughness (Crust & Azadi, 2010; Gucciardi et al., 2008; Gucciardi & Jones, 2012). In their sample of youth athletes, Crust and Azadi (2010) specifically found that the use of self-talk was effective through its influence on self-belief. They also found relaxation, a tool for emotion regulation amongst athletes, to be strongly correlated to mental toughness. Attributional retraining interventions (e.g., reframing negative self-talk into positive self-talk) have also been linked to improved mental toughness as they can help athletes shift their mindset from a more pessimistic to a more optimistic approach whilst performing (Parkes & Mallett, 2011). Goal-setting has also been shown to help younger athletes develop mental toughness, and to enhance self-belief and perceptions of competence (Holland et al., 2010). These findings support the belief that mental toughness can be developed through psychological skills training that directly target the identified underlying characteristics (Gucciardi & Jones, 2012).

In addition to findings supporting interventions to improve mental toughness in athletes' sports performance, there is some evidence that also suggests the use of classroom-based psychological skills training to improve mental toughness in student-athletes. Golby and Wood (2016) looked at the effect of a psychological skills training class on mental toughness and psychological well-being of student-athletes. The study included 16 female student-athlete rowers competing at the national and international level. Participants took part in a total of three

group sessions which entailed five techniques to develop mental toughness: self-talk, thought-stopping, thought control, concentration skills and focus, and expect success and positive imagery) over the competitive season, plus one debriefing session, with around three months between each group session. In addition to the group sessions, each participant also received one-on-one support sessions via e-mail. The researchers measured mental toughness and psychological performance using self-report tools, and psychological well-being was assessed through four separate instruments, each assessing a specific psychological characteristic (i.e., self-esteem, perceived self-efficacy, dispositional optimism, and positive affect). Golby and Wood (2016) showed that the psychological skills training positively improved mental toughness and psychological well-being in student-athletes. Notably, mental toughness scores improved with the intervention, as did perceived self-efficacy, self-esteem, and positive affect. The study highlights again that mental toughness is trainable, not only in athletes, but also in student-athletes, who had not been explored by previous research. Not only did mental toughness improve, but psychological well-being improved as well, which is a crucial benefit for the student in the student-athlete, as the academic domain can often induce stress and burnout as well (Golby & Wood, 2016).

Mental toughness in academics

Although mental toughness in sport contexts has received considerable research attention, there are other performance domains in which it may also play a crucial role as well (e.g., education, business, and military service). Gucciardi and colleagues (2015) assessed mental toughness in three different achievement settings (i.e., work, academic, and social). Two of those settings (academic and social) were tested amongst 203 undergraduate students. Students were asked to fill out a questionnaire package every week for 10 weeks measuring four different

variables (i.e., mental toughness, goal progress, thriving, and psychological health). In order to measure goal progress, the researchers asked students to write down an academic and social goal at the first data collection point and report each week how much progress they believed they had made (ranging from 1 = *none* to 9 = *a great deal*). Mental toughness emerged as a significant predictor of academic and social goal achievement amongst undergraduate students and specifically was related to goal progress. Additionally, mental toughness was shown to be important in both academic and social goal achievement over time.

In support of these findings, additional research has identified that mental toughness is highly relevant within the academic setting (Crust, Earle, Perry, Earle, Clough, & Clough, 2014). In general, this work has shown that academic performance benefits from higher levels of mental toughness amongst students. However, further research has also shown that students' behaviour and general psychological well-being also benefit through mental toughness (St Claire-Thompson, Bugler, Robinson, Clough, McGeown, & Perry, 2015).

In order to understand mental toughness in terms of academic performance, Crust et al. (2014) examined the importance of mental toughness in higher education by assessing 161 male and female students across different degrees. In order to assess students' academic performance, the authors specifically looked at both: 1) academic progress (how many courses they passed, or credits received, with each course worth 20 credits if passed, in the year out of a total of six courses); and 2) academic achievement (what their percentage grade was at the end of the year, averaged across the six courses). Mental toughness was measured using self-report, assessing overall mental toughness and its underlying characteristics (i.e., challenge, commitment, life control, emotional control, confidence in abilities, and interpersonal confidence). The study identified a significant positive relationship between progress (i.e., credits) and mental

toughness, and between achievement (i.e., grades) and mental toughness. The researchers were also able to identify that students who passed their first year of university had significantly higher levels of mental toughness. Specifically, they found that mentally tougher students had an overall higher average throughout the year and were less likely to drop out of their program.

More recently, Lin, Clough, Welch, and Papageorgiou (2017) looked at the role mental toughness played in academic performance amongst 49 final year university students. They compared self-reported mental toughness scores with participants' academic grades and attendance. Academic grades were determined using average grades per year and the total average grade over three years (derived from grades attained from academic essays, critical reviews, written exams, multiple choice questions, and final year research projects). Academic attendance was attained through records stemming from the university's Students' Records and Data Office. Lin et al. (2017) showed that total mental toughness scores were significantly correlated with average grades, but not attendance. Two specific characteristics of mental toughness, commitment and control, were the strongest predictors of average grades. They accounted for 16.8% of variance in students' average grades. Similar findings have been reported in other student samples (e.g., middle-school students; St. Claire-Thompson et al., 2015).

The importance of mental toughness for students in academic settings was also supported by St. Claire-Thompson, Giles, McGeown, Putwain, Clough, and Perry (2017), who identified a positive relationship between mental toughness and adjusting to university as an undergraduate student. Commitment was the strongest predictor of academic and personal-emotional adjustment. These findings could present an explanation to Crust et al.'s (2014) findings showing students with higher mental toughness levels achieved higher performance in their undergraduate degree.

Apart from associations with academic performance, research has shown that mental toughness benefits students' behaviours and general psychological wellbeing. Multiple studies have shown links between mental toughness and resilience in adapting to stress over time, lower depressive symptoms, and higher life satisfaction (Gerber et al., 2013; Gerber et al., 2015; Stamp, Crust, Swann, Perry, Clough, & Marchant, 2015; Stock, Lynam, & Cachia, 2018). Two studies have looked at the mediating role of mental toughness in relation to coping with stress and burnout in students. Firstly, Gerber et al. (2013) looked at the association between mental toughness and stress resiliency. The study included 865 students from Swiss vocational schools. The researchers measured mental toughness, stress, depressive symptoms, and life satisfaction (all using self-reported measures). Participants completed the questionnaires at two different time points over a 10-week period. The results showed students could be classified in one of four different clusters based on their scores from the stress, depressive symptoms and life satisfaction measures: 1) well-adjusted (included 22.1% of total participants, who reported low scores for stress and high scores for life satisfaction at baseline and follow-up); 2) maladjusted (included 18.1% of total participants, who showed elevated stress scores at both time points and consistently high scores for depressive symptoms and low scores for life satisfaction); 3) deteriorated (included 17.7% of total participants, who demonstrated increasing levels of stress, increasing levels of depressive symptoms, and decreasing levels of life satisfaction); and 4) resilient (included 42.2% of total participants, who reported moderate stress at baseline, decreasing levels of depressive symptoms, and increasing levels of life satisfaction). Students in the well-adjusted cluster reported significantly higher mental toughness scores than those in the maladjusted, deteriorated, and resilient clusters. Additionally, at baseline those in the deteriorated and resilient clusters showed similar mental toughness levels, but at follow-up,

students in the resilient group had significantly higher mental toughness scores (converging towards well-adjusted mental toughness scores) than those in the deteriorated group, who actually showed decreased mental toughness scores. The results of this study demonstrate that high mental toughness is linked to positive emotional adaptation amongst students, specifically towards stress and depressive symptoms. The results also indicated that students with higher mental toughness experience higher levels of life satisfaction. The importance of mental toughness as a tool against stress was further supported in a follow-up study in a similar sample (Gerber et al., 2015). They investigated the role mental toughness played on burnout in students exposed to high levels of stress. They showed that students with high mental toughness scores showed fewer burnout symptoms compared to students who had low mental toughness scores.

A study of 168 undergraduate students across different years of study and universities across England, examined students' self-reported psychological wellbeing and mental toughness levels. The authors found that certain components of mental toughness were moderate to strong predictors of psychological wellbeing amongst students (Stamp et al., 2015). Specifically, commitment was found to be the strongest predictor of environmental mastery, and confidence in one's own ability was the strongest predictor of self-acceptance and positive relations with others.

Although most of this work has been done with general student populations, a more recent study examined the relationship between psychological well-being and self-reported mental toughness in a sample of student-athletes (Micoogullari, Odek, & Beyaz, 2017). The study involved 130 student-athletes from a variety of sports and different year levels at university. Participants completed measures of mental toughness in sport and psychological well-being. Results of the study showed that student-athletes' mental toughness was a significant

predictor of psychological well-being. Specifically, they identified confidence was the strongest predictor of positive relationships with others and self-acceptance. The authors reasoned that these psychological well-being subscales are important amongst student-athletes as university life presents challenges, adversities, and long-term commitment in order to achieve their goals not only in terms of sports performance, but also academically.

Jalili, Hosseini, Jalili, and Salehian (2011) also investigated mental toughness within the student-athlete population. The authors looked at the comparison of mental toughness and social skill between female student-athletes and non-athletes. They recruited 140 athletes (70 team and 70 individual sport athletes) and 70 non-athletes to complete measures of mental toughness and social skills. Results showed that student-athletes had significantly higher mental toughness and social skills scores compared to non-athletes. These results reinforce the findings from Micoogullari et al. (2017) and Gucciardi et al. (2015) who identified student-athletes' need for superior social skills in order to achieve their social goals as well as their academic and sports performance ones.

Several similarities in the relationship between mental toughness and performance in both academic and sport settings can be noted. For example, the importance of mental toughness to performance across a variety of contexts is clear (Crust et al., 2014; Weinberg et al., 2016). Further, across both sport and academic contexts, mental toughness has been linked to confidence (Gucciardi et al., 2008; Gucciardi, 2015; Micoogullari et al., 2017), resiliency (Gerber et al., 2013; Gucciardi & Jones, 2012), commitment (Gucciardi et al., 2008; Stamp et al., 2015), emotional control (Gerber et al., 2013; Gucciardi et al., 2015), and life satisfaction or optimistic mindset (Gerber et al., 2013; Gucciardi et al., 2015).

However, differences in mental toughness and performance between the two domains have also been shown. For example, attentional focus is linked to performance in sport (Butt et al., 2010; Crust & Clough, 2011; Parkes & Mallett, 2011), but has not been identified as a prominent characteristic of mental toughness in academic performance. Similarly, motivation is a core characteristic of mental toughness in sport (Gucciardi et al., 2008), but was not amongst core characteristics in literature investigating the effect of mental toughness in academics. On the other hand, students and student-athletes (Jalili et al., 2011; Micoogullari et al., 2017) identified interpersonal relationships as a dominant skill in mental toughness in academic settings, but it is not amongst the core characteristics for mental toughness in sports.

It is important to note that the research from both the sport and the academic contexts only shows the role mental toughness plays in the one or the other setting separately. Even in samples of student-athletes, only the role of mental toughness in academic life has been investigated. There has been no research provided on how mental toughness could be transferred across the domains and could potentially improve the sports and academic performance of athletes, where these two domains play a crucial role in their every-day lives.

Chapter 2: Rationale, Purpose, and Hypotheses

Rationale

Sports psychologists have identified that mental toughness is a crucial aspect of athletes' performance (Gould et al., 1987). As well, coaches and athletes have also recognised mental toughness as an important part of their performance and therefore their every day life (Jones et al., 2007; Thelwell et al., 2010). It is considered the most overused, yet misunderstood, psychological concept within the field of applied sports psychology (Jones, 2002). With coaches and athletes increasingly attributing their positive performance outcomes to the athlete's level of mental toughness, coupled with increased demand from coaches for strategies to help athletes become more 'mentally tough', it has become a topic of importance within both the research and applied sports psychology communities (Clough, Earle, & Sewell, 2002).

Gucciardi et al. (2008) defined mental toughness as a collection of values, attitudes, behaviours, and emotions an athlete needs to possess to overcome challenges and stay motivated in positive times as well. Building on this definition, Gucciardi (2017) defined mental toughness as "a state-like psychological resource that is purposeful, flexible, and efficient in nature for the enactment and maintenance of goal direct pursuits." (p. 18). Following Gucciardi and colleagues' (2008) definition, mental toughness research has focused on understanding how to develop this resource within athletes who are still developing their skills (Crust & Clough, 2011; Gucciardi et al., 2008; Thelwell et al., 2010; Weinberg et al., 2016).

One of the limitations within the mental toughness research is that it has almost exclusively focused on understanding mental toughness in athletes within sports settings, as researchers try to understand the role of mental toughness for performance enhancement

purposes. However, researchers have identified that mental toughness is not only a prominent aspect of performance in sports, but also within other domains such as work, social and academic; the importance of mental toughness in academics has been shown for both athletes and non-athletes (Crust et al., 2014; St. Claire-Thompson et al., 2015).

In both sport and academic settings, mental toughness has been linked to better performance in university students and athletes (Crust et al., 2014; Weinberg et al., 2016), as well as better psychosocial outcomes such as resilience, lower depressive symptoms, coping with stress, and life satisfaction (Gerber et al., 2013; Gerber et al., 2015; Stamp et al., 2015). However, student-athletes have been considered only infrequently, and in studies that have recruited this sample, only the academic setting for these students was considered. The gap in the research at the moment is whether there is an overlap between the two domains (i.e., sports and academics) with respect to mental toughness amongst student-athletes. The similarities and differences in mental toughness in sport and academic settings are unclear but are important to identify. For student-athletes, stress stems from both of these domains within their lives and it is unclear how mental toughness is perceived in both domains by the student-athlete. If, as suggested by Gucciardi and colleagues (Gucciardi & Jones, 2012; Gucciardi et al., 2015), mental toughness is unidimensional with the characteristics underlying it tending to vary together, it is possible that these underlying characteristics may influence multiple domains in life. If so, developing mental toughness in one domain may lead to performance improvements in the other. On the other hand, Gucciardi et al. (2015) also reported mental toughness to be state-like, with more differences across settings than in individuals – thus being mentally tough in one domain may not necessarily transfer to other settings. To date, this question has not been addressed.

This study examined perceptions of mental toughness related to both school and sport in university student-athletes and attempted to understand how they conceptualize mental toughness in both domains. In order to achieve this purpose, a qualitative approach was taken. The guiding research questions to this study were: 1) what are the similarities and differences in mental toughness in academics and sports as perceived by student-athletes; and 2) what factors affect mental toughness within each domain? Attaining insight into mental toughness from this perspective will allow coaches and other athlete-development professionals to not only highlight the importance of mental toughness within the sports context, but also within an academic context. Since academics play a significant role within the everyday life of student-athletes, and can often be a source of stress, it would be beneficial to explore the link between the two domains in mental toughness.

Chapter 3: Methodology

Methodology

This study used a general qualitative design, given the lack of research examining similarities and differences of mental toughness across different domains. As this is an unexplored topic, a general qualitative design allowed the flexibility for the researcher to effectively investigate these research questions. This approach also fit with the researcher's positionality (see below). However, the study's design still took into account specific sampling of participants (i.e., purposeful sampling), data collection (i.e., semi-structured interviews), data analysis (i.e., thematic analysis), and trustworthiness criteria (i.e., reflexivity, member checking, and transferability).

Researcher positionality

This study is approached from the researcher's constructivist research positionality, which best encompasses the scope and lens the researcher was attempting to establish throughout the study. Constructivist research is rooted in the notion that reality is socially constructed (rather than objective), and thus the reality of both the researcher and participants influences the research. It allows for the researcher to explore and understand a construct in as detailed a way as possible in order to understand how it operates in the real world and not just the scientific one (Patton, 2002). From an ontological perspective, the constructivist lens allows for a relativist point of view. This lens allows the researcher to perceive the student-athletes' collective perceptions of mental toughness and construct mental toughness within their world. The literature suggests there is a gap when it comes to the understanding of mental toughness within student-athletes, especially, since that demographic experiences and relies on mental toughness

to successfully achieve their goals in two dominant domains of their life (i.e., sports and academics). Relativist ontology aims to interpret their reality of mental toughness using multiple, intangible constructions, which are socially and experientially based and are local and specific in nature (Guba & Lincoln, 1994). From a practical perspective, this allows the most important concepts to emerge from the participants. Mental toughness is a phenomenon many student-athletes have talked about and experienced, but often have not accumulated a wealth of information on. A constructivist approach depends on the form and content of an individual or group holding the construct that is being explored. In this study the student-athletes hold the content and form of how mental toughness is perceived in both their academic and sport domains.

The epistemological approach of constructivism states that knowledge is created through meanings attached to lived experiences. This becomes the basis of the mental toughness construct within student-athletes, allowing student-athletes to interpret future experiences (Tindall, 1994). Constructivism acknowledges that there are different ways of construing the world around us, which are all equally valid within society. The methodological aim of the constructivist approach is to come to a consensus of the construct (i.e., mental toughness) that is more informed and sophisticated than the predecessor constructions. Research has shown that this approach is relevant to understanding the experiences that Canadian varsity student-athletes have of mental toughness (Lorenzo & Carlos, 2010).

The methodology allowed for this constructivist worldview and how the researcher wanted to approach this research project. It linked with the strong view on how research should be able to be interpreted by practical professionals (e.g., coaches) as well and allow them to learn and advance their knowledge from it. Thus, the methodology was approached to encompass the

literature and theory, but also the relevance to practical work through a general qualitative design. Furthermore, it focused on the subjective nature of mental toughness experienced by the student-athletes throughout their academics and sports. It allowed the researcher to look at the phenomena through the student-athletes' lenses as they describe their world stories (Kafle, 2011).

Participants and sampling

The study used purposeful sampling to recruit participants (Patton, 2002). Purposeful sampling involves recruiting and selecting information-rich cases that yield in-depth data to answer the research question thoroughly. This study recruited a diverse group of student-athletes (across gender, sport, team and individual sports, majors, and year in school) that were currently in or had been part of a varsity sports program at the Canadian university level. Through purposeful sampling, student-athletes who could provide a complete picture of how student-athletes perceive mental toughness in both their sports and academic domains were selected to interview.

A total of 10 participants took part in this study (3 male and 7 female), from six different sports (i.e., lacrosse, rowing, track and field, basketball, wrestling, and rugby), with ages ranging from 18 to 25 years. Experience playing their sport at a Canadian university ranged from 1 to 4 years, with a range of 5 to 15 total years spent playing their sport. Participants were in different years of their studies ranging from first year students to sixth year students, who studied various courses within the undergraduate and graduate department of the university (i.e., Nursing, Kinesiology, Biotechnology, Teacher Education, MSc Applied Health Sciences, Recreation and Leisure, Concurrent Education, and Sports Management). It is important to note that with qualitative inquiry studies, sample size is often smaller compared to quantitative studies (Jones,

Torres, & Arminio, 2014). The data collection process tends to be more rigorous and detailed compared to quantitative studies, as it explores participants' experiences in-depth and tries to identify why specific phenomena are perceived the way they are. Based on recommendations by Patton (2002) and the fact that saturation was reached, the sample size was considered adequate.

Recruitment took place in two phases. Pre-COVID recruitment was accomplished through distributing posters around the campus. Posters contained a brief summary of the purpose, participation requirements and contact details of the researchers. Pre-COVID-19 participant recruitment yielded two participants before the province went into lockdown and in person recruitment and data collection were no longer allowed. Following the university's lockdown, the study transitioned onto an online platform. During the lockdown, recruitment was achieved by emailing the posters to coaches/assistant coaches who provided the information to their teams through team social media. In addition, recruitment occurred through word-of-mouth; participants distributed the posters to other friends who were also student-athletes and who might be interested in participating. Gaining access to advertise through coaches and friends was a crucial aspect, as coaches and friends are often trusted figures in a student-athlete's life. This method of recruitment yielded a further eight participants to bring the total to 10.

Procedures

The study was cleared by the University's Ethics Board (see Appendix A) prior to data collection. Once eligibility was confirmed, a date and time were agreed up by both parties (researcher and participant) for an interview. Each participant received an e-mail with a copy of the interview guide (to familiarise themselves with the questions; see Appendix B) and a copy of the consent form for them to go over before the interview. On the day of the interview, the participants were asked to complete a brief demographic questionnaire (see Appendix C). The

questionnaire included basic information about the participant (i.e., gender, age, sport they played at university).

Due to the use of interviews for the study, selecting a research site could have an effect on the participants' engagement in the study. It was crucial for the participant to feel comfortable to elaborately open up about the topic, in order to attain sufficient data relevant to the guiding research questions. The participant's comfort throughout the data collection process (i.e., when e-mailing with the participant, and during the online call or any in-person interaction with the participant) was critical, as it was their choice to what extent they answer questions and the detail in the information provided to construct mental toughness within the student-athlete context. Through having experience of being a varsity athlete myself, I shared some common experiences with the participants. This aided in building rapport with the participants, as there was reciprocity and mutuality between the researcher and the participant (Jones et al., 2014). Participants became more interested in exploring their own experiences within the context of mental toughness through examples provided by the researcher combined with the knowledge the researcher had compiled about mental toughness. The researcher's experiences and knowledge became part of a conversation where they were able to make their own links between mental toughness in the two settings and their own experiences. Further, there is a shared language around the student-athlete experience that also aided in building rapport. Rapport in qualitative research is especially important, as the topics can often become personal and emotional to the participant. As the researcher related to their experiences and shared some of his own, the participants were more comfortable giving a more personal insight into their own academic and sports experiences.

Initially all interviews were to be done in person on campus. They were recorded using a voice recording application on an iPad. Doing interviews in person allowed for the researcher to

build rapport using body language and made the conversation more natural and genuine. In-person data collection took place on campus in a private room which acted as a neutral site for both the researcher and the participant. The two in-person interviews took place in different rooms due to scheduling. However, privacy was prioritized at both locations, and I tried to make the participant feel comfortable to the best of my professional ability. One of the rooms had the benefit of having sofa furniture and a coffee table compared to the other room, which was furnished with office chairs and desks, as it was a practical lab room. However, both participants reflected positive body language and engagement throughout the interview, suggesting comfort on their behalf.

However, due to the pandemic and the province-wide lockdown, the remaining interviews had to be moved to an online platform (i.e., LifeSize). That also meant that the demographic questionnaire was moved online via Qualtrics. Participants also signed the consent form online as part of the demographic questionnaire. LifeSize was the initial suggestion, as it was made available to all students by the university and was a secure platform. However, prior to each online interview, the researcher made sure participants were comfortable with using the LifeSize software. As an option, the researcher always suggested flexibility with which video-chat software was used to make sure the participant was not uncomfortable throughout the interview due to technology. The online interviews were recorded using the same method as the in-person interviews (i.e., using a voice recording application on an iPad)

Moving to an online format resulted in several changes to the interview process. In-person interviews were more dynamic than online interviews. When interviewing the participants online, the quality of video, audio, and internet played a role in the flow of the interview. Sometimes the participant and researcher talked over one another due to delayed audio, causing

the conversation to halt and sometimes even derail one's thoughts. Additionally, it was harder to build rapport through body language with online interviews, as the image was not always clear or had a visual delay on one end.

Rapport in the online format was primarily focused around asking initial personal questions to show interest in the participants' experiences. It also became crucial to portray a visible interest in what they had to say and be an active listener. More importantly, privacy still had to be maintained on the online platform. In person, it was easier to control for privacy as the researcher was able to book a private room for a specific amount of time. However, doing the interviews online, the researcher was working from home, and it was important that the same measures were accounted for in relation to privacy. It was imperative that no other person in the house could hear the interview or transcription of the interview when they were working from home. This was reiterated and assured to participants prior to each interview.

On the other hand, there were also some advantages to the online format. It was easier to schedule participants, as no shared space needed to be booked and only a link was needed to the virtual chat room. Further, not having to come into campus led to greater convenience for participants. In addition, participants could choose a safe and private place in their homes where they felt comfortable. Overall, online interviews were conducted with no major difficulties and there was no difference in the quality of data produced, compared to the in-person interviews.

Following the completion of each interview, it was transcribed verbatim. The transcripts were sent back to every participant to assure that they were comfortable with what was written. They confirmed by giving feedback on the transcripts and no edits were requested on the transcripts on behalf of the participants. This process of member checking assured that what was written in the transcript accurately represented their stories and perceptions in relation to mental

toughness. Changes were made to transcripts if feedback was given by the participant. If no feedback was given, the transcripts were kept as they were.

Interviews

As the study looked to interpret and understand the experiences of student-athletes in relation to mental toughness, a method was selected that would maximise the amount of qualitative data produced by the participant. As general qualitative inquiry is an effective way to explore participants' perceptions and understanding, interviews were the most appropriate tool of data collection (Patton, 2002). Interviews are also commonly used in constructivist research methods (Mertens, 2020). The interviews were semi-structured to allow for flexibility. The semi-structured interview allowed the researcher to ask open-ended guiding questions that were related to the research questions, but also to ask follow-up questions depending on what the participant shared throughout the interview. This allowed the researcher to explore various aspects of how student-athletes perceived mental toughness. Open-ended questions allowed for participants to reflect on past and present experiences and allowed them to expand on their responses. The semi-structured nature of the interview also allowed the researcher to assess different avenues of thought and reflection of the interviewees. Follow-up questions varied between participants, based on their responses. The questions in the interview guide (see Appendix B) served as a guideline that keep the interview on track and relevant to the topic.

Interview guide

Interviews were structured into three main topics: perceptions of mental toughness, mental toughness in sports performance, and mental toughness in academic performance. The interview guide was developed by the researcher and their supervisor. The guiding questions

were open-ended within the context of mental toughness, recognizing that not everyone perceives mental toughness the same way. Thus, consistent with previous qualitative work on mental toughness in sport (Jones et al., 2007; Thelwell et al., 2010), the first question of the interview asked them to define the term mental toughness in their own words. The broad questions that followed asked participants about experiences they may have had with mental toughness in their own sport and academic contexts, as well as what they thought were key factors contributing to mental toughness based on their own experiences. Specific questions about experiences in both sport and academic contexts were also asked.

The open-ended questions allowed participants to reflect on past and present experiences. As mental toughness has been described to be influenced by developmental factors during childhood and adolescence (Thelwell et al., 2010), the past was important to reflect upon, as it revealed important experiences that support this idea. To reflect on the present allowed for the student-athletes to illustrate the relevance of mental toughness at a university level of performance, both academically and athletically, and how well or inadequately they were exposed to this concept. As little evidence has been reported for understanding mental toughness in non-elite athletes, reflecting on current importance and exposure to mental toughness was important to focus on. It allowed for participants to really assess whether they viewed mental toughness as, first of all, a crucial aspect of their mental performance in their sport, and secondly whether they believed it is something that a student-athlete just had and grew into, or whether they are able to work on it throughout their academic and sporting career.

Data analysis

The collected data was transcribed verbatim and analyzed using reflexive thematic analysis (Braun & Clarke, 2006, 2019). Thematic analysis allows for a rigorous yet flexible

inductive approach to analyze qualitative data. Although it is not as customary in thematic analysis, this study also took a deductive approach as the literature was kept in mind when constructing the themes. A deductive approach allowed for the consideration of established findings in other areas of mental-toughness (Fereday & Muir-Cochrane, 2006). It is important to recognise as well that this form of qualitative data analysis is not bound to specific theories or epistemologies, enabled through its reflexive nature.

Braun and Clarke (2006, 2019) outlined six steps in reflexive thematic analysis which I followed in this study. First, I began with initial familiarization with the data before beginning coding. This required reading and re-reading the transcripts multiple times and noting points in each transcript that could contribute to the findings. Familiarization allowed me to embed myself in the data to understand the perceptions of mental toughness from the views of the student-athletes. Following this step, codes were identified (smallest units of analysis within the data). Next, these codes were grouped into various patterns with underpinning organizational concepts (i.e., themes; Braun & Clarke, 2006). The themes were then reviewed to ensure they were an accurate representation of the data. This process took multiple attempts to ensure the best representation of the data. Once themes were established, they were named and defined as the next step of thematic analysis. Names and definitions clarified the themes, how they represent the data, how they differ from one another, and how they contribute to the overall findings. The final step was to represent the data by writing the report.

Braun and Clarke (2019) highlighted the role of reflexivity within this data analysis process. Researchers are responsible to use their own knowledge and understanding of the topic to generate themes rather than simply search for them in the data. Throughout the data analysis in this study, themes were generated through constant questioning of oneself as a researcher. The

assumptions that were made throughout the analysis and any subjectivity towards the topic were questioned and decisions were made based on theoretical understanding of mental toughness. Through this process themes were generated through the researcher's interpretation of the data. Approaching this study from a constructivist lens meant the focus was on generating these themes to reflect an unknown reality. The themes allowed for the participants' stories to be told and expressed, through combining my theoretical understanding and relevant assumptions together with the researcher's analytical skills and resources, as well as the data itself.

Trustworthiness

The researcher's worldview is heavily related to the link between the theories and concepts investigated and their real-world application. Therefore, criteria for trustworthiness that are related to the researcher's position are credibility, transferability, dependability, and confirmability (Guba & Lincoln, 1994). These criteria have been identified as being important in general qualitative research, and more specifically highlighted amongst thematic analysis literature as well (Nowell, Norris, White, & Moules, 2017; Shenton, 2004). Therefore, these criteria were important towards this study and what was hoped to be achieved.

Credibility represents the truth or plausibility of the findings (Korstjens & Moser, 2018). One way of achieving credibility in this study was through member checking. In this study, member checking involved asking the participants to read the transcript of their interview and acknowledge that what was written down was actually written the way they intended it to be interpreted. This step helped ensure that perceptions of what was said were not misinterpreted and that the codes, themes, and subthemes were in fact interpreted correctly and represented the data.

Credibility was also achieved by addressing the researcher's personal biases that led to generating specific themes. One way of reducing bias was through the interview process; questions were asked that explored the experiences of others and diving deeper into these experiences through follow-up questions instead of making personal remarks or assumptions. Given the researcher as a former student-athlete, certain personal experiences could lead to assuming the participants had similar experiences and could therefore lead to generalizing experiences without acknowledging the unique representation of a specific participant. It is important to recognise that every participant had unique experiences and to not let those be generalized by personal bias. As a researcher, knowledge of existing research on mental toughness could also influence the generating of some themes. As the themes are generated through information from the participants, bias affects the process of selecting the ideas (codes) that could lead to a theme. There had to be a balance between representing the perceptions of the student-athletes, the researcher's own knowledge and experiences, and piecing it together with what is known about mental toughness at this point. The constructivist approach is about placing emphasis on appreciation of the perspective of the student-athletes and the fairness in depicting constructions of the values that underlie the experiences they had of mental toughness perceived in academics and sports (Patton, 2002).

Transferability is another crucial component of trustworthiness. This component refers to the intent of transferring the findings to other settings or contexts, such as practical work. Guba and Lincoln (1994) viewed transferability as a form of external validity. Therefore, throughout the study, the researcher attempted to show the relevance of the findings in relation to the literature that drew comparisons of mental toughness in academics and sports amongst student-athletes. Explicitly making the links to the practical reality allows sports psychologists to

develop interventions for mental toughness, for student-athletes who are also concentrating on their academics simultaneously, and to help these athletes to improve their performance during sports and academic performances. These links strengthened the relevance of the study especially since this area of mental toughness has not yet been explored. However, since the sample size is low for qualitative studies compared to quantitative ones, the generalisability aspect of the study is quite low.

Dependability refers to the research process as being logical, traceable and clearly documented (Nowell et al., 2017). This was achieved through the researcher's audit trail. An audit trail allows for a researcher to physically represent the path they took to come to the findings of this study. The audit trail includes how the researcher coded and what decisions they took to generate specific themes throughout the data analysis process. Other researchers should be able follow the steps of the process and how each step led to the findings. The audit trail acted as an expression of reflexivity and trustworthiness throughout the study (Nowell et al., 2017). In this study, the audit trail took a similar structure as the physical audit trail outlined by Carcary (2009). The identification and clarification of researcher bias and subjectivity needed to be established throughout the study (Glesne, 2015) allow the reader to identify the approach taken and how the researcher may have viewed certain statements that they may have perceived differently. Therefore, clarifying this through an audit trail was seen as essential and contributed to strengthening the study and its overall transparency (Carcary, 2009). The findings from the data were constantly compared to the existing literature around mental toughness to help strengthen the overall significance of the findings. This transparency assured that the researcher's perceptions of the data were not only influenced through any pre-understandings or assumptions but can be traced back to the initial codes within the data.

Confirmability refers to the plausibility of the findings and interpretation of the findings (Korstjens & Moser, 2018). Similar to dependability, confirmability was achieved through an audit trail. Confirmability showed the readers at what points specific decisions were made that led to generating the themes in this study. The decisions focused on theoretical, methodological, and analytical choices. As the researcher specified these aspects of the research, readers are able to understand how the researcher came to their findings and outcomes of this study (Nowell et al., 2017). The audit trail allows the researcher to keep all their thoughts in the same place. Other researchers should be able to come to similar findings, but not contradictory ones, if they were to follow the audit trail of the study. It would identify why certain decisions were made throughout the process of generating themes from the data (Nowell et al., 2017).

Reflexivity

Reflexivity is also considered an essential component of trustworthiness. Reflexivity was undertaken throughout the study, documenting internal and external dialogue to support the trustworthiness of the study. To be reflexive means that the researcher actively reflected on the process of the study and what led to make decisions and how those decisions reflected the findings of the study and how the study may be perceived by readers (Tobin & Begley, 2004). As previously discussed, the researcher adopted a constructivist world view throughout this study as a new construct was being explored through the experiences of the participants. Reflexivity appears throughout the study acknowledging in the researcher's world view where appropriate (Shaw, 2010).

As a researcher who has extensively studied mental toughness and the corresponding literature, knowledge of the topic in the conversation is quite familiar. From a participant's

standpoint this could have been perceived as intimidating, but also helpful, as they understood more about the topic they were being asked about. However, as a researcher it was important to not try and influence or prompt specific answers to questions throughout the interview process. Notes were taken throughout the interview specifically when follow-up questions asked that were relevant to their experience and allowed them to elaborate on that experience, so that question could be used in future interviews. This is where it was important for the researcher to reflect throughout the interview and contribute to the conversation appropriately. Appropriate comments to make were related to comments on events experienced by the researcher and the participant and drawing a comparison. At certain times, it was also important to explain how the answer were perceived by the researcher and clarify if some of the comments were meant the way they expressed them. This allowed for the participant to elaborate on their thoughts, but also for the researcher to understand what the participant tried to share.

Chapter 4: Results

The data analysis process allowed for a deep dive into the transcripts and understand mental toughness from the point-of-view of student-athletes. Throughout this chapter, direct quotes from the participants were used to illustrate themes and subthemes. The names of the participants in this chapter are randomly assigned pseudonyms for confidentiality purposes and are not the real names of the participants.

It was apparent that student-athletes linked mental toughness with resiliency, both in a physical and emotional sense. It also became clear that student-athletes believed commitment to what they wanted to achieve was a crucial aspect of being mentally tough and succeeding. Overall, four main themes emerged from the data (see Table 2), with each main theme containing between two and five sub-themes. The four main themes that will be discussed in further detail are: 1) the Dynamic nature of mental toughness, 2) Outcomes of mental toughness, 3) Resilient mindset, and 4) Relationships. The themes and sub-themes emerged and stem from clusters of codes made from the transcripts.

Table 2

Themes and subthemes constructed from the data.

| dynamic nature of mental toughness | Outcomes of mental toughness | Resilient mindset | Relationships |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> ▪ Growth over time ▪ Performance affected by mental toughness state ▪ Negative experiences affect mental toughness more than positive ones ▪ Carryover effect from sports to academics | <ul style="list-style-type: none"> ▪ Embrace or seek the challenge ▪ Commitment to being successful as a student and athlete ▪ Focusing on the task ▪ Confidence ▪ Consistency was key | <ul style="list-style-type: none"> ▪ With resiliency comes mental toughness ▪ Physical resiliency ▪ Emotional resiliency ▪ Optimism | <ul style="list-style-type: none"> ▪ Personal relationships ▪ Professional relationships |

The dynamic nature of mental toughness

The first theme allowed for an understanding how student-athletes perceived mental toughness in general and how it affected them throughout their daily life, both in the academic setting and in their sport. This theme was defined as an attribute of mental toughness, in that it changes and fluctuates through different experiences, but overall grows and develops over time. Student-athletes also acknowledged that mental toughness growth occurred within both their academic and sports domains simultaneously within university life.

Growth over time. In this sub-theme, student-athletes described experiencing mental toughness ups and downs within each domain, but they also noted that each experience helped their mental toughness grow overall. As student-athletes reflected back on their mental toughness when they first started university compared to the present, they stated that it had grown from day one because of all the experiences they had had until that point in time. One quote from Scarlett highlighted this point:

I would judge my mental toughness is probably my first year mindset would probably have a different answer or right now. I would say that it would be the way I react in certain situations reacted way I like process that situation where I some people some people have the mindset of when they hit an obstacle they're like I just wanna break through that obstacle and or like overcome it whereas for me like I don't want to just overcome it but I actually want to learn that situation it's like for me the way I react and then the way I react kind of determines like how like how my mental toughness is in that situation.

She believed her first year self would have given a different answer on how she would judge her own mental toughness, because she had not experienced as much yet in terms of sport or academics, and therefore felt her own mental toughness levels to be low early on. She said, "In my first year I was very naïve. I probably be like oh in every situation I'm I always have a positive mindset of getting through it just overcome that obstacle keep pushing through." This quote highlights the growth attribute of mental toughness. She acknowledged that now instead of just completing a task, she is looking to actively learn from her experiences. Scarlett also referred to the dynamic nature of mental toughness as she explained that in certain situations she may react differently, but still learn from her reaction and really allow her mental toughness to grow. Over time, Scarlett learnt that taking her time helped her overcome challenges and learn from them:

I had that very competitive mindset in the past and I'll do this, and I'll do that and it did put a lot of stress on me and the stress did like that did affect my health as well. So, like in my mind I'm like as I grew older I kind of realized that it's OK to take your time of the

day like you just have to be happy with what you're doing and you push through. And the outcome will be the outcome whatever it is.

This quote demonstrates the complex, dynamic nature of mental toughness as perceived by student-athletes

Participants also spoke of this same pattern of growth of mental toughness within university academics. They noted that over time mental toughness is prone to growing as they are given opportunities to become more self-reliant every year. Isla was a master's student as well as an athlete. When talking about mental toughness in academics, she made a few comparisons between her undergraduate and master's experience. During her undergraduate studies she felt like there was a lot more guidance throughout. Once she started her master's, she felt her way of thinking had to adapt in order to succeed. She knew she had to become more self-reliant and develop her critical thinking. She highlighted the way her mental toughness had to adapt and change over time in order to succeed in her academics:

I think mental toughness plays more of a role in my master's degree. Also, it's such like in your undergrad you're like hey I need to do this this this I take this course and this course and then I end up with this yeah my course. For this is like why are you here this is what you're studying right now and why are you another brick in the wall where this study will be to nothing and you're like how like I'm not oh that's a really good question and you're like why the **** am I here.

Isla identified that her first courses within the master's program really made her reflect on her mental toughness and question if she could handle it. She felt she had to figure out even the small things before she could concentrate on where get to. This required her to ask herself

difficult questions and try to answer them on her own. Initially she felt as if that experience had really taken a hit on her mental toughness, but she also realised if she kept working hard at school and came out at the end, it would benefit her mental toughness. Overall, the participants felt that mental toughness grew over the years, and as they gained experiences, they also knew it benefited their mental toughness and help it grow in both sport and school.

Performance level affected by mental toughness state. In this sub-theme, student-athletes realised that not only did mental toughness grow throughout their university life, but it also affected their performance as it changed. Participants were able to recall experiences where they identified their mental toughness to be lower than usual and it having had a direct influence on their performance. Janey was able to recall a specific incident, where she was in a low mental toughness situation, and how it directly affected her performance in competition:

A prime example everyone was saying... like she's not she's not good like she's so bad. I knew I could beat her because she was actually a member of our team and I beat her many times before, but I just had like a mental block, and I couldn't. I lost and I think that was ****.

As she was telling this story she was able to pinpoint when it all went wrong for her. In the end, Janey realised that all that doubting only led to a poor performance and she knew she could have done better.

The student-athletes found the unnecessary pressure they put on themselves in sports had a more detrimental effect on their performance compared to academics. Interestingly, in academics this pressure was sometimes needed to get into a high mental toughness state, which I will discuss later. In a more general context, Geoffrey described mental toughness fluctuations as

occurring infrequently as he identified his mental toughness as generally being high, but when the fluctuations did occur, they did affect his performance in both sports and academics.

I would say there are little few things get me down I rarely experienced stress in any aspects of life and you know and you when I do get down on myself when I do things like man I'm not gonna be able to do this it really doesn't last long. Yeah I have sort of an unshakable self-belief like I just I believe that I'm gonna achieve what I want to achieve and you know there's days that I might be like maybe it's not possible but you know a day doesn't last long right back to believe myself so that's really good yeah.

Similar to Janey, doubting oneself had a direct impact on Geoffrey's performance in a detrimental way.

It is also important to note that student-athletes could experience these low points within the academic setting just as much as in sports. Doubting one's intellectual performance was found to hinder academic progress over time. Overall, it seemed as though specific examples were harder to come up with for experiences in their academic setting, as they tended to think in a more general sense and the effects of a poor performance were not as evident straight away. With sports, however, this effect was seen more immediately (e.g., in a particular match, game, or competition) and the consequences were often described as more severe compared to their academic setting. Their performance was analysed by coaches, teammates or even spectators immediately during and after, allowing them to identify specific instances where a low mental toughness state led to a poor performance level.

Negative experiences affect mental toughness more than positive ones. A pattern that emerged early on when the participants were recalling their past experiences with mental

toughness was that they identified that the negative experiences had the most effect on their mental toughness and benefitted its overall growth. This sub-theme was identified by Elodie, making a correlation between mental toughness and negative experiences: “I guess I would say most of the experiences that I feel shaped my mental toughness were negative yeah.” She felt it was important to identify this pattern early on because it allowed her to benefit from negative situations instead of harming her mental toughness even further by seeing the worst in those situations. Janey made a similar observation in the relationship between negative experiences and mental toughness through seeing others go through negative experiences and learning from those situations, allowing her mental toughness to grow. Her close family relationships allowed her to see the effects of negative experiences on mental toughness in others and she learnt early on not to repeat mistakes, but to also use those to her advantage:

...I'm the youngest of my family yeah though I've learnt to learn from other people's mistakes and not make the same mistake twice so I'm always like really cautious and really thought through what I do... It always helps to see others make a mistake and you know not to do that again.

She focused on negative experiences others may have had and learnt from them, allowing her to either prevent being in that situation in the first place or cope with it efficiently if she was unable to avoid it. She specified that she learnt from mistakes other people made alternatively to paying much attention to their successes, demonstrating the crucial role negative experiences play in developing mental toughness in student-athletes.

A fitting example for this pattern of growing mental toughness through negative experiences comes from the sports domain of another student-athlete. Geoffrey explained the

relationship with his own negative experience and the consequences it had and how he turned the situation into one he could learn and benefit from:

I let in a goal that I thought I should've had in overtime. I bawled my eyes out all the way back to [town] and five days later I remember driving my car to the field at [university] turning on the high beams dragging the [equipment] off the side of the field and getting [my teammates] to shoot on me in the in the dark five days later.

This was an experience that stuck with Geoffrey for a long time and something he was happy to share as he felt it really showed his eagerness to improve his mental toughness and get his self-belief back through learning from that situation.

This pattern became apparent within the academic domain as well. Isla talked about the importance of living through negative experiences in the first place. They almost became a necessity once she realised the importance they have for improving her mental toughness in the future: “I think if you don't learn those lessons early on, you're not gonna be mentally tough in the real world so succeeding in it definitely comes from within you and wanting to succeed in an academic domain.”

However, it's important to note that negative experiences brought with them detrimental effects as well, especially on mental toughness. Isla expressed how exhausting the consequences of negative experiences (in this case getting injured again straight after being cleared from the previous injury) were:

I was out for the rest of the season. This particular point was one of the lowest as I was mentally in the sport or like throughout my career yeah. I just felt like I was physically and mentally exhausted with the whole like rehabilitation process.

Isla realised later on in her career that those harmful effects had to be addressed, but they ultimately also helped improve her overall mental toughness going forward: “There were definitely positives that came out of it in terms of in all the strength I gain from going through that.” This attribute stood out because negative experiences are often something many people want to avoid at all costs, but in relation to mental toughness, it almost became a necessity in terms of improving and growing one’s mental toughness state, to try and reduce the frequency of fluctuations in one’s mental toughness levels.

Carryover effect from sports to academics. The fourth sub-theme shows how improving mental toughness in sports led to improvement in mental toughness in academics, through skills that were improved. The data within this study suggested a primarily unidirectional relationship between mental toughness in sports and academics. Tera said, “My time management is so much better now, and I'd say like I've definitely learnt that from doing sport.” Her sport was very time consuming sport at a university level, as practices require them to be up very early. She felt that going through that challenge all these years that she had been competing allowed her to perfect her time management within the sport and transfer it to her academics as well.

The ability to find passion within sports and transfer this to other aspects of their lives was also a pattern that stuck out throughout the data analysis. For some participants, this started during university. In Gabriel’s case it came at an earlier point in his life, which was a point where important decisions for the future had to be made as well:

I think I learnt from [my sport]. When I was younger, I wasn't always the brightest. I liked recess, I liked gym class and like everything else. And then I went to high school, and it became apparent that like I wanna go to university and [play sports] and for my

mom like school is very serious I'm like for me like the mindset was like if I had to give 100% whatever I do. I got that from [my sport] 'cause I was like that like [my sport] I was like challenge me like that like if I applied this to school like maybe like I could like do better in school or high school, approach university with the same mindset yeah. I started approaching academics the same way I approach [sports] and that's what I see improvements in my school.

Gabriel talked about the struggles he faced throughout high school, in particular with motivation towards academic subjects he was not very interested in. Once Gabriel began being more engaged and committed to those classes, he felt it became an easy transition into university as well. He credited his academic success in his more recent university years to his mental toughness that improved through his sport.

Joetta spoke about a similar experience:

I think it definitely came from me when I had to shut out crowds like when I'm [performing a task in a competitive game] or something. So, I have never been able to listen to music to do a task. Being able to close out anything that is on has to be from sports. Those rowdy fans or something. There is nothing else it could come from I think.

She felt she had higher mental toughness when she did not have any distractions, and she transferred this skill over to her academic work to help her complete tasks successfully in that domain as well.

It is interesting when comparing these two experiences, that one student-athlete consciously knew he could become more motivated about his academics as it would aid him in achieving his goal. On the other hand, Joetta subconsciously transfer these psychological skills

from one domain to the other to help her become mentally tougher in academics as in the second example, but not realizing it until she reflected back in our conversation. This sub-theme often seemed to be a subconscious attribute of mental toughness. Student-athletes often realised during the interview that some of the psychological skills they use to improve mental toughness in their academic domain stemmed from utilising them efficiently already in their sports domain.

A different example by Gabriel highlights this phenomenon nicely:

I feel like 'cause like I think a lot of [athletes] have this mindset like once you [compete] everything else in life is easy and being an academic All-Canadian and stuff like that. It is easy for as it is not as mentally taxing as [sports].

This student-athlete explained how academic work becomes less taxing when he was committed to reaching all of his goals in his sports domain. The skills in dealing with mental stress transfer to the academic work and because that work is less taxing on the body and mind it becomes easier to be successful and improve mental toughness in this domain as well.

It is important to note however, that all the examples given were carryover effects from sport to academics and none from academics to sport. This may be an indication of how mental toughness differs in the two domains, but may be due to student-athletes having an easier time remembering their sports experiences more than any academic ones during the interview.

Overall, the theme of mental toughness's dynamic nature is highlighted through these four sub-themes: fluctuation and growth over time, performance is affected through mental toughness state, negative experiences have more effect on improving mental toughness than positive ones, and carryover effect of psychological skills to improve mental toughness in either domain.

Outcomes of mental toughness

Throughout the interviews with the participants, the student-athletes often described how mental toughness impacted their performance. This second theme generated five subthemes (i.e., embrace or seek the challenge, commitment to being successful as a student and athlete, focusing on the task, confidence, and consistency is key) that explored the different ways mental toughness has aided the performance of the student-athletes in both their academic and sports domains. The subthemes also addressed how different aspects of their performance throughout their university life were affected, showing how versatile mental toughness is amongst student-athletes.

Embrace or seek the challenge. Student-athletes described preferring to be an underdog, with lower pressure to win – alternatively, they described putting themselves in the mindset of being an underdog. As an underdog, student-athletes described they often felt challenged, although expectations were low, but were able to come out on top in any situation. The crucial part of this mindset was to actively challenge themselves. Student-athletes in this study felt that when they were challenged, they tended to perform better than if they were not challenged. They described feeling more stressed because their performance was often at its highest when they were faced with a challenge, but when there was no challenge, they were still expected to perform as if they were challenged. In these situations, they had to actively come up with ways to keep challenging themselves. When asked about this mentality in relation to mental toughness, Janey noted: “I find I do better when I don't have the pressure to win because the other person is ranked higher.” Based on her past experiences, she felt more confident performing at her highest level when there is no added pressure put on her by everyone expecting her to win.

However, sometimes student-athletes competed in a situation where they were the higher ranked athlete and thus the favorite. In those cases, student-athletes noted that it was important

not to level the playing field and lower their performance standards. Gabriel expressed this idea in his own words:

Like it's easier to like to visualize the goal when you're not the person that's feeling that he was the goal to beat. It's hard for me to imagine that and I think I got used to like having like a stronger opponent in front of me... A person that's that person that I find it hard against. For me to keep challenging myself like I gotta get more creative at the competition find better ways to challenge myself in my mind. So, when you're the underdog you kind of have a challenge before you as in kind of in the person, but when you're the person to beat you have to keep yourself entertained. But you have to kind of actively keep yourself challenged cause you know that the person you're facing is not necessarily the challenge.

Gabriel felt he had to actively find an aspect of the competition that would challenge him to keep his performance at the highest level possible.

Adopting this underdog mindset also helped student-athletes' performance within their academic domain. They treated the subject or class that they were taking as an opponent and put themselves in the mindset of the underdog, looking to constantly challenge themselves to help perform better in their academics. The following quote by Geoffrey expresses this sentiment:

That's the point of education. To sit there and look at something that you really don't understand and just know that you're gonna get it eventually and all the stress is off your shoulders.

When student-athletes embraced the challenge in academics, it also boosted their belief in their own abilities, as they trusted their skills to get the job done, even if it did not happen straight away.

Student-athletes also noted that utilising this mindset was helpful for improving their own performances. Joetta recalled an example of when she was still competing in swimming and explained how embracing the challenge actually allowed her to improve her own time: “I wanted to be as fast as them. I was not meant to be. But I thought if I at least tried to be as fast as them I would get at least halfway there.” She acknowledged that she was not the fastest swimmer, but knew she could get close if she tried to keep up with the faster swimmers. She was positive about it as she knew that this would help her improve her personal time and perhaps finish better overall, compared to going into the race and accepting the loss and not even trying to challenge herself in that situation.

This subtheme was seen as highly relevant within the academic domain as much as in the sports domain.

Commitment to being successful as a student and athlete. A prominent subtheme in the data as an outcome of mental toughness amongst student-athletes was commitment, and it was considered crucial for both their academic and sports success in university. Participants who set their priorities before attending university, felt it helped with their commitment to their goals. Joetta was fortunate enough to have learnt this from her parents before going off to university and to this day carried this lesson with her:

I remember being told something right off the bat when I was at [university]. It was if you go to university, you can either become an athlete and a student. Or you can be a

student and have a social life. Or you can be an athlete and have a social life. So, you had to pick. So just knowing that kind of showed me that my mindset had to be when I go away for school you didn't have parents around. Your goal was you give your all to the team and you give your all to your academics. If you have a little extra you can do your little fun stuff. When people come to school people think they're free. You're going to succeed more when you pick the two that you were supposed to pick.

Joetta explained how she had to shift her mindset from concentrating on both domains to just the academic one: "You have to train then and then. Now it's changed and my only goal for the week is read these 4 readings, but I know I have to do it." She knew her goals had changed and with that she had to change her commitment. She believed that being mentally tough allowed her to make this change in commitment and time management without much stress.

Joetta further explained how mental toughness allowed her to stay committed to her goals as she described an experience from her high school swimming:

I used to be a swimmer. Like we were swimmers since we were little. Like I was slow. It was always timed. And you always got to see your time. And you got mad cuz you're 30 secs before and I'm at 32 secs. And to shave off 2 secs is insane. In high school, I wanted to get to OFSAA. You've got to beat this time cuz that's the time. All year I was working on it just gotta get to that time. I never got to it, but I still tried my hardest. I never got mad that I didn't get to it. I'd get excited to get close to it. The cool thing about a second is that there are so many milliseconds. Yes, I'm like .1 or .01 off. It's that small itty-bitty goal that makes you wanna drive and go a little further achieve a little more the next time.

Joetta found motivation in getting close and working harder the next time to see if she got a little closer. The time commitment that a lot of student-athletes put into both sport and academics did not always result in successful performance – it often resulted in failure or loss or not quite achieving their goal. However, the mental toughness of these student-athletes allowed for the commitment and the perseverance to achieve their goals.

Similarly, Isla noted the importance of commitment, but also explained how mental toughness helped her deal with not reaching the outcome that she had hoped for after putting in that much time:

Yeah, you train for six months which is gonna lead up to the result. You want it not to just be a waste of time. Then you also have to be mentally tough in the sense that do you believe that you did everything you could, but in the end, you can't control what your competitors do. So, like understand that like some people are just gonna be naturally better or like they're gonna be training even harder, because they have the facilities to train harder you know, like rehab programs in the lead up to a better performance, like they have advantages that you don't. Train yourself to... to relax yourself in the sense that there's factors that... you can't control exactly.

Mental toughness was critical for making sure that the time she did put into her training was productive, allowing her to be the best athlete she could be. Isla also identified the realisation that she is not in complete control the outcome. She felt positive knowing she had done as much as she could, regardless of the outcome, and kept working to improve.

In academics the mindset of commitment and putting time into work in order to succeed was shown to be effective as well amongst the participants. Geoffrey noted about his academics:

All goes back to my consistency, build competence, competence builds confidence right. I've read the literature, I've done the practice questions and if I've gone to the lectures and taking notes and then I studied consistent. Now I know I'm confident that the subject and I'm confident I will do well on the assessment so yeah that's like an example of my mental toughness is just like a really good exam. Where you just knock it out of the park because you put in the work.

He knew exactly that when he put in the time, he would get the results he had worked for. He credited this mindset and corresponding behaviour to his mental toughness. His mental toughness helped him get into the mindset of committing to his task (e.g., assignment or studying for an exam), which in return increased his likelihood of completing the task successfully.

There was a key difference between the academic and sport domains. In comparison to the sports domain, most factors within academics were controllable. In academics, outcomes generally rely on the individual and their ability to work and comprehend the material provided. In an academic sense, there is not much competition. Within the academic domain everyone is simply trying to achieve the best grade possible, which anyone can achieve. Students can still compete with one another to see who does better, but the academic result of a classmate generally has no direct effect on their own results. In sports competition, the opponent's' or even teammates' performance directly affects their own performance and outcome, as there has to be a winner or a loser. As noted by participants, the only person that could really affect their academic performance was themselves. Geoffrey alluded to this during his interview as well. He knew that sometimes that was the hardest battle - the effort to put time into working on his academics was something he felt would hold him back most. However, he also understood this to be a controllable factor that could be fixed with the correct mindset:

I did years of elementary school, I did four years of high school, I did four years of university and now I'm in my second year teacher's college and I've you know that's hundreds and hundreds and hundreds of week's assignment coming up you have a test coming up and you know you feel like you're like how am I ever get this done and then it gets done right so I think just like knowing that you get these things done and not letting in the not even letting it get in your head about like you know how much stuff is due because you always get it done.

Geoffrey avoided getting overwhelmed and stressed out because he realised based on his past experiences that in the end, he always completed the task. He turned his attention towards the quality of his work.

The importance of using time productively within academics was discussed by Elora as well. She knew that she had dedicated time to study, but also understood that in that time her work needs to be productive. Acknowledging that this time can be wasted if not utilised properly, she got herself in the correct mindset in order to achieve her academic goals:

Like I have 3 hours. I could do far more in this time. This is 3 full hours of me working.

If I simply sit and utilized these 3 hours the way that I need to then I can get this done.

Gabriel developed a similar approach towards his academic domain. His approach was similar to what he learnt as an athlete, and he found it helped him with his academics as well. He had different motivating factors, but the commitment was still there, and his mental toughness levels enabled him to keep his commitment consistent:

Gabriel: I'm very organized like even like half times for like study I have like whatever weekly assigned I'm like I have like 7 days to do the work, like just I'm consistent with it

with everything I do in school. I know specially since I play without like I'm always like I'm always like over like overprepared like way beforehand.

Interviewer: So, kind of drawing a parallel to your of what you've told me about your wrestling experiences, that do you kind of breakdown goals smaller and smaller throughout the semester academically too?

Gabriel: Yeah, I think if I'm in terms like a month away that I'm not really thinking too much about it. I'm just like however would never learning right now is going to be there so I had to like focus on what's here take it like we sometimes I even like do you make my week, like what do I have this week I got accomplished and like it that's actually like I'm like I don't have enough that we can look like and then I'll look ahead. I've never really actually like crunch anything at the last minute. I've never had like just to finish something like something in next week and I have time now I got calculate now yeah and that's like I've always like still like one step ahead.

Similar to what Elora stated, he understood that he had available time that needed to be productive to stay on track. He compared his process in academics to the process he used in sports, as he stayed committed. The processes differed in that he did not necessarily plan ahead in his sport as much as for academics, but this difference may be due to the nature of the two domains rather than his approach. As he was not responsible for planning his team training sessions, he could not efficiently plan each practice; rather, his coaches and veteran teammates were responsible for that role. His academics were easier to plan ahead, since he decided what amount of work needs to be done each step of the way to complete his task successfully.

Isla voiced a similar opinion with respect to comparing her commitment in sports and academics: “I think sports makes you a more time management oriented person”. Their experiences illustrated the role mental toughness played on the commitment of student-athletes. They were able to commit when they knew each day what their task was that would help them succeed in the end.

Focusing on the task. The participants also noted their time invested had to be productive and lead them to improving their skills in whatever task they were focused on. Focusing on their task was described by student-athletes as a factor that helped their performance remain constant. Telling oneself to commit productive time to a task is one thing, but then actually focusing on the task for the whole time was another struggle that student-athletes identified as important for success. This subtheme, similar to the commitment subtheme, again showed a transferring of skills from one domain to the other. Elora experienced this within both her sports and academics and found it equally important in both domains:

[My sport] is one of those sports yeah so, the focus part comes in with telling yourself that you can do it, and you will do it, and you will face your day around getting up that early and focusing to go to bed on time. Or focus comes in with schoolwork especially for me as not multitasking when you're doing work. So, you're sitting down and I would say that's where they correlate. It's you're sitting down telling yourself you're going to do it you aren't going to direct your attention toward anything else, but their actions focus on that specific assignment and if you let your mind wander if you're not going to be able to do it in the time that you told yourself you would be able to do it. So, it's kind of talking about distractions yeah that is that kind of why you're like blocking out the distractions.

Within her sport, a lot of the focus had to be directed towards her daily training routine. Even more important was focusing on the fact that she was able to perform successfully every time during training or competition. Elora elaborated on the importance of focusing on the task: “now you actually are capable of sitting and getting this much work done in this much time”. She felt that when she was focused, she had high levels of mental toughness that allowed her to focus better on the task at hand. Elora also identified the importance of the constructive use of her time that she had given herself to do the task through focus.

Joetta had a similar experience with her sports with respect to blocking out distractions: “Since forever I have always been able to block out what I didn’t want in my head. It’s pretty cool, yeah.” Relating back to the subtheme of transferring skills from one domain to the other, she credited this useful skill to her days playing sports and the ability of tuning out the rowdy fans during a game. Her mental toughness allowed her to focus on her performance on the court by blocking out distracting spectators or other players. Now she can do it in any situation and is aware of its importance towards her success.

Also, important to blocking out the distractions was the ability to separate school studies from sports. The two domains are heavily linked within their everyday life as a student-athlete. However, it was important to be able to leave stress or other issues from one domain in that domain, and not bring them along to the other. Scarlett put it simply yet effectively, explaining that this was an important aspect: “Whatever time you have to dedicate that just for your studies. Separate your practice from your studying”. In first year, she felt like she was thrown into this whole new world trying to figure everything out, but she knew she could not let stress from one domain take over her other domains as well:

It's crazy how in first year so many of these athletes come in like they know what they want as an athlete and everything like that, but academically like it will change you and then it may affect your training.

This links back to utilising time productively when you are committed, as she put time aside specially to work on a task, but she also knew putting that time aside was not enough. She had to actively make sure she was only concentrating on that one important thing at that time.

Geoffrey offered a similar opinion when he was talking about the importance of being able to focus through mental toughness. He talked about the importance of keeping his academics and sports separate:

Think when you are off the field when you are not locked in. Work as hard as you can in that school and be as either student or as an adult at work or family members. Truly cutting out those outside stressors when you step on the field or the rink or the floor that's gonna make you more mentally tough 'cause less stressors there are, the tougher you're gonna be right.

He described this similarly to Elora in a sense of blocking out distractions, but combining that with Scarlett's point of making sure you leave your stress from another domain at the door to focus on the domain you are currently engaged in. Amongst student-athletes, this pattern of keeping stressors out of other domains in their life was important to being mentally tough, but was also enabled through their mental toughness, creating a positive feedback loop for their mental toughness.

Confidence. Gaining and continuing to build confidence through adversity was a distinct effect of mental toughness altogether. It was important for the student-athletes to be consistently

confident in their abilities, and as their performance improved, so should their confidence along with it.

There was also an important distinction to be made between confidence and over-confidence. Geoffrey earlier on described how consistency bred competence, and competence in turn bred confidence. Confidence should be based on abilities and competence, rather than on blind belief. However, this did not mean to shy away from tasks they might not be good at. Geoffrey talked about how he took on any challenge, but also remained realistic about whatever he was faced with:

Yeah, like whether it was you know playing the best team in high school hockey and you know everybody's like well we gotta good run but we're gonna lose and then I think visualizing myself like winning the championship and stuff and never ever thought I was gonna lose at anything. Really maybe it's blind crab shooting now but like I don't it's like either I'm really good at something and I'm confident in myself or I'm not getting something but I'm like hey you know we're gonna take the dive anyways and adventure gained right. So yeah, I've always kind I've always had this I don't know believe in myself more belief with things that I have more confidence. In my opinion consistency breeds confidence and sorry consistency breeds competence and competent makes confidence. So, like things like [my sport] where I've seen thousands of shots across ball against the wall on million times that consistency so I know I'm a competent lacrosse player making me confident but then there's other things in life that I'm kind of just like see what happens you know, you'll never know.

As an athlete, he described that he had faced many challenges in his sports and stayed consistent with training. In turn, this built his confidence in a relevant manner, where he knew that whoever

he faced, he had the ability overcome the challenge. In an unfamiliar situation now, instead of blind confidence, he knows he might not fair well, but is still eager to give it a shot and might even build his confidence with this new task. Amongst the student-athletes, this understanding of confidence became important when facing new and old challenges. The understanding of their own confidence and awareness of 'is my confidence realistic?' was crucial in situations they faced daily.

Throughout the interviews, the student-athletes acknowledged that confidence was important, and anyone could be confident. However, when it came to mental toughness, student-athletes put as much importance, if not more, on the ability to prevent themselves from losing confidence, or the ability to build it back up. Mentally tough student-athletes were aware when they lost confidence and were proactive about building it back up. They understood that if they let it diminish too much, all their work could become redundant. Isla noted:

... the minute you know see yourself get down or a negative kind of commentary and their own visualization when you get sent down that spiral of losing your confidence, everything you kind of trained for in the span of like 10 seconds is lost, so yeah that's pretty much it.

Isla understood the importance of not losing confidence as an effect of negative stressors. She knew everything she trained for would have been lost within a short period of time, if she lost confidence in herself. Confidence broke down fast and if she did not come out of that spiral the consequences could become more detrimental.

Elora felt similarly about the fragility of self-confidence and belief, but also knew the importance of getting it back as quickly as possible. A large aspect of her decrease in self-belief

came down to fatigue. As an athlete she felt that fatigue was often the driving force in fluctuating levels of her self-confidence and belief at times. She said:

... once you start letting yourself do that then there is you started telling yourself that you can do that and you're allowed to do that and then it's almost like an all or nothing if that makes sense free from it like I think you can definitely recover from it if you decide within the moment no from here on out I'm going to do this, but if you keep letting yourself be broken down like that it's just a downward spiral yeah that makes sense like you have to catch yourself.

Just as Isla described, allowing the adoption of bad habits and going down the spiral of letting yourself get broken down had consequences to her confidence. Once she recognised her fatigue it was too late; it almost becomes an all or nothing situation every time. She lost her confidence to keep going. To her it was important to note that she could build herself back up and restore her confidence doing so.

The important thing amongst other student-athletes was the ability to catch themselves indulging in bad habits or thoughts that affected performance negatively, and make sure it was corrected immediately. That was the point where they identified that mental toughness played a critical role. The ability to become aware of their behaviour and assess its effectiveness towards achieving their goals, as well as the ability to restrain themselves from spiralling and handicapping themselves by losing confidence was something the student-athletes associated with their mental toughness. It assisted them in being aware and preventing them from adopting a detrimental routine.

The student-athletes in this study understood the importance confidence carried towards their performance in both academics and sports. Mental toughness played a key role in gaining confidence. However, also important was that mentally tough student-athletes recognised when they lost confidence, and they remedied it immediately. They knew that once they gave in to loss of confidence, that it became a downward spiral from there, which became harder to build back up. I found this subtheme highlights the extent to which mental toughness had an effect on confidence. It was not just the confidence in their own abilities, but also the confidence in recognising bad habits and more importantly building it back up when it was low. Knowing that one could rebuild confidence was essential to keep improving as a student-athlete.

Consistency was key. This subtheme relates to the last part of the Gucciardi's (2008) definition, which was presented to the participants at the end of the interview: "...but also to maintain concentration and motivation when things are going well to consistently achieve your goals (Gucciardi et al., 2008, p.278)". All of the student-athletes in this study felt that part of the definition was something they had not thought about in relation to mental toughness, but that it made sense and some of them would opt to include that in their own definitions as well.

Geoffrey was one of the participants that felt that he did not think much about consistent performance when everything was going well, but felt as if this was an important part of mental toughness:

I love the second part about remaining like mentally sharp things are going well never really think that you need mental toughness. It is a defence against negative outcomes but yeah, I guess I guess you need to keep that mental toughness when things are going great for you as well right guys like you and not become complacent you can never ever ever

ever become complacent or satisfied I'm gonna definitely write that down and you know kinda tailor that into my mentality.

Keeping performance consistent did not necessarily mean to perform at the same level. To be consistent meant to consistently have the same work ethic to keep improving, meaning that with time your performance should increase if you keep working at it. Geoffrey expressed earlier that he felt that he was mentally tough. To see how he interpreted that part of the research definition and took it a step further to incorporate into his mentality showed how eager he was to keep pushing himself and improving not only his physical skillset, but also his mental one.

Jerold talked about how this part to the definitions made sense to him as well. He was happy with the definition that he came up with at the beginning of the interview, but understood that it was important to keep striving and not let go even if you are ahead:

Yeah, for the most part I think I I'm happy with my definition. This definition yeah that's good

Interviewer: do you agree with that last point

Yeah, I mean you always got to be like on the ball if you will concentrated on your goals 'cause yeah you will have highs and lows. We only talked about the lows, but the highs could be just as detrimental. If you don't know how to deal with them in my opinion you can't succeed. The best way I can think about is someone who just like came across a lot of power or a lot of money, yeah, they just don't know how to deal with said amounts of money or set amount of power they might abuse it.

The important aspect for him was that some people who might not be as mentally tough would let success get to their head and could not handle it. He realised, just as Geoffrey did, that mental

toughness had an effect during the highs of someone's performance as well. A lot of time he just focused on mental toughness when it came to the lows in his experiences in academics and sports, but it became just as important dealing with the highs. Scarlett had a similar opinion when it came to dealing with the highs of someone's career:

The second part does make a lot of sense as well is just difficult for them to stay there because sometimes people get airheaded but sometimes like you're at the top in the back and then you kind of fall out of that that mind set of OK I'm better than everyone I don't need to work as hard I need to get better 'cause I'm already the best.

This subtheme significantly highlights the breadth of mental toughness and what it enables student-athletes to deal with in specific situations that they can encounter at any point in their university career.

Elodie identified another dimension to mental toughness. She realised once she read and understood the definition that mental toughness helped her achieve her goals and credits a lot of her success to her mental toughness. However, once you have reached your goal, she found that it was almost a new chapter that mental toughness plays a crucial role in as well:

A lot of times they forget about the positive aspects of mental toughness, and it makes sense to me though. Because in a way yeah you overcome your obstacles and stuff so you become the best that you can possibly be right, but then also to stay the best you could be it also takes a whole other part of mental toughness right. So, becoming the best is hard but then staying the best sometimes is even harder.

She valued the role mental toughness played in achieving her goals. However, she recognised that it did not stop there. In sports there are other competitors wanting to challenge and become

better once you are at the top. In academics there is not a lot of direct competition, but in certain situations where being the best in an academic field is something everyone is striving for throughout their university career, these competitive environments can occur just as easily.

This emerging theme is important towards further understanding mental toughness, including the outcomes of mentally tough student-athletes and what they believed it enabled them to do. This theme explored the outcomes of mental toughness amongst student-athletes and highlighted a shift in attitude (i.e., embracing the challenge, committing to goals, confidence in their abilities, remaining focused on the task, and staying consistent with their performance

Resilient mindset

The third theme that emerged from the data was *Resilient Mindset*. Student-athletes felt that resiliency played an important role in their mental toughness in both academic and sport domains. They associated the term resiliency with the ability to keep pushing themselves, particularly through adversities of any form. This became clear with the participants early on in the interviews, when they were asked to define mental toughness in their own words. Every participant included resiliency in some form in their definition. The four subthemes of this theme were: with resiliency comes mental toughness, physical resiliency, emotional resiliency, and optimism.

With resiliency comes mental toughness. Participants were asked to define mental toughness, and the main aspect of each definition was resiliency. This highlights the importance resiliency has in relation to mental toughness. Participants included varying descriptions of resiliency when asked to define mental toughness in their own words. Elodie formulated this sentiment very well and straight to the point when asked to define mental toughness: “Just

having like a ***** thrown at you all at once and being able to process it”. This relationship does make sense and mental toughness is often linked to the ability to keep going no matter what challenges are encountered. Processing every detail often became the biggest hurdle towards overcoming challenges. Rather than just being overwhelmed with various aspects of the challenges in front of her, she credited mental toughness with her ability to process the critical aspects of the challenges in order to tackle it effectively.

Unlike the other participants, who were in their final year of undergraduate or even in a graduate level program, Janey was a younger student-athlete. When Janey was asked how she would define mental toughness she expressed the following: “I think an individual’s resilience, 'cause I think like really really see if someone is likely to fail or if they instead give up.” Janey reflected a mature approach to mental toughness, especially as a young student-athlete. In both her academic and sports domains, the level at which she needed to perform had risen dramatically compared to high school. Going into university, student-athletes often find themselves in situations where they are occupied with many tasks at once, as mentioned by Elodie in the previous quote. Therefore, it was important to approach challenges with the idea that you might not succeed at everything straight away, but that does not mean you have failed. Janey put it nicely in that mental toughness was often affected by someone’s resiliency, as it determined whether they continued to strive to improve or simply gave up.

Physical resiliency. This subtheme focused primarily on the perception of mental toughness within the sports domain of student-athletes. It is rare that someone has to endure physical challenges (e.g., the ability to get back up when taking a physical hit) within their academic domain and the experiences recalled by the participants were focused exclusively on their sports domain in this case. To become mentally tough, many participants credited their

physical resiliency and their ability to fight through injuries or other physical challenges they had to overcome to succeed. The student-athletes felt that by going through physically demanding situations, they understood how mentally tough they were and in the end that process helped their overall mental toughness.

Jerold was straightforward in his description of how he perceived physical resilience in relation to his mental toughness, saying, “My first thought would be resilience and the notion of getting back up after you get hit.” Jerold understood this ability was important particularly in his sport because it was a big part of his performance. However, when asked to elaborate on this he talked about how his resilience was fundamental to his mental toughness.

Jerold: Hopefully it doesn't sound too spiritual but like mind and body and how they kinda are the same. Like it's 'cause I think getting hit physically kinda takes a toll on you actually. So then once again like are you able to deal with that in a constructive and healthy manner and move forward.

Interviewer: OK and then when you mean constructive and healthy, what are specific kind of things that you do?

Jerold: Honestly just not being a little ***** about it. Yeah, not playing with flailing around on the ground. I mean I don't doubt some athletes are hurt and they need attention but yeah. But yeah, I suppose constructively, also healthy being that like you don't push it as well, and you gotta be mentally tough enough to know when to stop.

Jerold elaborated by explaining how getting physically hit took a mental toll on him as he found his body and mind to be linked in these situations. He acknowledged the fact that getting hit was normal, but for him being mentally tough meant moving forward from that in a constructive and

healthy manner. What he meant by constructive and healthy was not making a big deal out of every physical incident he had to endure, and to not take it too far in terms of putting himself into these physical situations repeatedly. That's where he really differentiated between the mentally tougher and mentally weaker student-athletes in his opinion. He found the ability to move on, but also to learn when it is going too far, had become extremely valuable to him as an athlete in this case and his mental toughness.

In other cases, there was more to these situations than just the physical demand of getting hit as well. Isla was one of the participants that endured a devastating injury during her university basketball career, which sidelined her for the better part of a season. It was not the initial injury that she felt tested her mental toughness, but rather the gruelling rehabilitation process that she had to go through in order to return to play. She explained that even though it was a hard road to get back, it was worth it to play again. However, shortly after she had recovered, she was struck with another devastating injury, and she felt even more mentally challenged by this one.

And then to have that second injury, like I remember when I got hurt like in practice no one really, thought it was really believable, but I remember thinking this really hurt and it hurt more than it really should have. And I was almost hysterical at that point. Like thinking how I can possibly go through another thing right now it was a lot harder almost. Like it's weird I think it was more difficult mentally I guess I would say, but that's only because I was previously going through you know 12 months of it. ... Yeah, you know looking back I think in my first and second year I was an out of control [athlete]. Like I was often you know putting myself in stupid situations kind of thing. Yeah, I think I was more concerned with being careful you know. What's interesting is that I was putting

myself at like better positions yeah so you kind of try to in a way to avoid becoming injured again.

Isla knew she had to fight through it though to play again and she understood the process already. She felt that her physical resilience was in part due to her high levels of mental toughness, but it also allowed her to further improve her mental toughness simultaneously. She credited her mental toughness with the change in how she perceived and played the game. Isla explained that throughout the rehabilitation process, she could focus on the mental part of her game, which also kept her motivated through that stressful time. Through sustaining these injuries, she grew mentally off and on the court, but was also able to get through that difficult time by being mentally tough and resilient in the first place.

Injuries often became a turning point mentally in an athlete's career as they had to assess how they got injured in the first place, and how their body was going to respond to physical interactions in the future. However, it also allowed the athlete to identify how mentally tough they really were and bounce back from an injury. Gabriel was another participant who had endured a major injury during his athletic career. His injury was an overuse injury, which led his body getting injured under the immense amount of physical work he was putting it under.

I had a lower back injury which was just overuse injury where like I just like pushed myself really hard like in the weight room. Yeah, like my lower back just like gave up on me I think it made me like step back... When I'm like pushing myself now I make sure like to prioritize like recovery by taking care of my body not letting that like dictate my life. Training should be more aware of putting more time into like the recovery I guess and when I do get an injury like rehabbing it like properly.

Gabriel acknowledged that his mental toughness was able to get him through the rehabilitation process of this injury, but also allowed him to change his approach to training in order to prevent similar overuse injuries in the future. Like Isla, being resilient was about acknowledging the problem in that moment and bouncing back from the injury, but not falling back into his old debilitating habits. These two experiences highlight the importance of physical resilience within the student-athletes' mental toughness.

Physical resilience was also shown to be important to student-athletes when it came to persevering and pushing through physical fatigue over a long period of time. Tera identified physical resilience with her ability to stay mentally tough throughout her demanding schedule within her sport: "In [my sport], I would say is endurance like your willingness to keep going back to it every day especially during season we're waking up at 4:00 AM." In her case she was not in intense physical pain (as from an injury); instead, it was a constant state of body fatigue throughout her season. She found her body's endurance to a physically demanding schedule, to be crucial towards being mentally tough and even becoming tougher going forward. She credited her mental toughness with her ability to keep getting up at 4:00 AM in the morning over the course of her season in order to improve her performance.

Emotional resiliency. Amongst the student-athletes in this study, emotional pain, even if not visible, could be just as detrimental to the student-athletes' mental toughness as physical pain if it was not handled correctly. Janey found herself in a situation where her emotional resiliency was important:

I experienced this year in university the one my first quiz and my one class was really bad. Like and I'm not I'm not used then getting like bad grades it was kind of shocking,

but I had to realize I could have done this, or I could have done this to prepare for that quiz. And the rest of my quizzes are now like high marks.

Her experience in her academics provided valuable insight into the struggles some student-athletes faced early on and how being mentally tough got them out of a negative situation.

Scarlett was in a similar situation where the way she handled her emotional distress determined her performance in the end. She had just heard some news right before a competition that emotionally distressed her. However, she understood that the news had nothing to do with how she needed to perform, and she felt her emotional resilience helped her perform effectively.

Yeah, it kind of it put me in a space where I'm like OK like what am I gonna do in this situation. So, I put my headphones on I kind of just went into my own zone didn't talk to anybody. When I went to that race all I thought about was like OK I just heard this bad news I want to be at the finish line as soon as possible so I can call my parents I can talk to them so for them for that time like I think that really helped me like with my sports performance like it really enhanced it to be honest that could help me get a PB.

Emotional distress is often something teammates or coaches do not pick up on as it is internalised within the person, leading them to handle it on their own. Scarlett felt that emotional resilience was a crucial part of her mental toughness and even credited her improved sport performance (i.e., hitting a personal best) to her ability to be resilient through emotional stress.

A similar experience was highlighted by Geoffrey as he described his national championship game and therefore the last game of the season. After he let in a goal and his team lost the game, he was determined to bounce back from this emotional stress and put it behind him by training and improving his performance to avoid it reoccurring. This is a fitting example

of high mental toughness amongst student-athletes. Geoffrey knew he was under emotional stress and took time to deal with it in his own way after the game. He knew the consequences and stress this emotional pain could put on his mental toughness and decided to fight through it and turn the situation around to his advantage.

Gabriel talked about emotional resilience in a more general sense amongst student-athletes and how crucial it is towards mental toughness overall:

The ability...to come on...obstacles or challenges while still being able to...remain focused. And...sleep and not just...I'm trucking through everything but...emotionally and physically...regulated, while still be able to...overcome...one obstacle at time

Similarly to the previous two experiences, this quote showed how important he believed it was to deal with emotional stress, but also to come out of it knowing you have to keep moving on and improving, which was a similar pattern amongst experiences with physical resilience as well.

Optimism. The last subtheme of *Resiliency* is *Optimism*. The examples in this sub-theme were often generalised to how the student-athletes approached situations in both their academic and sports domains. This is a subtheme some might not directly associate with resiliency, but I found that within the data revolving around the different subthemes of *Resiliency*, there was often a pattern of optimism amongst the student-athletes. It was important for this study to explore this theme and how optimism specifically contributed towards resilience amongst student-athletes. Gabriel expressed how breaking down his overall goal and knowing what he needed to accomplish to get there allowed him to keep going and keep performing at the level that he knew he could perform at, whilst keeping a positive mindset:

Being able to like overcome like one obstacle at time whatever comes in front of you. OK kinda yeah so breaking down your overall goal to kind of just OK if I do this right and do this right then overall, I should be good.

This strategy helps him get into a positive mindset where he did not mind running into challenges because he knew that once he got through it, he would be closer to achieving his overall goal. To be resilient, it was crucial to be in an optimistic mindset; otherwise, it was hard for the student-athletes to justify why they should keep going and get back up when they knew they might fail again. Student-athletes felt that to be mentally tough they had to be positive about their outlook on everything that they did.

This optimistic mindset also benefited their resiliency, as they acknowledged that the process was never going to be easy, but as long as they found joy in the process, they were able to persevere for longer. Tera elaborated on this idea and described how she found optimism to be such a strong factor in her ability to go out every day with the same energy:

Being optimistic as you said about what you can get done trying to just enjoy anything that you enjoy is always gonna be way easier than anything you don't enjoy. So, enabling your mind to turn a negative into a positive one enables it to go, makes a big difference for me.

She found it important to keep positive and enjoy what she does. To her it made the process easier and more enjoyable at the same time.

Overall, the consensus amongst the student-athletes was that *Resiliency* played a crucial role within their mental toughness. *Resiliency* took on different forms amongst the student-athletes, which were explored as the four subthemes (i.e., with resiliency comes toughness,

physical resiliency, emotional resiliency, and optimism). *Resiliency* was shown to help in a wide array of situations that student-athletes encounter throughout their university life (e.g., injuries, emotional distress, receiving poor grades in classes, and dealing with performance setbacks in competition).

Relationships

The fourth and final theme that was constructed from the data was *Relationships*, despite the fact that none of the questions throughout the interview addressed it explicitly. Previous studies had identified that the environment of athletes played a crucial role within mental toughness. However, they addressed relationships in general in past studies, whereas the data in this study was able to show distinctions within this theme amongst student-athletes. It became apparent that student-athletes made sure they had specific professional and personal relationships within each domain (i.e., school and sport) in order to improve their mental toughness and to succeed. The athletes suggested they needed boundaries between their professional and personal relationships – even if the same person fulfilled both these roles - in both sport and academics in order to succeed in each domain and not build relationships which could deter any possible improvements in mental toughness. There were two sub-themes in this theme, labelled *Personal* and *Professional*, to reflect the different interactions student-athletes had with people in their lives. These two sub-themes differed substantially when it comes to *where* these relationships took place for the student-athletes. For personal relationships, these relationships could be with peers or teammates, but aspects of their relationship outside of academics and sports with that person were influential on their mental toughness.

Personal relationships. The first sub-theme, *Personal Relationships*, allowed for insight into how student-athletes managed their relationships with fellow teammates or coaches - outside

of sport performance - in order to get the most out of that relationship in relation to mental toughness. Student-athletes felt that a healthy relationship away from their sport or classes was important and helped them improve their mental toughness overall. These relationships may have been with people who were on the same team or in the same class, but it was important to build those relationships outside of academics or sports as well, to support them with challenges inside those domains. Joetta described the relationship she had with one of her teammates, and how different this relationship was off the court,

Off the...court you could never see us screaming at each other. So, I think making those kind of connections and relationships with people helps with your mental toughness...

Sometimes in women's sports you can't criticize cuz someone will go 'what I'm terrible?'

And I'm like no no no that's not what I meant. So having those relationships helps.

The personal relationship outside of the sport, in this case, helped the relationship on the court. This off-court friendship was necessary to keep a healthy state of mind overall, but to also keep her mental toughness levels high when she was performing, as she knew she could give constructive criticism without it damaging her relationships off the court. It was also important to keep those relationships separate, even if it was with the same person, as that allowed her to make clear boundaries, preventing off-court relationships from damaging her mental toughness on the court.

The effect that a positive personal relationship had on student-athletes' mental toughness was further supported by Geoffrey, who stated,

My first year [at another university] I split time with the older goalie; he was [on the provincial team], and he was like a he is such a mentor to me I owe I owe so much in this

sport. I don't think I would be where I am standing if wasn't for him yeah and he really preached that healthy competition and he's like an older goalie brother to me.

Geoffrey illustrated how he grew very close to his teammate and became almost like an older brother to him. He explained that his goalie brother always preached healthy competition allowing him to push himself hard and get better at his sport. It was important to him to build that relationship on a personal level in order for them to be comfortable enough pushing each other to the limit as goalies. He felt that his personal relationship with this teammate was just as, if not more, important off than on the field, towards increasing his mental toughness within his first year on the team. These two quotes highlighted precisely the effect healthy personal relationships have on mental toughness, and how student-athletes perceived is the best way to maintain those relationships.

Professional relationships. In the second subtheme, *Professional relationships*, athletes perceived that professional relationships were important towards their mental toughness and performance in both their academic and sport domains. They felt that these professional relationships aided them in building the required skills necessary to achieve their goals in either domain and that having someone on their side to help them improve if they had concerns or questions was crucial. They also alluded to the impact that positive professional relationships had on their mental toughness, as these relationships helped them build overall confidence in their abilities through reinforcement from a trusted professional source. Even in situations where student-athletes were struggling to improve performance they felt having a close professional relationship with someone whose judgement was trusted helped with staying mentally tough and overcoming that struggle with low confidence. They felt the reciprocity of the relationship they

received, by showing willingness to improve and placing trust in that relationship, was valued highly and helped them succeed further. Elodie observed in the academic domain:

You know that like if you study in the for if you ask a lot of questions in class then like have a good relationship with the prof and really show that like in a year, a student who cares transforms into getting like those good grades like high averages you know.

Elodie understood that this relationship helped her achieve her academic goals more effectively, possibly alleviating stress that came with not following up with the professor to make sure she understood what was being taught, for example. She felt that showing engagement in the topic of study or in the class in general would help build a good professional relationship and help her commitment to the class in general. From a mental toughness aspect, she felt that receiving that help because of the professional relationship she built with a professor through commitment made it easier to acknowledge that she needed help and then also ask for it. For her this was an important aspect of mental toughness amongst students - the acknowledgement that she was struggling with something, but also knowing that because of her professional relationship, she could work at improving on her struggles with help she needed and was happy to ask for. In a positive professional relationship both sides need to be committed to each other to help each other grow and improve.

Commitment to each other to help each other grow and improve was also a good description of professional relationships within the sports domain of student-athletes. Joetta, who was quoted earlier on her perceptions of how personal relationships were important to have for her mental toughness, also touched on the importance of a healthy professional relationship on the court:

Like when I played at [college] I played with close friends. I made sure that my connections with them were 2 separate ones and stayed separate. I literally played with [teammate]. And she would scream my face off if I wasn't doing something right. And I was like yeah, I know I got to get on it... Like when someone screams at me, they're screaming at my player self if that makes sense. My on court.

This quote illustrates the important effect a professional relationship had on the mental toughness and general eagerness to improve of student-athletes. She stated that when she got screamed at, she did not take it personally, but rather acknowledged she made a mistake and got on it straight away to fix it. Having that kind of relationship with a teammate was very important to her. She knew that if her teammate messed up, she would want her to call her out on it as well. This was the most efficient way for her to improve in her sport. It also helped student-athletes improve their mental toughness, as it helped them deal with mistakes constructively and simultaneously taught them how to take criticism without feeling attacked.

As this theme emerged from the data, it became clear as to its importance towards the overall perception of mental toughness in student-athletes. Within university life, student-athletes tended to meet and build relationships with many people in both their academic and sports domains. It was important to student-athletes to be able to develop and manage those relationships – personal and professional - to keep their mental toughness levels high. Making the distinction between personal and professional relationships was the best way to portray how student-athletes manage theirs. It was also possible for one person to fulfil both roles.

Chapter 5: Discussion

General discussion

The purpose of this study was to investigate the perceptions that student-athletes have of mental toughness: sport and academics. The interviews were designed to allow participants to explore their past experiences in relation to mental toughness. In the sport psychology literature, the understanding of the importance of mental toughness on athletic performance has increased significantly over the past two decades. However, within the academic domain, research is still in early stages compared to that of the sports literature. Even less mental toughness research has focused on the unique demographic of student-athletes. Student-athletes are required to perform at a high level in both of these domains. Therefore, the ability to understand mental toughness within both domains amongst student-athletes could be highly beneficial going forward for this demographic.

Throughout the data analysis, four main themes were identified from the interviews: nature of mental toughness, outcomes of mental toughness, resilient mindset, and relationships. Each of these themes also has several underlying subthemes contributing to the overarching theme. These themes allowed for the identification of how mental toughness is perceived amongst student-athletes, but arguably more importantly, the identification of the similarities and differences between the two domains. This information can be further used to understand how mental toughness amongst student-athletes is affected and how it can be enhanced. It also addresses factors that enable student-athletes to achieve the high standards they are constantly striving for, ultimately leading to design possible interventions to improve it.

One aspect that makes this study stand out from the previous studies is the fact that mental toughness was investigated in both sports and academics simultaneously. Previous research (Crust et al., 2014; Gucciardi, 2017; Lin et al., 2017; Weinberg et al., 2016) examined either sports or academics individually and although some similarities were apparent (e.g., commitment and confidence), whether it was perceived to be similar across the two domains was unclear. It was important to be able to identify whether mental toughness, in the case of student-athletes, transfers across those two domains. This is something that will be discussed extensively throughout this chapter. It is important to note, however, the relatively small emphasis placed on mental toughness within the academic domain (compared to the sport domain) amongst student-athletes. As the participants recalled their own personal experiences with mental toughness within the two domains, it became evident that they had to think longer about specific situations where mental toughness affected their academic experiences. Perhaps they had not thought about mental toughness in academia previously, or it was generally not a topic that was discussed with classmates or professors. Compared to their experience with mental toughness in sports, coming up with examples of mental toughness in academics seemed harder. This study does suggest a transfer effect of mental toughness, but the experiences of the participants showed the transfer only from sports to academics, and not the other way around. This may be due to the emphasized importance of mental toughness within sports. Coaches and sports psychologists often try to focus specifically on helping their athletes become mentally tough. In sports, there is more to win, but also more to lose in a constant competitive environment compared to academics, where there is no winner or loser as everyone can do well. In sports there has to be a loser or a winner at some point. Hence coaches and sports psychologists acknowledge that champions within most sports need some degree of mental

toughness. It is also something that is talked about frequently on media outlets analysing sports performances. Rarely do teachers or professors emphasize mental toughness within the classroom, and there is not much investment in media that covers academic analysis and performance. Introducing the concept of mental toughness within academics could potentially lead to transferability from academics to sports. The challenge with that would be motivating students to work on their mental toughness, as they have no coaching staff whose instructions they need to follow in order to gain more playing time or make the overall cut for the team. Academics is much more independent in that sense, which presents the challenge of whether students would prioritise mental toughness in their free time. Additionally, professors and instructors do not have as much vested interest in their students' performance, as coaches have with their athletes. It is important to note that all students could benefit from developing mental toughness in their academics, and not just student-athletes.

Gucciardi (2017) put forth an updated definition of mental toughness, defining it as: “a state-like psychological resource that is purposeful, flexible, and efficient in nature for the enhancement and maintenance of goal directed pursuit.” (p. 18). The findings of this study have suggested that this is an accurate representation of mental toughness. Student-athletes expressed how mental toughness is dynamic, fluctuating throughout their time at university and these fluctuations were often determined by varying experiences that affected their mental toughness. This emphasizes the state-like nature of mental toughness, as proposed by Gucciardi (2017). Student-athletes acknowledged that in specific situations where they felt less mentally tough, their performance suffered. The definition also highlighted that mental toughness is a goal directed pursuit, which is supported in the current study. Goals such as student-athletes making sure they stay committed to their priorities. The athletes talked about how their goals with

respect to sport and academics helped them prioritize their efforts, set goals, and increase commitment, leading to success.

A theme that emerged from this study that had not been explored in any depth by researchers previously was *Relationships*. Relationships have been noted as a factor affecting mental toughness (Thelwell et al., 2010). However, the current study provided further insight into the different types and roles of relationships affecting mental toughness. Student-athletes expressed the importance of professional and personal relationships to higher levels of mental toughness. Amongst student-athletes, teammates and coaches played a critical role, and often took the form of both professional and personal relationships simultaneously. Previous research has shown a link between student-athletes and their ability to form stronger relationships through higher levels of social skills compared to non-student-athletes. For example, Jalili et al. (2011) found that student-athletes had higher levels of social skills than non-student-athletes, suggesting that student-athletes may place great importance on building relationships throughout their university career. In this study, positive relationships, both personal and professional, were seen as important towards the development of mental toughness. Personal relationships with teammates off the court helped create stronger relationships on the on the court, as student-athletes believed those strong personal relationships allowed more freedom to criticize teammates in training without them taking it personally. Stronger personal relationships allowed student-athletes to recognize they were on the same page and that sport-related feedback was done without negative intentions. These relationships also helped the athletes deal with criticism they received from teammates. This finding is consistent with Gucciardi (2015), who found a link between higher levels of mental toughness and social goal achievement, indicating that building stronger relationships outside sport helped increase mental toughness amongst student-

athletes. Thelwell et al. (2010) found that family relationships and environment are critical to developing mental toughness in athletes. The findings of the current study suggest that this can extend to someone's "sports family" as well. Having those close personal relationships with teammates could mimic those of sibling relationships for some student-athletes. This would make sense, as family is often far away for many student-athletes at university, and they spend the majority of their time training or studying surrounded by teammates. They actively seek out close relationships as such to create the environment of a family away from home (Thelwell et al., 2010).

Within the theme, *Relationships*, some differences between the two domains were also revealed. In the subtheme of personal relationships, even though the participants felt personal relationships were important in both sports and academics, there was a mutual feeling that personal relationships had a larger effect on mental toughness within sports. Within academics the positive personal relationships had an effect on their mental toughness, but were seen as a minor effect, compared to factors they had total control over as a student (e.g., time commitment). As an athlete, however, the participants felt that actively working on personal relationships with teammates, and in some cases coaches, was beneficial for their mental toughness and overall performance. Student-athletes felt that positive personal relationships in sport allowed them to become more confident and less stressed (i.e., emotion regulation), both important factors underlying mental toughness. Student-athletes' mental toughness greatly benefitted from positive personal relationships within their sport. In academics, personal relationships were seen as detrimental when negative, but did not seem to impact mental toughness much when they were positive. Participants within this study often considered their performance within academics as solely their own responsibility. By contrast, with sport, the

student-athletes felt that other people had a significant effect on their own performance. This was a pattern observed amongst team sport athletes, but also amongst individual sports athletes. This may be due to individual athletes still being part of a larger team with multiple coaches, even if they competed individually.

Moreover, the nature of relationships between coaches and professors is different on many levels for student-athletes. First, on average coaches tend to have much closer relationship with their athletes as they get more face time, due to the ratio of athletes to coaches being lower than undergraduate students to professors. Second, a coach's performance is linked closely to that of their athletes' performance as well. They benefit from creating a nurturing environment through personal relationships that facilitates development amongst their athletes. Their success becomes dependent on their athlete's ability to perform at a higher level compared to that of their opponent. Professors on the other hand are not incentivized to create a nurturing environment even if it aids in developing a student's performance, as their success has no link to that of their students. However, the idea of a nurturing environment to develop mental toughness is also relevant within the academic domain, as McGowan, Putwain, St. Claire-Thompson, and Clough (2017) identified in their study. McGeown and colleagues (2017) explored high school students' perception of mental toughness through the lens of psychological and educational theory. They conducted focus groups (12 focus groups with 2-5 participants per group). The students highlighted the importance of various environmental factors such as supportive teachers, engaging lessons, and lack of distractions that may support their mental toughness. The authors found that in addition to the supportive environment, previous experiences of success, value, and confidence, contributed to the students' ability to take on challenges.

Previous research has shown the environment carries some significance when it comes to developing mental toughness. Weinberg et al. (2016) stated that challenging but nurturing environments make for ideal circumstances to develop mental toughness. The findings from the current study support this contention. The subtheme of *embracing the challenge* reflected this pattern in both domains. Student-athletes actively pursued challenges in order to perform at their highest level. These practice environments should mimic those of competition and the pressure that comes along with it as much as possible. The environment should be challenging enough, and the student-athlete experiences the pressure that requires a certain level of mental toughness in order to overcome it. It is therefore crucial for student-athletes to keep experiencing pressure and a sense of competition to nurture their mental toughness. The data within this study suggested that when student-athletes did not feel that pressure or challenge, they experienced more stress and often underperformed compared to their expectations. Janey expressed how she preferred competing against a higher ranked opponent rather than being expected to win because she is the higher ranked wrestler. She preferred the challenging environment when she competed. Some student-athletes even went so far as figuring out how to create challenge themselves if they were the athlete to beat. When the challenge was not physical, athletes could challenge themselves mentally (e.g., by switching the focus from the opponent to their own technique and making sure they avoid making little mistakes) to make sure they contended at the best of their ability by putting themselves into a competitive situation. A previous intervention study showed that creating a challenging environment over a longer period of time enhanced mental toughness within sports (Bell et al., 2013). Within the literature concerning mental toughness in academics, this pattern has yet to be presented. This study shed some light on this aspect of mental toughness within academics. The data suggested that within academics, student-athletes take a

similar approach, by embracing the challenge of academics. Even when they experienced difficulties in school (e.g., understanding material), they recognized that was normal, and knew that they would learn and understand it eventually if they put in the work. However, in order to put in their best efforts to get to that point of understanding, they described creating a mindset that embraced the challenge of learning. This also allowed them to reduce stress because they were not overwhelmed by the challenge. In addition, it enhanced their attentional focus, as it gave them a challenge they could not allow themselves to get distracted from. In turn, successfully completing the challenge gave them further confidence in their abilities, as they replaced the easier assignment, which was not going to challenge their abilities, with a task which was (e.g., taking on extra readings on top of already assigned readings).

Additional similarities between the two domains presented themselves in this study in relation to the perceptions of mental toughness. An important finding contributing to the literature was the transferability of psychological skills from their sport to their academic domain. The data showed that student-athletes utilised the skills learnt within their sports in their academics as well to aid them in their success. This subtheme is further support for Gucciardi and colleague's (2015) unidimensional approach to mental toughness. Rather than keeping each skill within its own dimension of mental toughness (e.g., training within sports; Jones et al., 2007) student-athletes demonstrated that it was more beneficial to transfer the skills between different domains to help them succeed. Gucciardi et al. (2015) identified a unidimensional approach across sports-related areas (e.g., training, competition, off-season, pre-season, etc.), and the findings of the current study suggest a unidimensional approach also transfers across different domains (i.e., sports and academics). One of the skills mentioned that portrayed a unidimensional nature in this study was time management. Student-athletes felt that time

management was a crucial skill that they learnt from their sports and then applied to their academics.

Another skill that showed its applicability across the two domains was commitment. The athletes acknowledged that putting 100% effort and commitment into their sport-related goals was also successful with their academic goals. It was mutually understood that in order to succeed, both these domains had to be prioritised as a student-athlete. Participants acknowledged that the awareness and pro-active decision making of prioritising academics and sports over aspects of their lives like social and work, allowed them to be mentally tougher and they found themselves succeeding in both domains. In relation to mental toughness in academics, Lin et al. (2017) revealed similar findings, stating that commitment and control were the strongest predictors of average grades. Furthermore, St. Claire-Thompson et al. (2015) found that control of life was the most significant predictor of achievement level and attendance in school. In their study, they described control of life as “the extent to which individuals hold a belief that they are influential in creating their own future” (p. 891). Therefore, having the awareness and committing to both academics and sports as a student-athlete, demonstrated high levels of mental toughness that benefit the overall performance in both domains.

Commitment to academics and sports is similar to successful mindset, which is one of the key factors of mental toughness (Gucciardi et al., 2015). Successful mindset was defined by Gucciardi et al. (2015) as, “The desire to achieve success and ability to act upon this motive” (p. 29). In fact, commitment has often been used when assessing participants’ mental toughness (Lin et al., 2017; St. Claire-Thompson et al., 2015). Commitment was also found to be a strong predictor of psychological well-being amongst university students (Stamp et al., 2015). These findings illustrate the importance of commitment towards mental toughness across both

academics and sport. Not only does commitment benefit their overall mental health, but it also helps student-athletes achieve their goals.

Confidence was another subtheme that was important across both domains. This finding is in line with Gucciardi et al. (2015), as confidence is part of the key factors of mental toughness (i.e., generalised self-efficacy). Throughout this study, confidence was described as the outcome of commitment. Many student-athletes in this study felt that when they were fully committed to their sports and academics, that confidence came along with it. In fact, Geoffrey lives by the motto in both domains: “*Consistency builds competence, and competence builds confidence.*” Within academics, this translated into doing the readings and putting time into schoolwork, which would lead to results (e.g., grades) that reflected this confidence. These athletes also knew the same process worked within sports as well. These findings are consistent with prior research showing confidence to be as an important psychological characteristic of mental toughness early on in sports (Gucciardi, 2008; Holland et al., 2010) as well as in academics (Crust et al., 2014). Student-athletes in this study understood how important confidence was towards their success. However, they also acknowledged the fragility of confidence and credited higher levels of confidence with higher levels of mental toughness. In situations where they perceived their mental toughness to be low, they often found themselves experiencing a downward spiral of confidence. It was important for their mental toughness that student-athletes were aware of their confidence and could catch themselves when they started to lose confidence.

Resiliency was a theme that had similarities, but also differences, across the two domains in relation to mental toughness. This theme carried a lot of importance amongst student-athletes in this study and was considered by all participants to be part of their own personal definitions of mental toughness. Even though this aspect of mental toughness is supported by Gucciardi’s

(2017) findings stating that resilience is an important characteristic of mental toughness, it is also a separate construct and not exclusive to mental toughness. The common thread that mental toughness and resilience share is the adaptability in stressful situations, which is what the findings in this study focus on. However, general resilience and mental toughness differentiate on three levels, which is important to note. First mental toughness has only been discussed within the realm of a psychological resource to individuals, whereas resilience is applicable to various aspects, such as individuals, groups, organisations, economics, and ecosystems (Gucciardi, 2017). Second, resilience is seen as solely reactive (i.e., coping with stressors), compared to mental toughness, which includes both proactive (e.g., studying for an exam) and reactive (e.g., dealing with injury) experiences. Third, the effectiveness of adaptability within resilience is underpinned by various protective factors including individual (e.g., biological factors), community (e.g., environmental support), and societal (e.g., health and social services) (Gucciardi, 2017). Mental toughness, on the other hand, solely concentrates on the psychological resources of the individual, which is one of several broad types of protective factors of resilience. Stock and colleagues (2018) identified that measuring mental toughness, also captures the measurement of resilience. The findings of this study support the common thread of adaptability in stressful situations and that both mental toughness and resilience rely on psychological resources of the individual on the account that they benefit their overall mental toughness.

Emotional resilience, a subtheme within the theme Resilience, was shown to assist with academic performance as well as sport performance. This was a key finding that suggests that resilience carried importance within mental toughness in two distinct ways. Emotional resilience falls in line with emotion regulation as one of Gucciardi and colleague's key factors of mental toughness (2015). Emotional resilience and emotional regulation both require the individual to

“use emotionally relevant processes to facilitate optimal performance and goal attainment” (Gucciardi et al., 2015, p. 29). However, they also differ slightly; emotional resilience adds to the literature as it is a reactive adaptation, whereas emotional regulation is both a proactive and reactive measure (Gucciardi, 2017). Overall, the theme of emotional resilience showed how it acts as a reactive psychological response to emotional trauma as a part of mental toughness. These findings show emotional resilience contributes to mental toughness through enabling student-athletes to not only use (e.g., emotional regulation), but to also adapt through emotionally relevant processes in order to keep achieving their goals when faced with setbacks in either domain (i.e., injuries or falling behind academically).

On the other hand, physical resilience emerged as a clear difference between the two domains. This pattern makes sense since within the academic domain little physical stress or risk were highlighted about throughout the interviews. In contrast, participants valued physical resilience highly when it came to their mental toughness within their respective sports. Physical resilience was not just portrayed as the ability to “take a hit”. Although that was part of it, the ability to adapt and maintain resilience when fatigue starts to emerge on a physical level was shown to carry importance as well. Student-athletes felt mental toughness contributed towards their performance in sport when they had high physical resilience.

Within their academics, physical resilience was not as much of a factor within mental toughness that aided them in their success within that domain. If only students (versus student-athletes) would have been interviewed for this study, physical resilience would perhaps not be on the list of important characteristics underlying mental toughness. With a student-only population, the use of mental toughness would predominantly be to maintain a consistent performance in academics alone, rather than overcoming challenging situations in two separate domains. The

challenging situations students often find themselves in can often be prepared for further in advance (e.g., group presentation, assignment, or midterms), whereas in sports many challenges can present themselves without much notice (e.g., falling behind early in competition, unforeseen injuries, or getting cut from the team). Additionally, student-athletes tend to be responsible towards multiple figures of authority (e.g., coaches and professors) compared to students, who often only have to be responsible towards the professors whose classes they are in. A student often has more control of their performance, whereas an athlete cannot control his opponents' or even teammates' performance, which directly affect the outcome of their own performance. This can lead to more pressure experienced by the student-athletes. Therefore, to students, underlying characteristics of mental toughness that aid in competitive situations may carry less importance than characteristics that help keep performance steady in academics. Characteristics such as confidence would have less of an effect within the academic context on its own, compared to attentional focus or commitment for example.

Research has shown that attentional focus is an important factor regarding mental toughness in sport (Butt et al., 2010; Crust & Clough, 2011; Parkes & Mallett, 2011). Attentional focus had not emerged as a factor of mental toughness within literature investigating its effect in academics. However, in this study, student-athletes stated that focusing on the task is a dominant factor of mental toughness in both domains. Due to the unique nature of the demographic in this study, the student-athletes highlighted the importance of keeping each domain within that domain – that is, not letting stress transfer between the two domains was an important aspect of mental toughness for student-athletes. The data showed that focusing on the current task (e.g., sport while at practice, academics while writing a paper) was important to perform at the best of their abilities. They also noted it was important to keep these two domains separate to reduce

overall stress. The transfer of stress from one domain to the other only harmed mental toughness within both domains and debilitated any progress in skill acquisition and mental toughness as well, as student-athletes would be constantly concerned with the irrelevant domain at any given point. This was an aspect of mental toughness that had not been explored within the literature in relation to academics.

Self-reflexivity

As a student who spent a significant amount of time researching mental toughness, I went into this study with more knowledge of the literature than the participants. However, the purpose of the study was to explore how the participants experienced mental toughness. As they expressed their perceptions and experiences of mental toughness, it was important for me to not influence their point of view with my knowledge of the literature. Influence in the form of probing questions or even assimilating their experiences with findings and theories that has emerged from previous literature could have altered their initial perception of mental toughness, influencing their answers in an attempt to match the literature. Therefore, throughout the interviews I had to be aware of comments I made whilst building rapport. I kept comments about the literature to a minimum and when I did bring up findings from other studies, I made sure that the participant understood that these findings were specific to that one study. This ensured that the participants felt comfortable in expressing all of their perceptions they had on mental toughness without second guessing whether their answer matches the findings from the literature.

Conversely, I was also a student-athlete myself. Having had similar experiences it was important that I was aware not to influence the discussion too much with my own experiences. I wanted the participants' experiences with mental toughness to be the main focus of the

discussion and not have it derailed by asking me further questions about my experiences as a student-athlete. To prevent this from happening in the first place, I tried to minimize sharing my own stories and if I did feel it was appropriate to contribute with one of my own experiences it was for the purpose of building rapport. In instances where I did share my own experiences for rapport, I shared similar experiences to that of the participants. I felt that this was an appropriate way to make them feel more comfortable about sharing their personal experiences and demonstrate my shared understanding of their experiences. As the participants became comfortable sharing their experiences, I felt that sharing my own experiences in relation to mental toughness helped guide the conversation in line with the purpose of the study as well. Previously identifying as a student-athlete helped find a common ground with participants and as they shared their stories, they knew that I understood the little details as well, which may have been misinterpreted or not understood by someone without that background.

In addition to recognising my position as a researcher and former student-athlete, I also recognise my privileges as a male within today's society. This became especially important to be aware about when it came to interviewing female student-athletes. Their experiences taught me a few things about how differently they approach situations within either domain. When interviewing female student-athletes, I had to make sure to not make too many comparisons to my own experiences, as they may not relate to their experience and find it insensitive to what they had experienced. However, I did not want to treat female participants differently than male and still made sure I engaged in the conversation. I found that I often asked more questions about the situation with female participants in order to familiarise myself. This helped me understand the situation better for the purpose of the study. In relation to rapport, asking questions helped me draw more accurate similarities to their experiences that they could then also relate to.

Limitations, implications, and future research

Certain limitations came to light throughout this study. A big limitation was the ongoing COVID-19 pandemic. At the beginning of the pandemic, I had to change purpose and design of the study due to time constraints and recruitment with the previous design, as the university campus was essentially shut down and shifted to online learning (meaning many students did not move to Niagara), university sports were cancelled for the year, and teams could no longer train together (after a couple of months, training was cancelled as well). For the present study, this meant that not as many participants could be recruited, but more importantly, this meant I only had time to interview every participant once. Ideally a multiple interview design would have allowed me to get better insight into the experiences and perceptions participants had in relation to mental toughness. Follow up interviews would have allowed me to go back to some experiences participants had and explore those experiences more in depth than in the first interview, particularly with respect to academics. In addition, a crucial aspect of data collection in the form of interviews is the ability to build rapport. Due to the pandemic and research restrictions placed by the university and public health guidelines, the interviews had to be moved to an online platform making it more difficult to build rapport compared to in person. For example, technology and connectivity issues and a lack of physical proximity can hinder rapport, which is important for creating flow in the interviews and helps the participant feel comfortable about sharing their experiences with the interviewer.

Another limitation to this study is that student-athletes were only recruited from one university instead of multiple universities. This means that experiences at the university level are restricted to one environment. One remedy for this limitation throughout the study was that questions often asked participants about past experiences, which is where variations in

environment did appear within the data. However, other than pre-university experiences, only participants who had transferred from other universities (two out of ten participants) were able to give further insight into student-athlete environments outside of Brock University.

As a researcher with a constructivist view, implications of these findings are critical. For coaches and professors, this study offers firsthand insight into how student-athletes are able to cope with the stress of academics and sports through mental toughness. The data highlighted that mental toughness helps student-athletes cope better with setbacks and aids in maintaining their performance at their highest level. With this in mind, coaches, academic advisors, or professors can promote interventions designed to target mental toughness in general. These could be implemented at the team level, or through university programming (e.g., centres for teaching and learning). Further, these findings support the idea of using interventions that target mental toughness characteristics in general compared instead to those tailored to a specific domain (e.g., training in sports or studying in academics). Additionally, the suggested link between the two domains regarding mental toughness may promote the development of mental toughness within academics, in order to facilitate the development of mental toughness within sports as well. This could potentially show a similar feedback loop that this study showed from sports to academics. The ability to transfer psychological skills from academics to sports could open further possibilities in not only developing mental toughness, but also achieving a more constant state of mental toughness amongst student-athletes.

This study has also shown that many characteristics of mental toughness are transferrable between the two domains. For student-athletes, this study may also help give further insight into mental toughness within their own experiences in these environments. They can better grasp the concept within sport and academics by becoming more aware of how the findings relate to their

own experiences both past and present, and become more proactive for similar future situations. For instance, performing worse against a lower ranked opponent, due to unnecessary pressure put on themselves by expectations of a guaranteed success, could be prevented next time they compete. Student-athletes suggested becoming proactive and determining a new challenge (e.g., no shots on target if I am the only defender) if the opponent in front of them was not enough of a challenge. This new challenge, even if the student-athlete was unsuccessful, will encourage them to perform to the best of their abilities, which could build further confidence in their abilities. Performing at the height of their abilities should also help them overcome their opponent, by not playing down to their level as they could not afford to, due to the new challenge. Additionally, participants stated that mental toughness benefits not only sports performance, but academic performance as well, could lead student-athletes to prioritise their mental toughness development. For example, student-athletes could attempt to incorporate more of the skills they use for developing mental toughness in their sport into their academics (e.g., investing as much time it took to perfect a physical skill, studying the relevant material needed to perform better on an assignment; or applying the appropriate focus needed to have a successful training, to achieve a successful run through on a group presentation). This awareness could lead to improving and growing their mental toughness within academics.

A suggestion for future research would be to recruit student-athletes from different post-secondary environments. This would allow for generalizability of the data, as experiences are not always similar amongst different post-secondary institutions (e.g., campus environment, academic vs. sports culture in different countries, athletic infrastructure and organisation, or financial and educational support available to student-athletes). Participants from different universities could give further insight into how mental toughness is affected by their

environment and how that compares to the findings of this study. Additionally, with more time available to collect data, a multiple interview per participant design would allow for a more elaborate insight into mental toughness within academics and sports. I felt that this study helped explore their perceptions, but amongst some participants, it felt as if this was the first time discussing mental toughness. Follow-up interviews or focus groups would have helped strengthen the findings of the study and could have allowed for more detailed insight into how to develop or utilise mental toughness effectively as a student-athlete. Additionally, future studies could focus on self-reported mental toughness scores and compare scores amongst student-athletes competing at different levels in sport (e.g., provincial, national, or international/Olympic) and academics (e.g., full scholarship, no scholarship, or all-Canadian) with characteristics of mental toughness they deem important in their experiences. Taking a mixed-method approach may allow more of an understanding between how student-athletes with higher mental toughness prioritise specific characteristics of mental toughness at different performance levels. This could lead to developing appropriate interventions targeting the development of mental toughness in student-athletes.

Conclusion

The purpose of this study was to explore the perceptions of mental toughness within a student-athlete populations. This study provided further insight into the phenomenon of mental toughness within the domains of sport and academics, which have not previously been investigated simultaneously. The literature surrounding mental toughness in sport has expanded significantly within the last two decades, but within academics, the topic is more of a recent focus. In addition to contributing to the overall understanding of mental toughness, the findings of this study suggest there are more similarities than differences in mental toughness between

sports and academics, although at least in this study, student-athletes found it more relevant in sport. The findings of this study also fall in line with the idea of mental toughness as a state-like psychological resource. Mental toughness was affected by (often negative) experiences and lower levels of mental toughness were associated with poorer performance. However, student-athletes also showed that actively seeking out or creating a challenge for themselves allowed them to increase their mental toughness, when they felt it was low. As a student-athlete, university life can be overwhelming due to the commitment to both school and sports. Mental toughness aided in coping with the challenges they faced within the two domains that they dedicate the majority of their time to.

References

- Bell, J. J., Hardy, L., & Beattie, S. (2013). Enhancing mental toughness and performance under pressure in elite young cricketers: A 2-year longitudinal intervention. *Sport, Exercise, and Performance Psychology, 2*, 281-297. doi: 10.1037/a0033129
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*, 77-101. doi: 10.1191/1478088706qp063oa
- Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health, 11*, 589-597. doi: 10.1080/2159676X.2019.1628806
- Bull, S. J., Shambrook, C. J., James, W., & Brooks, J. E. (2005). Towards an understanding of mental toughness in elite English cricketers. *Journal of Applied Sport Psychology, 17*, 209-227. doi: 10.1080/10413200591010085
- Butt, J., Weinberg, R., & Culp, B. (2010). Exploring mental toughness in NCAA athletes. *Journal of Intercollegiate Sport, 3*, 316-332. doi: 10.1123/jis.3.2.316
- Carcary, M. (2009). The research audit trial-enhancing trustworthiness in qualitative inquiry. *Electronic Journal of Business Research Methods, 7*, 11-24. Retrieved from www.ejbrm.com
- Clough, P. J., Newton, S., Bruen, P., Earle, K., Earle, F., Benuzzi, F., & Venneri, A. (2010). *Mental toughness and brain structure*. Poster presented at the 16th Annual Meeting of the Organisation for Human Brain Mapping, Barcelona, Spain.
- Clough, P., Earle, K., & Sewell, D. (2002). Mental toughness: The concept and its measurement. In I. Cockerill (Ed.), *Solutions in Sport Psychology* (pp. 32 – 44). Thomson

- Coulter, T. J., Mallett, C. J., & Gucciardi, D. F. (2010). Understanding mental toughness in Australian soccer: Perceptions of players, parents, and coaches. *Journal of Sports Sciences, 28*, 699-716. doi: 10.1080/02640411003734085
- Crust, L. (2007). Mental toughness in sport: A review. *International Journal of Sport and Exercise Psychology, 5*, 270-290. doi: 10.1080/1612197X.2007.9671836
- Crust, L., & Azadi, K. (2010). Mental toughness and athletes' use of psychological strategies. *European Journal of Sport Science, 10*, 43-51. doi: 10.1080/17461390903049972
- Crust, L., & Clough, P. J. (2011). Developing mental toughness: From research to practice. *Journal of Sport Psychology in Action, 2*, 21-32. doi: 10.1080/21520704.2011.563436
- Crust, L., Earle, K., Perry, J., Earle, F., Clough, A., & Clough, P. J. (2014). Mental toughness in higher education: Relationships with achievement and progression in first-year university sports students. *Personality and Individual Differences, 69*, 87-91. doi: 10.1016/j.paid.2014.05.016
- Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods, 5*, 80-92. Retrieved from http://www.ualberta.ca/~iiqm/backissues/5_1/pdf/fereday.pdf.
- Gerber, M., Brand, S., Feldmeth, A. K., Lang, C., Elliot, C., Holsboer-Trachsler, E., & Pühse, U. (2013). Adolescents with high mental toughness adapt better to perceived stress: A

- longitudinal study with Swiss vocational students. *Personality and Individual Differences*, 54(7), 808-814. doi: 10.1016/j.paid.2012.12.003
- Gerber, M., Lang, C., Feldmeth, A. K., Elliot, C., Brand, S., Holsboer-Trachsler, E., & Pühse, U. (2015). Burnout and mental health in Swiss vocational students: the moderating role of physical activity. *Journal of Research on Adolescence*, 25(1), 63-74. doi: 10.1111/jora.12097
- Glesne, C. (2015). *Becoming qualitative researchers: An introduction*. Pearson Education.
- Gould, D., Hodge, K., Peterson, K., & Petlichkoff, L. (1987). Psychological foundations of coaching: Similarities and differences among intercollegiate wrestling coaches. *The Sport Psychologist*, 1, 293-308. doi: 10.1123/tsp.1.4.293
- Golby, J., & Wood, P. (2016). The effects of psychological skills training on mental toughness and psychological well-being of student-athletes. *Psychology*, 7, 901-913. doi: 10.4236/psych.2016.76092
- Guba, E.G., & Lincoln, Y.S. (1994). Competing paradigms in qualitative research. In N.K. Denzin & Y.S. Lincoln (Eds.), *Handbook of Qualitative Research* (pp. 105-117). Sage
- Gucciardi, D. F. (2017). Mental toughness: Progress and prospects. *Current Opinion in Psychology*, 16, 17-23. doi: 10.1016/j.copsyc.2017.03.010
- Gucciardi, D. F., & Jones, M. I. (2012). Beyond optimal performance: Mental toughness profiles and developmental success in adolescent cricketers. *Journal of Sport and Exercise Psychology*, 34, 16-36. doi: 10.1123/jsep.3.4.1.16

- Gucciardi, D. F., Gordon, S., & Dimmock, J. A. (2008). Towards an understanding of mental toughness in Australian football. *Journal of Applied Sport Psychology, 20*, 261-281. doi: 10.1080/10413200801998556
- Gucciardi, D. F., Gordon, S., & Dimmock, J. A. (2009). Evaluation of a mental toughness training program for youth-aged Australian footballers: I. A quantitative analysis. *Journal of Applied Sport Psychology, 21*, 307-323. doi: 10.1080/104132009030206066
- Gucciardi, D. F., Hanton, S., Gordon, S., Mallett, C. J., & Temby, P. (2015). The concept of mental toughness: Tests of dimensionality, nomological network, and traitness. *Journal of Personality, 83*, 26-44. doi: 10.1111/jopy.12079
- Holland, M. J., Woodcock, C., Cumming, J., & Duda, J. L. (2010). Mental qualities and employed mental techniques of young elite team sport athletes. *Journal of Clinical Sport Psychology, 4*, 19-38. doi: 10.1123/jscp.4.1.19
- Horsburgh, V. A., Schermer, J. A., Veselka, L., & Vernon, P. A. (2009). A behavioural genetic study of mental toughness and personality. *Personality and Individual Differences, 46*, 100-105. doi: 10.1016/j.paid.2008.09.009
- Jalili, F., Hosseini, S. A., Jalili, F., & Salehian, M. H. (2011). Comparison of personality dimensions, mental toughness, and social skills of female student athletes (team-individual) and non-athletes. *Annals of Biological Research, 2*(6), 554-560. Retrieved from <https://www.scholarsresearchlibrary.com/abstract/comparison-of-personality-dimensions-mental-toughness-and-social-skillsrnof-female-students-athletes-teamindividual-and--9276.html>

- Jones, G. (2002). What is this thing called mental toughness? An investigation of elite sport performers. *Journal of Applied Sport Psychology, 14*, 205-218. doi: 10.1080/10413200290103509
- Jones, G., Hanton, S., & Connaughton, D. (2007). A framework of mental toughness in the world's best performers. *The Sport Psychologist, 21*, 243-264. doi: 10.1123/tsp.21.2.243
- Jones, S. R., Torres, V., & Arminio, J. (2014). *Negotiating the complexities of qualitative research in higher education: Fundamental elements and issues* (2nd ed.). Routledge
- Kafle, N. P. (2011). Hermeneutic phenomenological research method simplified. *Bodhi: An Interdisciplinary Journal, 5*, 181-200. doi: 10.3126/bodhi.v5i1.8053
- Korstjens, I., & Moser, A. (2018). Series: Practical guidance to qualitative research. Part 4: Trustworthiness and publishing. *European Journal of General Practice, 24*(1), 120-124. doi: 10.1080/13814788.2017.1375092
- Lin, Y., Clough, P. J., Welch, J., & Papageorgiou, K. A. (2017). Individual differences in mental toughness associate with academic performance and income. *Personality and Individual Differences, 113*, 178-183. doi: 10.3389/fpsyg.2017.01345
- Lin, Y., Mutz, J., Clough, P. J., & Papageorgiou, K. A. (2017). Mental toughness and individual differences in learning, educational and work performance, psychological well-being, and personality: A systematic review. *Frontiers in Psychology, 8*, 1345. doi: 10.3389/fpsyg.2017.01345
- Lorenzo, J. C. T., & Carlos, J. (2010). *'Team mental toughness': A case study of professional road cycling* [Unpublished Doctoral dissertation]. Roehampton University.

- McGeown, S., Putwain, D., St. Clair-Thompson, H., & Clough, P. (2017). Understanding and supporting adolescents' mental toughness in an education context. *Psychology in the Schools, 54*, 196-209. doi: 10.1002/pits.21986
- Mertens, D. M. (2020). *Research and evaluation in education and psychology: Integrating diversity with quantitative, qualitative, and mixed methods* (5th ed.). Sage.
- Micoogullari, B. O., Odek, U., & Beyaz, O. (2017). Evaluation of sport mental toughness and psychological wellbeing in undergraduate student athletes. *Educational Research and Reviews, 12*(8), 483-487. doi: 10.5897/ERR2017.3216
- Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods, 16*, 1-13. doi: 10.1177/1609406917733847.
- Parkes, J. F., & Mallett, C. J. (2011). Developing mental toughness: Attributional style retraining in rugby. *The Sport Psychologist, 25*, 269-287. doi: 10.1123/tsp.25.3.269
- Patton, M. Q. (2002). Two decades of developments in qualitative inquiry: A personal, experiential perspective. *Qualitative Social Work, 1*, 261-283. doi: 10.1177/1473325002001003636
- Shaw, R. (2010). Embedding reflexivity within experiential qualitative psychology. *Qualitative Research in Psychology, 7*, 233-243. Doi: 10.1080/14780880802699092
- Shenton, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information, 22*, 63-75. Retrieved from <https://content.iospress.com/articles/education-for-information/efi00778>

- Stamp, E., Crust, L., Swann, C., Perry, J., Clough, P., & Marchant, D. (2015). Relationships between mental toughness and psychological wellbeing in undergraduate students. *Personality and Individual Differences, 75*, 170-174. doi: 10.1016/j.paid.2014.11.038
- St Clair-Thompson, H., Bugler, M., Robinson, J., Clough, P., McGeown, S. P., & Perry, J. (2015). Mental toughness in education: Exploring relationships with attainment, attendance, behaviour and peer relationships. *Educational Psychology, 35*, 886-907. doi: 10.1080/01443410.2014.895294
- St Clair-Thompson, H., Giles, R., McGeown, S. P., Putwain, D., Clough, P., & Perry, J. (2017). Mental toughness and transitions to high school and to undergraduate study. *Educational Psychology, 37*, 792-809. doi: 10.1080/01443410.2016.1184746
- Stock, R., Lynam, S., & Cachia, M. (2018). Academic success: The role of mental toughness in predicting and creating success. *Higher Education Pedagogies, 3*, 429-433. doi: 10.1080/23752696.2018.1507623
- Thelwell, R. C., Such, B. A., Weston, N. J., Such, J. D., & Greenlees, I. A. (2010). Developing mental toughness: Perceptions of elite female gymnasts. *International Journal of Sport and Exercise Psychology, 8*, 170-188. doi: 10.1080/1612197X.9671941
- Thelwell, R., Weston, N., & Greenlees, I. (2005). Defining and understanding mental toughness within soccer. *Journal of Applied Sport Psychology, 17*, 326-332. doi: 10.1080/10413200500313636

- Tindall, C. (1994) 'Personal construct approaches', in P., Banister, E., Burman, I., Parker, M., Taylor, and C. Tindall (Eds.), *Qualitative Methods in Psychology: A research guide* (pp. 72-91). Open University Press
- Tobin, G. A., & Begley, C. M. (2004). Methodological rigour within a qualitative framework. *Journal of Advanced Nursing*, 48, 388-396. doi: 10.1111/j.1365-2648.2004.03207.x
- Weinberg, R., Freysinger, V., Mellano, K., & Brookhouse, E. (2016). Building mental toughness: Perceptions of sport psychologists. *The Sport Psychologist*, 30, 231-241. doi: 10.1123/tsp.2015-0090

Appendices

Appendix A



Brock University
Office of Research Ethics
Tel: 905-688-5550 ext. 3035
Email: reb@brocku.ca

Social Science Research Ethics Board

Certificate of Ethics Clearance for Human Participant Research

DATE: November 3, 2020

PRINCIPAL INVESTIGATOR: GAMMAGE, Kimberley - Kinesiology

FILE: 19-152 - GAMMAGE

TYPE: Course Assignment STUDENT: Liam Waters
SUPERVISOR: Kimberley Gammage

TITLE: The perception of mental toughness from student athletes within their sports and academic domain

ETHICS CLEARANCE GRANTED

Type of Clearance: MODIFICATION Expiry Date: 12/1/2020

The Brock University Social Sciences Research Ethics Board has reviewed the above named research proposal and considers the procedures, as described by the applicant, to conform to the University's ethical standards and the Tri-Council Policy Statement.

Modification:

- Switch from in-person to online (LifeSize/Qualtrics)
- Recruitment via coaches/professors/word of mouth

The Tri-Council Policy Statement requires that ongoing research be monitored by, at a minimum, an annual report. Should your project extend beyond the expiry date, you are required to submit a Renewal form before 12/1/2020. Continued clearance is contingent on timely submission of reports.

To comply with the Tri-Council Policy Statement, you must also submit a final report upon completion of your project. All report forms can be found on the Office of Research Ethics web page at: <https://brocku.ca/research-at-brock/office-of-research-services/research-ethics-office/#application-forms>

In addition, throughout your research, you must report promptly to the REB:

- a) Changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
- b) All adverse and/or unanticipated experiences or events that may have real or potential unfavourable implications for participants;
- c) New information that may adversely affect the safety of the participants or the conduct of the study;
- d) Any changes in your source of funding or new funding to a previously unfunded project.

We wish you success with your research.

Approved:

Angela Book, Chair
Social Science Research Ethics Board

Dipanjan Chatterjee, Chair
Social Science Research Ethics Board

Note: Brock University is accountable for the research carried out in its own jurisdiction or under its auspices and may refuse certain research even though the REB has found it ethically acceptable.

If research participants are in the care of a health facility, at a school, or other institution or community organization, it is the responsibility of the Principal Investigator to ensure that the ethical guidelines and

Appendix B

Interview guide

1. When I say mental toughness, what are the first thoughts that come to you in relation to this term?
 - a. How would you define mental toughness?
2. How would you judge your own mental toughness?
3. What experience have you had with mental toughness, either negative or positive, whilst being an athlete at university in regards to sports performance?
 - a. What do you believe contributes to an university athlete's mental toughness?
4. What experience have you had with mental toughness, either negative or positive, with academic work, whilst being a university student?
 - a. What do you believe contributes to an university student's mental toughness?
5. What factors do you think contribute to mental toughness in your sport? What about in your academics?
6. Remember how at the beginning of the interview I asked you to define mental toughness. Would you change or keep your original definition after reading the definition derived from the research?
Why?

Appendix C

Demographic Questionnaire

Age:

Gender:

Program of study:

Year of study:

Sport you play at Brock University:

Number of years playing sport at Brock:

Total number of years you have been playing the sport: