

**The relationships between perceived competence,
goal orientation and mind sets on the motivation to
participate in sport at university.**

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Declaration

The above serves as a declaration that the work produced in this document has been produced for the sole purpose of this Psychology Masters by Research project. The work is mine in its entirety and has not been plagiarised or submitted to any other higher education institution.

Abstract

The research sought to uncover the links that exist between perceived competence, goal orientations and mind sets with the motivation to participate in sports. The research was conducted in a South African university context and was comprised of 212 participants. Data was collected through the use of Sports Motivation Scale 6, Intrinsic Motivation Inventory: Perceived Competence Subscale, Task and Ego Orientation in Sport Questionnaire and the Self-Theory Questionnaire. The participants completed the questionnaires using a pen and paper technique at their various sports practices. Data was collected and analysed using Pearson's correlation coefficient in order to demonstrate the strength and nature of the relationships that existed between the variables. Findings generally supported previous findings. Using a deductive approach, the main findings found that various types of motivation based on Self-Determination Theory demonstrated a proportional relationship with task orientation and little to no relationship was found between motivation and ego orientation. The relationships between motivation and perceived competence were mixed, with the most significant relationship occurring between integrated regulation and perceived competence. Fixed mind sets also showed little to no relationship with motivation, whereas growth mind sets showed proportional relationships with the various kinds of motivation. Further relationships between these variables were also explained. It is recommended that data collection techniques are improved in future research. This research may be useful in indicating what factors are related to motivation to play sport at university.

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CHAPTER 1 INTRODUCTION

1.1 Introduction

Much research has been conducted with concern to perceived competence, mind sets, goal orientations and motivation, in particular using the Self-Determination Theory (SDT) as the main theoretical framework (Elliot & Dweck, 2005; McManus, 2004; Milavić, Guć, & Miletić, 2010; Pelletier et al., 1995; Potgieter & Steyn, 2010; Ryan, 1995). However, this increase in research has only occurred in the last two decades and therefore has led to scarcity of resources that have been used previously as opposed to a dense collection that have been completed in the last five to ten years (Potgieter, 2011; Wilson, Mack, & Grattan, 2008). It should be noted however, that prior research has been conducted primarily between motivation and one of the other variables above. The current research will look to develop on the findings of fellow researchers and contribute to the existing body of knowledge whilst simultaneously generating new information. The generation of new information will primarily be targeted at the South African University sport context. Due to sport psychology being such a young field, it has not had the same amount of growth and development in South Africa as has been experienced in Western Europe and North America (Wang & Biddle, 2003). Potgieter and Steyn (2010) state that there is insufficient research and evidence in this area and context to corroborate findings effectively with other studies and therefore additional research must be conducted.

Apart from this, it has also been indicated that within the South African context, only one in four people participate in sports (Department of Sport and Recreation, 2005). It was also noted by the Department of Sport and Recreation (2005) that as individuals get older, participation in sport decreases substantially. This research is therefore relevant to the current context as it may also give an indication of what factors interact with the motivation to participate in sport at the university level. This research has been documented less than at adolescent and childhood stages.

The above research has been selected, not only because of previous research that has been conducted, but also due to the relationships that have been empirically proven to exist between these factors. These findings have consistently shown that there are relationships between goal orientations, perceived sport competence and motivation (Georgiadis, Biddle, & Chatzisarantis, 2001). Biddle, Wang, Chatzisarantis and Spray (2003) indicated that enjoyment and motivation to participate in sport are directly/indirectly related to goal orientations and

perceived competence. Papaioannou, Bebetos, Theodorakis, Christodoulidis and Kouli, (2006), state that perceived sport competence, goal orientation and motivation are key factors in determining factors such as continuous sport participation. This serves as the basis for this dissertation as a minor indicator of the fact that research has been conducted on these variables as different combinations, but not as a collective. These factors have been selected as a collective as they have all been shown to relate to the main theoretical framework of SDT as well as amongst one another. It is simple to deduct conceptual associations between these concepts, but this is insufficient, and therefore empirical relationships should be made to refute or concur with previous findings.

A brief synopsis will be given as an indication of how these variables relate to SDT. Competence has the most obvious relationship with motivation and SDT. This relationship is apparent, not only through research that has been conducted, but also due to the fact that competence is one of the basic needs that an individual must fulfil in order to realise self-determination through motivation (Mouratidis, Vansteenkiste, Lens, Sideridis, & others, 2008). Much research has indicated that apart from relationships with motivation, perceived competence also has associations with the goal orientations that people follow (Duda & Nicholls, 1992; Ntoumanis, 2001; Ryan & Deci, 1989; Wang & Biddle, 2003). Goal orientations have been thought to exist as a dichotomy, when in fact much research has shown them to be orthogonal (Kavussanu & Harnisch, 2000; Ntoumanis, 2001). Due to the orthogonality of this construct, research has indicated that generally, task orientations have been found to correlate with intrinsic motivation and ego orientations correlate with extrinsic motivation (Biddle, et al., 2003; Ntoumanis, 2001; Potgieter, 2011). This concept has also been linked to the different mind sets that exist by Potgieter and Steyn (2010) and Potgieter (2011), therefore this relationship will be investigated further. Another purpose of the research will be to investigate what relationships exist between mind sets and perceived competence. Literature indicates that there are possible associations that may exist between these variables. Mind sets may indicate a relationship with motivation (Dweck, 2007). This concept exhibits many characteristics that are inherent for motivation to exist such as a desire to develop and be resilient (Dweck, 2007). Dweck (2007) also stated that certain inclinations to certain mind sets will foster certain types of motivation. An example of this is how people with growth mind sets have been seen to demonstrate more intrinsic forms of motivation (Dweck, 2007). This is therefore the line of enquiry that this research will follow.

1.2 Research Problem and Research Questions

This research was conducted to explore relationships between all of these variables (motivation, perceived competence, goal orientations and mind sets). The research was also conducted as there is limited research that has been conducted overall and more specifically in the South African context (Wang & Biddle, 2003). This is further purported as there is even less research that has been conducted on these factors within the university context. In addition, it was reported by the Department of Sport and Recreation (2005) that once individuals leave school and sport participation is on a completely voluntary basis, levels of attrition increase exponentially (Georgiadis et al., 2001; Hagger & Chatzisarantis, 2009; Standage, Duda, & Ntoumanis, 2003; Wilson et al., 2008). This research was conducted in an attempt to contribute in a meaningful way to decrease the rate of attrition. The research also attempted to give coaches insight as to what factors they need to develop and harness to enhance players' performance and ensure continued participation. Therefore, the aim of this study was to indicate the type of correlations and relationships that exist between these variables, whilst indicating how perceived competence, goal orientations and mind sets relate to peoples' decisions and motivations to play sport.

1.2.1 Research question.

- What are the relationships between perceived competence, goal orientations and mind sets and motivation to participate in sports at university, if any exist at all?

1.2.1.1 Sub questions.

- Is there a relationship between competence and motivation to participate in sports?
- Is there a relationship between goal orientations and motivation to participate in sports?
- Is there a relationship between mind sets and motivation to participate in sports?
- Is there a relationship between perceived competence and goal orientations?
- Is there a relationship between perceived competence and mind sets?
- Is there a relationship between goal orientations and mind sets?

The questions above have been selected in order to gain some insight into the broader question by breaking them down into sub questions. The questions were selected specifically in order to

address the respective variables in a manner that was appropriate to previous findings as well as the research goals of this dissertation.

1.3 Key Words and Definitions

There was a vast amount of key words that were used throughout the current research project and it will therefore be invaluable to provide a brief understanding of these terms before the onset of the investigation. In addition to the brief definitions that will be given, some abbreviations will be noted for the constructs where possible. The definitions will be kept brief and elaborated upon further in the literature review chapter.

1.3.1 Motivation.

Weinberg and Gould (2011, 2014) state that motivation refers to the direction and intensity of performed effort by an individual.

1.3.1.1 Intrinsic motivation.

Intrinsic motivation is defined as an internal desire to complete a task without the presence of a separable consequence, people are rather driven by the inherent pleasure that is gained from doing the task (Pelletier et al., 1995; Ryan & Deci, 2000; Vallerand & Losier, 1999).

1.3.1.2 Extrinsic motivation.

Contrary to intrinsic motivation, extrinsic motivation which involves a person being driven by a separable reward received upon completion of a task which may be tangible or social (Pelletier et al., 1995; Ryan & Deci, 2000; Vallerand & Losier, 1999).

1.3.1.3 Self-Determination Theory (SDT).

Ryan and Deci (2000, p.55) state that Self-Determination Theory distinguishes “between different types of motivation based on the different reasons or goals that give rise to an action”. In order for individuals to be self-determined, they need to fulfil the basic needs of competence, autonomy and relatedness (Deci & Ryan, 1985a; Gagné, 2009; Hagger, Chatzisarantis, Culverhouse, & Biddle, 2003; Pelletier, Rocchi, Vallerand, Deci, & Ryan, 2013; Vallerand & Losier, 1999). These factors may be satisfied to varying extents and therefore levels of self-determination may be quantified along a continuum ranging from intrinsic motivation to amotivation with various sub-categories within these broader categories.

1.3.2 Perceived competence.

Competence as defined by Elliot and Dweck (2005) refers to the quality of effectiveness demonstrated by an individual. Therefore perceived competence indicates the manner in which an individual experiences this quality of effectiveness.

1.3.3 Achievement goal orientations.

Goal orientation refers to the subjective inclinations of individuals in relation to a specific activity and are generally consistent with their belief regarding success (Duda & Nicholls, 1992; Duda, 1998). It refers to how an individual appraises an achievement situation (McManus, 2004). Goal orientations are split into two sub-categories with reference to the inclination experienced by the individual towards achievement (Duda, 1998; Duda & Nicholls, 1992). These sub-categories are orthogonal in nature independently (Milavić et al., 2010). This means that there can be more or less of one, in combination with the other, they do not necessarily exist independently (Milavić et al., 2010).

1.3.3.1 Task orientation.

This orientation refers to situations where the athlete's focus is more on learning and improvement (Duda, 1998; Milavić et al., 2010; Williams, 1994). Actions are considered to be task involving (Duda, 1998; Milavić et al., 2010; Williams, 1994). People who thrive in these environments are thought to be task orientated (Duda, 1998; Milavić et al., 2010; Williams, 1994). Task orientation therefore involves the desire to attain a goal and develop competence in a certain aspect of a task (Elliot & Dweck, 2005; Williams, 1994). These situations are considered to utilise self-referenced norms (Standage & Treasure, 2002).

1.3.3.2 Ego orientation.

Environments that are characterised by inter-personal competition, public evaluation or normative standards are considered to be ego involving and people who thrive in these situations are thought to be ego orientated (Duda, 1998; Elliot & Dweck, 2005; McManus, 2004; Milavić et al., 2010; Williams, 1994). When an individual is ego orientated, it is believed that they utilise social norms as cues for behaviour and comparison (Standage & Treasure, 2002).

1.3.4 Orthogonality.

This term refers to the fact that features of a concept do not exist independently and rather coexist and may exist in this manner with more or less of one of the factors (Milavić et al., 2010).

1.3.5 Mind sets.

Mind sets are based on implicit theories of self and provide the theoretical association for the entity and incremental perspectives of knowledge (Dweck, 2013). They refer to the ways in which people understand characteristics such as intelligence and abilities, and these are either seen as fixed or changeable and are commonplace in activities of daily living without individuals realising their existence (Dweck, 2013; Priester & Petty, 2016).

1.3.5.1 Fixed/entity mind set.

Individuals who possess fixed mind sets are of the belief that the set of characteristics that were obtained at birth are likely to remain as such without any change and often remain loyal to these characteristics despite changing contexts (Dweck, 2013; Priester & Petty, 2016).

1.3.5.2 Growth/incremental mind set.

Individuals who possess growth mind sets believe that the characteristics obtained at birth are changeable and may be improved. This may occur over time in the hope of improving and potentially attaining a certain goal (Dweck, 2010, 2013; Priester & Petty, 2016).

1.4 Chapter Overviews

1.4.1 Introduction.

This chapter covers a brief overview of the entire study, it looks to do this by familiarising the reader with the common terms that will be used throughout the dissertation. This chapter sets the scene for the research as it looks to explain further the objectives and significance of the research. It builds on title in stating a broad research question that will be answered through the research. In addition to this sub-questions to this were developed which will all be answered in the results and discussion chapter.

1.4.2 Literature review.

In chapter 2 SDT will be explained in more depth, as this is the theoretical framework that will be utilised for this study. SDT will then be related to the variables that were measured. The

concept of perceived competence will be explained and related to the theoretical framework. Achievement goal theory will then be discussed and related to the main theoretical framework. This will be done by explaining task goal orientation and ego goal orientations, as well as indicating the similarities and differences between these two sub categories. Mind sets will be further described and discussed in relation to SDT. A distinction will be made between the two sub categories of fixed and growth mind sets. Where possible, for all the variables, examples of prior research will be explicated to indicate how they may relate to the current research that was conducted.

1.4.3 Methodology.

The methodology found in chapter 3 will clearly outline the methods used for this research. It attempt to do so in a manner that could be replicable in future due to the fact that there is limited research in this area and even less within the South African context. A pilot study that was conducted will be elaborated on. The quantitative nature of investigation will be explained, along with the research design utilised. Sampling techniques will be explained as well as procedures for data collection and analysis. At this stage, ethics will be strictly adhered to and this will be explained thoroughly. Any difficulties experienced at this stage will be clarified in chapter 6 on the limitations of the study.

1.4.4 Results and data analysis.

This chapter will present the results that were obtained during the analysis procedures. The procedures during analysis will be explained in depth, to indicate how they were relevant to the data that was collected and how they will answer the research questions.

1.4.5 Discussion of findings.

Chapter 5 will explain the findings in further depth whilst relating them to previous findings. This chapter will outline the associations between the four variables and illustrate the strengths of these relationships.

1.4.6 Closing thoughts.

The closing chapter will give a summary of the research as a whole, including the findings and contributions. This chapter will also attend to possible limitations that were experienced in this research. It will further suggest future recommendations and give directions to potential

research as well as research in the field of sports psychology. It will also include any final, closing thoughts.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

This chapter will explain the various theories that have been selected for this research in order to give a better understanding of how they fit together and the potential relationships that this research looks to uncover. It will serve to discuss previous findings based on these theories. The research will also seek to contribute to the existing body of knowledge in a meaningful manner, as the relationships between all four variables has not been investigated previously (Elliot & Dweck, 2005; McManus, 2004; Milavić, et al., 2010; Pelletier et al., 1995; Potgieter & Steyn, 2010). Much of the research that has been conducted has spanned over the last three decades (Biddle, et al., 2003; Papaioannou, et al., 2006; Potgieter, 2011). There is limited recent research regarding the relationships which exists between the four concepts of perceived competence, goal orientations and mind sets with motivation to participate in sport during university. This research will look to contribute to the existing body of knowledge (Potgieter, 2011). It should be noted that due to the paucity of research in this field, dated resources have been utilised, but these have been used in combination with more recent research in order to contextualise the research and complement one another. The relative importance of this study is apparent in order to further advance the body of knowledge. By doing this, the study might progress the understanding of motivation, perceived competence, goal orientations and mind sets within a present-day university context.

The relevance of the literature lies in the fact that there has been evidence prior to this research, despite it being sparse, that indicates relationships between motivation, perceived competence, goal orientations and mind sets individually (Duda & Nicholls, 1992; Kimiecik & Horn, 2012; McManus, 2004; Milavić et al., 2010; Ntoumanis, 2001; Potgieter, 2011; Potgieter & Steyn, 2010; Standage et al., 2003; Standage & Treasure, 2002; Thøgersen-Ntoumani & Ntoumanis, 2007; Wang & Biddle, 2003; Williams, 1994). No evidence could be found to illustrate the relationships that exist between these concepts simultaneously. However, research undertaken by Wang and Biddle (2003) investigated the links that exist between perceived competence, mind sets, goal orientations and intrinsic motivation on Singaporean university students. The current research differs in how it uses the self-determination continuum to explore relationships between all four concepts as opposed to the Intrinsic Motivation Inventory (IMI) to link the concepts to motivation as well as variations in other measurement instruments that were used.

In addition, this research was conducted in a South African university context as opposed to a Singaporean University context.

Therefore, from the review of literature, there is an indication that the current research may uncover relationships between ego orientations, fixed mind sets, extrinsic motivation and possibly lower levels perceived competence (Duda & Nicholls, 1992; Kimiecik & Horn, 2012; McManus, 2004; Milavić et al., 2010; Ntoumanis, 2001; Potgieter, 2011; Potgieter & Steyn, 2010; Standage et al., 2003; Standage & Treasure, 2002; Thøgersen-Ntoumani & Ntoumanis, 2007; Wang & Biddle, 2003; Williams, 1994). It is also expected that relationships will be indicated between task orientations, growth mind sets, intrinsic motivation and higher levels of perceived competence which are polar concepts to those mentioned prior (Duda & Nicholls, 1992; Kimiecik & Horn, 2012; McManus, 2004; Milavić et al., 2010; Ntoumanis, 2001; Potgieter, 2011; Potgieter & Steyn, 2010; Standage et al., 2003; Standage & Treasure, 2002; Thøgersen-Ntoumani & Ntoumanis, 2007; Wang & Biddle, 2003; Williams, 1994). As mentioned previously, these factors have also been found to be important predictors in achievement behaviours such as continuous sport participation which this study will look to investigate (Papaioannou et al., 2006).

It is apparent, that apart from the lack of research that has been conducted in the South African context, the research that has been done indicates concerning figures of attrition in sport as individuals grow older (Department of Sport and Recreation, 2005). This attrition could be due to a number of factors that include access to facilities and resources, distances to facilities, finances, gender, race, parenting style or even coaching style (Department of Sport and Recreation, 2005). Due to this the survey conducted found that only one in four South Africans participate in sport (Department of Sport and Recreation, 2005). It is made apparent in the 2005 survey that sport participation is emphasised in schools, but there is no emphasis beyond this in tertiary institutions (Department of Sport and Recreation, 2005). The Department of Sport and Recreation (2005) define sport as a physical activity that is engaged in for competition in a structured or unstructured setting, but also for enjoyment, health related reasons, physical wellbeing or growth and development which may occur emotionally, psychologically or physically. This definition is valuable as it allows this research to focus on a particular sample that may be characterised by the above features.

Some of the concerning facts have been posited by the Department of Sport and Recreation (2005) mentioned above, which have contributed to why this research should be conducted in

a South African context. It would then be useful to see if the results of this study may be used in the future to decrease attrition and increase participation. Therefore, despite there being a variety of factors that could possibly influence university students' motivation to participate in sports, it will be interesting to note whether perceived competence, goal orientations and mind sets all interact with this. It will be of particular interest to note whether the results that are found in this research are the same or are similar to those that have been found in the sparse past research.

2.2 Motivation: Self-Determination Theory

As defined by Weinberg and Gould (2011, 2014), motivation broadly refers to the direction and intensity of effort performed by an individual, but quite simply refers to the 'why' of an action (Ryan & Deci, 2000; Vallerand & Losier, 1999). This definition has been selected as it outlines the concept in a manner that is consistent with the SDT which will be utilised as the main theoretical framework. SDT distinguishes between different types of motivation based on the reasons that result in certain actions, completing the taxonomy of human motivation (Ryan & Deci, 2000). Ntoumanis (2001) states that SDT refers to a life-long process whereby an individual endeavours to integrate new and interesting aspects into their lives through the satisfaction of the three basic psychological needs (autonomy, relatedness and competence). The satisfaction of these three basic psychological needs will lead to optimal motivation (Mouratidis, et al., 2008). The various types of motivation that are present in this taxonomy may also be known as self-regulations (Standage et al., 2003). They regulate the behaviour presented by individuals as well as the type of motivation presented (Standage et al., 2003).

The taxonomy of human motivation is comprised of various sub-categories of motivation that are further compartmentalised into intrinsic motivation, extrinsic motivation and amotivation (Ryan & Deci, 2000). These compartments of motivation are viewed along a continuum that ranges from amotivation which is the least self-determined form of motivation to the different types of intrinsic motivation which are the most self-determined forms of motivation (Pelletier et al., 2013; Ryan & Deci, 2000). Apart from differing types of motivation, motivation may also exist in differing amounts (Ryan & Deci, 2000). It is therefore important not to view motivation as a unitary concept, but rather as multi-dimensional in nature (Ntoumanis, 2001; Ryan, 1995; Standage et al., 2003). The type and amount of motivation that an athlete experiences will have a large effect on the types of experiences that athletes encounter during their sport (Ryan & Deci, 2000; Vallerand & Losier, 1999). Despite this, motivation remains

fairly constant and may be influenced by extraneous variables related to the university context, personality or even activity completed by the individual (Bong, 2004; Struthers, Perry, & Menec, 2000).

There are many reasons why individuals participate in sport. These may include reasons that are aligned with personal beliefs such as interest and enjoyment or separable reward such as a prize and public acknowledgement (Ryan & Deci, 2000). These will be described in further depth when the different types of motivation are discussed. In addition to these reasons for participation, it should be noted that motivation is also comprised of certain components. These components include the expectancy component, value component and affect component (Bruinsma, 2004). The expectancy component refers to self-efficacy of an individual to complete a task (Bruinsma, 2004). The value component refers to the interest and value that an individual places on a task (Bruinsma, 2004). The affect component refers to the students' emotional responses to the task (Bruinsma, 2004). These concepts and how they relate to tasks are of interest. In addition, similarities may be drawn between these components and the various aspects of SDT such as competence, intrinsic motivation and extrinsic motivation respectively.

Motivation may be considered to be the potential that an individual possesses, whichever way they are inclined to achievement. However, in order for this potential to be fully realised, there are basic psychological needs that need to be fulfilled (Gagné, 2009; Vallerand & Losier, 1999). The basic psychological needs that should be satisfied in order to be self-determined include the needs for autonomy, competence and relatedness (Gagné, 2009; Hagger et al., 2003; Vallerand & Losier, 1999). The basic need for autonomy refers to the ability of a person to be able to carry out certain tasks independently with free choice (Gagné, 2009; Hagger et al., 2003; Vallerand & Losier, 1999). Relatedness refers to inter-personal relationships with important others, whom act as a support system (Gagné, 2009; Vallerand & Losier, 1999). The final basic psychological need that should be satisfied to enhance self-determination is the need for competence. Competence refers to how individuals understand certain internal and external events and how they occur (Gagné, 2009; Vallerand & Losier, 1999).

These basic psychological needs ensure that individuals realise their potential and allow for people to develop (Vallerand & Losier, 1999). These basic psychological needs, when they are perceived to be satisfied, often aid in facilitating motivation and represent psychological mediators for social events that an individual experiences (Vallerand & Losier, 1999). Contrary

to this, events which affect individuals' perceptions of their basic psychological needs negatively will undermine motivation (Vallerand & Losier, 1999). In addition to this, it should be noted that these perceptions may be altered by factors such as feelings of pressure to do an activity due to an external locus of causality (Deci & Ryan, 1985b). It is apparent that the discussion is moving from a broader discussion of motivation as a whole, into varying types of motivation that exist and inform SDT. As previously mentioned, these varying types of motivation may be quantified along a continuum that ranges from the least self-determined form of motivation (amotivation) to the most self-determined form of motivation (intrinsic motivation). These different forms of motivation are also described as self-regulations as they determine the manner in which individuals interact with various activities based on how individuals attribute reasons for activities to themselves (Standage et al., 2003). These self-regulations/ different types of motivation form part of the SDT emphasising the multi-dimensional nature of the theory, but also consist of their own sub-categories indicating their own multi-dimensional nature.

2.2.1 Amotivation.

Amotivation will be discussed as the first type of motivation as it is the least self-determined form of motivation (Ntoumanis, 2001; Ryan & Deci, 2000; Vlachopoulos, Karageorghis, & Terry, 2000). Throughout the literature review, a gradual progression will occur explaining the various types of motivation that exist along the continuum. Motivation will be conceptualised from the least self-determined forms of motivation to the most self-determined forms of motivation. The multi-dimensional nature of motivation will become more apparent as it is not a simple unidimensional relationship between amotivation and motivation (Ryan & Deci, 2000). Rather, the various sub-categories of the different forms of motivation will be established and elaborated upon.

Amotivation refers to the absence of motivation and vision (Pelletier et al., 1995; Pelletier et al., 2001; Vallerand & Losier, 1999). Amotivation may also include situations where individuals feel incompetent, do not place value on a task or simply lack intentionality often resulting in a feeling of helplessness (Ryan & Deci, 2000). This therefore indicates that there could be a potential relationship between motivation and perceived competence. By definition, this relationship could exist between amotivation and low levels of perceived competence and vice versa which will be elaborated upon below. It is therefore an area of interest to illustrate how these variables are potentially interact with one another.

It can sometimes be problematic defining amotivation as a type of motivation, simply due to the fact that it represents a complete lack of motivation meaning that there is actually no motivation present within the individual to complete the given task (Faye & Sharpe, 2008; Köseoglu, 2013). An example of amotivation may be a scenario where player may begin to doubt whether practice will actually help in attaining their goals and whether or not it will improve their performance.

2.2.2 Extrinsic motivation.

Extrinsic motivation is the next category of motivation that will be explored as it exists next to amotivation on the continuum along with its sub-categories of motivation (Ryan & Deci, 2000). In many instances, extrinsic motivation is seen as being opposite to intrinsic motivation and existing at the opposite end of the continuum (Ryan & Deci, 2000). The behaviours associated with extrinsic motivation may be seen as contrary to intrinsic motivation, as there are distinct differences between intrinsic motivation and extrinsic motivation when considered as such (Pelletier et al., 1995). Extrinsic motivation itself is multi-dimensional and exists as part of the continuum with varying levels of self-determined motivation, much the same as intrinsic motivation. The fact that there are various levels of extrinsic motivation indicates that individuals often engage in activities out of their free will, but do not necessarily enjoy it (Vlachopoulos et al., 2000).

Extrinsic motivation may simply be defined as the drives that a person experiences in relation to a social or tangible, separable reward to be received upon completion of a task (Pelletier et al., 1995; Ryan & Deci, 2000; Vallerand & Losier, 1999). Extrinsic motivation does not govern behaviour by internal desires or feelings, rather by the possibility of threats, rewards or embarrassment (Standage et al., 2003). Individuals who are extrinsically motivated are only motivated by the end result of a task or activity, they do not find anything else about the task or activity inherently enjoyable or interesting (Ntoumanis, 2001). Extrinsic motivation, for many years was considered to only be established through external events or rewards (Pelletier et al., 1995). It has now been defined by varying levels of extrinsic motivation with the sub-categories comprising of their own amounts of internalisation (Pelletier et al., 1995).

Extrinsic motivation may be further divided into four sub-categories (Mallett, Kawabata, Newcombe, Otero-Forero, & Jackson, 2007a; Mallett, Kawabata, & Newcombe, 2007b; Ntoumanis, 2001; Pelletier et al., 1995; Ryan & Deci, 2000; Standage et al., 2003; Vallerand & Losier, 1999; Vlachopoulos et al., 2000). The first of these sub-categories is external

regulation. External regulation refers to behaviour carried out for the achievement of prizes such as winning a trophy for sporting prowess or in order to avoid punishment or embarrassment (Inoue, Wegner, Jordan, & Funk, 2015; Pelletier et al., 1995; Pelletier, Fortier, Vallerand, & Briere, 2001; Vallerand & Losier, 1999). This behaviour is completely controlled by external contingency and is the least self-determined form of motivation and epitomises the traditional dichotomy of extrinsic motivation versus intrinsic motivation (Ryan & Deci, 2000; Standage et al., 2003; Vlachopoulos et al., 2000). An example of external regulation may be winning a prize purely for recognition, when the activity holds no value at all to the individual.

The second type of extrinsic motivation is introjected regulation. Introjection refers to the internalization of driving forces that the individual experiences (Pelletier et al., 1995, 2001). An example of this is, internalizing an external motivation such as feeling pride for correctly completing a task within the sporting environment or to avoid feelings of guilt due to external forces (Inoue et al., 2015; Ntoumanis, 2001; Pelletier et al., 1995, 2001; Vallerand & Losier, 1999). Introjection indicates incomplete internalisation by individuals (Vallerand & Losier, 1999). Ryan and Deci (2000) indicate that introjection has strong ties to ego involvement due to individuals desire to avoid embarrassment and enhance self-esteem. An example of introjected regulation may be participating for a team so as not to disappoint friends due to a sense of guilt. These two forms of extrinsic motivation are perceived to be controlling and therefore the least self-determined forms of extrinsic motivation (Ntoumanis, 2001).

The third category of extrinsic motivation is identified regulation. This dimension alludes to when an individual identifies with a task and the importance of that task, but may not experience inherent satisfaction from completing the task per se (Pelletier et al., 1995; Ryan & Deci, 2000; Vallerand & Losier, 1999; Vlachopoulos et al., 2000). Therefore, tasks that exist in this category may be limited (Ntoumanis, 2001). An example of such an activity may include extra training in order to improve performance (Inoue et al., 2015; Pelletier et al., 1995; Pelletier et al., 2001; Vallerand & Losier, 1999). The final form of extrinsic motivation is integrated regulation. Integrated regulation refers to when identified regulations have been fully embraced by an individual, being incorporated with an individual's beliefs and values (Ryan & Deci, 2000; Standage et al., 2003). This, therefore indicates that an individual makes choices more out of choice than obligation, but will only complete a task once it has been completely integrated with the self (Vlachopoulos et al., 2000). Unfortunately, a scale has not yet been designed to measure this component of motivation, but one does exist for identified regulation, as well as the other forms of extrinsic motivation (Inoue et al., 2015; Ntoumanis,

2001). An example of integrated regulation may be the way in which a sports person incorporates all aspects of healthy living to their lives such as exercise, good diet and some socialising in order to maintain a balance (Ntoumanis, 2001). These two forms of extrinsic motivation represent the most internalised and self-determined forms of motivation, holding many similarities with intrinsic motivation (Ntoumanis, 2001; Ryan & Deci, 2000; Standage et al., 2003). These two forms of motivation may also be perceived as being autonomous and therefore are closely aligned with SDT (Ntoumanis, 2001).

The above indicates the multi-dimensional nature of extrinsic motivation which only forms part of the SDT and motivation as a unit. The different forms of extrinsic motivation have been explained, ranging from the least self-determined forms of motivation to the most self-determined forms of motivation. The last two forms of motivation are closely related to intrinsic motivation and should be considered as such due to the presence of some form of external influence that still exists, but the individual begins to internalise reasons for behaviour more and therefore the next section of motivation is intrinsic motivation.

2.2.3 Intrinsic motivation.

Intrinsic motivation may be seen as an internal desire to complete a task without the presence of a separable consequence, people are rather driven by the inherent pleasure that is gained from doing the task (Pelletier et al., 1995; Ryan & Deci, 2000; Vallerand & Losier, 1999). Intrinsic motivation includes the most self-determined and autonomous forms of motivation (Ntoumanis, 2001; Standage, et al., 2003). This is so due to the fact that for many years intrinsic motivation was also seen as a unidimensional concept and seen in contrast to only extrinsic motivation or amotivation (Ntoumanis, 2001; Vallerand & Losier, 1999). Rather, intrinsic motivation should be considered as a multi-dimensional concept that is triggered by no external incentive (Ntoumanis, 2001; Vlachopoulos et al., 2000). It is important to note that intrinsic motivation does not only exist within an individual, but also between an individual and the activity that he/she are partaking in, but this motivation can vary not only between tasks, but individuals too (Ryan & Deci, 2000). No individual presents the exact same motivation, for any given task, as another person (Ryan & Deci, 2000). For this reason, intrinsic motivation has been split into three separate sub-categories in order to attempt to define the different types of intrinsic motivation that may exist.

As mentioned above, intrinsic motivation may be split into three sub-categories including intrinsic motivation to know, towards accomplishments and to experience stimulation (Pelletier

et al., 1995, 2001). The first category is “intrinsic motivation to know”. Intrinsic motivation to know refers to when an individual is motivated by the desire to learn a new technique or skill (Ntoumanis, 2001; Pelletier et al., 1995, 2001; Standage et al., 2003; Vallerand & Losier, 1999; Vlachopoulos et al., 2000). This satisfaction is derived from attempting to understand a concept or task (Ryan & Deci, 2000). An example of intrinsic motivation to know may be the feelings that an individual experiences when they learn a new move specific to their sport or a new skill (Vallerand & Losier, 1999). The second refers to “intrinsic motivation toward accomplishments” and this refers to the pleasure an individual experiences when improving a weak aspect of their performance which can be associated with mastery of certain techniques (Ntoumanis, 2001; Pelletier et al., 1995, 2001; Standage et al., 2003; Vallerand & Losier, 1999). In this case, individuals strive to improve at skills that they already possess, therefore indicating the link to the mastery of a task and therefore task orientation (Ntoumanis, 2001; Ryan & Deci, 2000). Through this individuals strive to feel competent and gain more satisfaction from accomplishing a difficult task (Ryan & Deci, 2000). An example of this may lie in mastering a task that an individual has failed to grasp for a prolonged period of time (Vallerand & Losier, 1999). The final category refers to “intrinsic motivation to experience stimulation”. Intrinsic motivation to experience stimulation refers to how individuals participate in a certain activity in order to gain a sensory stimulation derived from the engagement in the task (Pelletier et al., 1995, 2001). This sensory stimulation may present itself in the form of fun, pleasure, excitement, aesthetic excitement or the pleasant feelings released by endorphins after exercise (Ntoumanis, 2001; Ryan & Deci, 2000; Standage et al., 2003; Vlachopoulos et al., 2000). An example of this type of motivation may lie in when an individual is excited or happy after completing a sport (Vallerand & Losier, 1999).

Evidence has indicated that when an individual exhibits this positive stimulation after sport, he/she often then exhibits greater levels of intrinsic motivation (Vallerand & Losier, 1999). There seems to be a lack of current and recent research which suggests that perceived competence is a mediator between sport participation and intrinsic motivation, despite the apparent links based in SDT (Vallerand & Losier, 1999). Despite the apparent lack of research in this area, it has been suggested that perceived competence predicts intrinsic motivation which in turn predicts self-worth (Georgiadis, et al., 2001). This research will therefore endeavour to explicate this relationship more clearly. SDT has been used as the dominating theoretical framework and therefore competence is one of the basic needs that must be satisfied for an individual to demonstrate self-determination and therefore will be explained in further

depth, not merely as a basic psychological need, but in the manner by which individuals perceive it.

As part of this section, differences between extrinsic motivation and intrinsic motivation have not been explicitly explained as they shall be elaborated upon at a later stage in the chapter. These shall be elaborated upon in the latter parts of sections 2.3, 2.4 and 2.5. This is due to the perspective that has been taken in relation to motivation. Using SDT as a dominating framework means that motivation is viewed along a continuum and therefore there are different levels of motivation making it difficult to differentiate between these concepts as explicitly as can be done for goal orientations and mind sets.

2.3 Perceived Competence

As mentioned above, competence is an instrumental construct to consider when investigating the levels of self-determination that an individual may possess. Perceived competence is a central concept when conceptualising and understanding motivation (Papaioannou et al., 2006; Wang & Biddle, 2003). Theories of motivation such as SDT and goal orientation theory underline the positive role of perceived competence. Competence refers to how individuals understand certain internal and external events and how they occur and the effectiveness that is demonstrated by individuals when completing these tasks (Elliot & Dweck, 2005; Gagné, 2009; Vallerand & Losier, 1999). Perceived competence therefore refers to the manner in which individuals interpret, perceive and understand effectiveness and ability demonstrated when completing a task (Kimiecik & Horn, 2012). This is an aspect of competence that this study will attempt to investigate. When competence is considered as a unit of measure for SDT, it is perceived to be valuable in order to quantify motivation and the amount of self-determination that is experienced by an individual, considering them at some stage along the self-determination continuum (Mouratidis et al., 2008).

Competence is used when considering performance and motivation, due to the fact that it is a concept that applies cross-culturally, is used daily by individuals and throughout their lifespans and can have an effect on emotions of individuals based on their levels of competence (Elliot & Dweck, 2005). Competence has therefore been considered as an appropriate concept that may be utilised for this study despite lack of evidence of the relationships as a mediator of motivation and research based in an African context.

A motivational analysis of competence must involve accounting for an individual's behaviour and direction of action (Elliot & Dweck, 2005). This direction of action is based in motivational

theory as previously mentioned and refers to the intensity and direction of performed effort (Weinberg & Gould, 2011, 2014). Competence does not directly affect motivation, but rather, the experiences due to a sense of competence or lack thereof, therefore motivating an individual to pursue a task further or cease activity (Weinberg and Gould, 2014; Wang & Biddle, 2003). This illustrates how perceived competence may result in persistent behaviour from an individual as a bi-product of intrinsic motivation (Papaioannou et al., 2006). This is of particular importance to the South African context due to the fact that research has indicated that participation decreases as individuals increase in age (Department of Sport and Recreation, 2005; Georgiadis et al., 2001; Hagger & Chatzisarantis, 2009; Papaioannou et al., 2006; Standage et al., 2003; Wilson et al., 2008). It is expected that through participation in sport, the continued practice of tasks should reflect higher levels of perceived competence which hopefully also results in greater persistence (Papaioannou et al., 2006).

2.3.1 Sources of competence.

The sense of competence that an individual experiences is based not only on their subjective experience of their effectiveness, but also on feedback that they receive based on the recently completed activity (Kavussanu, White, Jowett, & England, 2011; Mouratidis et al., 2008). Therefore, the source and type of feedback is important to consider when it is provided (Mouratidis et al., 2008). Feedback is likely to foster or inhibit perceived competence and therefore motivation (Mouratidis et al., 2008). It is valuable to note that positive feedback has been closely related to intrinsic motivation according to Mouratidis and colleagues (2008). Negative feedback may have adverse effects on the perceived competence of an individual and therefore on the motivation exhibited by an individual.

Henderlong and Lepper (2002) stated that feedback as a source of competence information will enhance intrinsic motivation most effectively when it is perceived as being honest, if success is perceived as being a result of effort, rather than ability, if it is self-referenced as opposed to norm-referenced and if standards and goals are perceived as being clear and attainable. Timing of this feedback is also important as it was noted that feedback after an event was related to changes in perceived competence (Bandura, 1977; Mouratidis et al., 2008). The timing that is referred to is in relation to success and failure, as if an individual receives competence related information as a result of success, an individual may begin to view failure as incidental inducing less negative impact (Bandura, 1977). This, therefore illustrates to the individual that the task that has been unsuccessfully completed may be overcome through persistence and

adaptation (Bandura, 1977). This therefore underlines the relationship that exists between perceived competence and intrinsic motivation.

2.3.2 Evidence.

Studies have been conducted investigating the mediating roles of various theories such as goal orientations and SDT on physical self-worth (Georgiadis et al., 2001; Wang & Biddle, 2003). The physical self-worth that is previously mentioned refers to the value that an individual places on a specific task or activity based on their internal value system (Georgiadis et al., 2001). This is of particular interest as it may be noted how similarities between perceived competence and physical self-worth may be pitted against one another as quite similar constructs. One refers to the quality of effectiveness experienced by an individual and the other refers to the value of this quality. Therefore, the study conducted by Georgiadis et al. (2001) draws pertinent similarities to that which is being conducted and indicates the significance of the research that will be conducted and the constructions of competence need to be accounted for (Wang & Biddle, 2003).

The instruments that have been used to measure physical self-worth have also indicated how individuals make lifestyle adjustments and exercise regiments, which has been identified as one of the important reasons for conducting this research project and using perceived competence as a variable (Georgiadis et al., 2001). It is hoped that the measurement of perceived competence will contribute in a meaningful way as the research conducted by Georgiadis et al. (2001) exhibits. Other research illustrates how intrinsic motivation may increase even in the absence of perceived competence which may be as a result of goal orientations, but this will be discussed in greater depth in the goal orientations section of this chapter, section 2.4 (Duda & Nicholls, 1992; Wang & Biddle, 2003). It has also been shown in research that there are direct and indirect relationships between perceived competence and intrinsic motivation, but perceived competence has been found to be a strong predictor of intrinsic motivation, therefore the current research will endeavour to either support or reject this (Wang & Biddle, 2003).

Apart from limited research, findings have also been inconsistent and therefore this research will hope to contribute to the existing literature that has been presented in this dissertation. It has been established that perceived competence decreases with age and that males generally have higher levels of perceived competence than females, but it has been stated that many of the findings have been inconsistent as Wang and Biddle (2003) established that gender

differences were not significant (Biddle, Wang, Chatzisarantis, & Spray, 2003; Milavić et al., 2010). This research therefore seeks to replicate various research methods in order to establish some reliability and validity amongst methods and findings (Biddle et al., 2003; Milavić et al., 2010; Wang & Biddle, 2003). These results have also been established in conjunction with various other factors such as mind sets and achievement goal theory which will be discussed in further depth below.

2.4 Achievement Goal Theory

Achievement goal theory will be utilised for this study due to the strong associations that it has with participation in sport, as well as motivation (Papaioannou et al., 2006). As mentioned previously, achievement goal theory is deeply engrained within motivational literature and is therefore suitable to utilise in an attempt to identify relationships between the variables as well as indicate how it affects students' motivation to participate in sports. Studies have been conducted relating goal orientations to all of the above factors, such as task orientations with intrinsic motivation, growth mind sets and perceived competence, therefore the current research attempted to support these findings and contribute to the existing body of knowledge (Duda & Nicholls, 1992; Kimiecik & Horn, 2012; McManus, 2004; Milavić et al., 2010; Ntoumanis, 2001; Potgieter, 2011; Potgieter & Steyn, 2010; Standage et al., 2003; Standage & Treasure, 2002; Thøgersen-Ntoumani & Ntoumanis, 2007; Wang & Biddle, 2003; Williams, 1994). As previously mentioned this research has never been collated into one study in a South African context and therefore should provide valuable insights. This section will further expand on the brief definitions provided previously, as well as give an indication of the manner in which the theory will be utilised for this specific study.

Achievement goal theory refers to how an individual perceives an achievement situation and measures success or failure within the situation (McManus, 2004; Potgieter, 2011). This is used by individuals as a basis for individual competence testing in relation to a specific task (Potgieter, 2011). Achievement goal theory consists of two dimensions known as orientations due to the distinct difference that exists between the achievement goal and the orientation, those referring to the result and direction respectively (Duda & Nicholls, 1992; Potgieter, 2011). Achievement goal theory, when applied to an individual, is simply known as the individual's goal orientation. The two dimensions that it can split into are ego orientation and task orientation (Duda, 1998; Milavić et al., 2010). These two dimensions of achievement goal theory are orthogonal in nature meaning that there can be more or less of task or ego orientation

(Papaioannou et al., 2006). This means that there could be any of four combinations of goal orientations (Papaioannou et al., 2006). These combinations may include high task orientation with a high ego orientation, high task orientation with a low ego orientation (task orientated individual), low task orientation with a high ego orientation (ego orientated individual) and a low task orientation with a low ego orientation.

It has been noted that goal orientations are primarily developed between the ages of six and fourteen, however they can also be moulded by the environment (Kimiecik & Horn, 2012; Potgieter, 2011). This means a coach or parent can create a task orientated environment to allow players to develop task orientation (Kimiecik & Horn, 2012; Potgieter, 2011). By doing this, it also allows for the basic needs of SDT to be fulfilled (Potgieter, 2011).

2.4.1 Ego orientation.

The first goal orientation that will be described is the ego orientation. This orientation is characterised by inter-personal competition, public evaluation or normative standards and people who thrive in these situations are thought to be ego orientated (Duda, 1998; Milavić et al., 2010). Individuals who are ego orientated often seek to demonstrate superiority over their peers or competitors and are therefore self-conscious about their ability to perform well (Duda & Nicholls, 1992; Georgiadis et al., 2001; McManus, 2004). Therefore, this orientation bases success on external sources of information relevant to other people (Georgiadis et al., 2001; Papaioannou et al., 2006). Murphy and Dweck (2015) state that these individuals are primarily driven by performance goals to show competence. Performance goals are externally and socially evaluated, therefore indicating links between ego orientation and extrinsic motivation and perceived competence.

An ego orientated individual would feel deeply successful by beating a competitor with minimal effort (Potgieter & Steyn, 2010). In contrast, an ego orientated individual will feel unsuccessful or incapable if they have to place more effort into a specific task (McManus, 2004). If an individual feels incapable, they may adopt maladaptive behaviours such as shallow learning strategies and avoidance of challenging tasks (Elliott & Dweck, 1988; McManus, 2004).

As stated, goal orientation is orthogonal in nature and therefore, there may be benefit in having high task orientation and high ego orientation when considering continuous sport participation, but it is yet to be proven whether ego orientation has a positive effect on this (Papaionnou et al., 2006). This will be investigated further in this research.

2.4.2 Task orientation.

Contrary to ego orientation, where the focus is more on learning and improvement are considered to be task involving, and the people who thrive in these environments are thought to be task orientated (Duda, 1998; Georgiadis et al., 2001; McManus, 2004; Milavić et al., 2010; Papaioannou et al., 2006; Potgieter, 2011; Wang & Biddle, 2003). Task orientation therefore involves the desire to attain a goal and develop competence in a certain aspect of a task, therefore indicating a relationship between goal orientation and competence (Elliot & Dweck, 2005).

Individuals who are task orientated thrive when exerting great levels of effort and find it rewarding to succeed as a result of effort and feel a sense of mastery in relation to the task (Duda & Nicholls, 1992). Task orientated individuals do not mind making mistakes and view it as a chance to learn and enhance their knowledge often embracing challenges as the focus in these individuals is to improve their perceived level of competence and these challenges present such opportunities (Potgieter, 2011). Despite the association with competence, it is been indicated that task orientated individuals still exhibit interest in self-improvement even when perceived competence is low (Wang & Biddle, 2003). Task orientated individuals view success and progress as a self-referenced norm as opposed to a socially controlled norm (McManus, 2004).

2.4.3 Myths based on goal orientations.

There are certain beliefs that exist in relation to various theories and goal orientations are not exempt from these misconceptions. Potgieter (2011) states popular belief is that individuals can only be ego or task oriented. However, due to the orthogonality of the constructs, individuals are able to possess both in varying amount (Potgieter, 2011). It is also popular belief that ego oriented individuals are more suited to sporting situations, but there is limited evidence supporting this (Potgieter, 2011). Evidence has however indicated that task oriented individuals tend to develop more within these contexts, which does not necessarily mean that they are better at sport either (Potgieter, 2011). A final myth associated with goal orientations is that task oriented individuals do not care about winning, the fact is that they often use these situations to gauge their development and use them to evaluate themselves (Potgieter, 2011).

2.4.4 Goal orientations and level of competition.

Research conducted by McManus (2004) has indicated that there are interactions between goal orientations and individuals' competitive levels. The research indicated that amateurs have been found to be higher in task orientation than semi-professional athletes who are higher in ego orientation, but this difference is not significant (Carpenter & Yates, 1997). It has also been indicated that high school athletes exhibit higher ego orientation than college athletes, but these college athletes have been found to have higher task orientation without being separated by sport (White & Zellner, 1996).

2.4.5 Goal orientations and gender.

Research in this area has been conflicted to some extent, therefore, this research will hope to contribute in a meaningful way to the existing literature. Duda and Horn (1993) stated that gender differences are not significant for goal orientations. In general it seems that females are more inclined to be task oriented than males. Duda, Chi, Newton, Walling and Catley (1995) reported that females who play tennis show a higher task orientation than males, but there were no significant differences for ego orientation. In high-school sport, it was documented that females possessed a high task orientation and males a high ego orientation, but this study was not sport specific (Duda, 1989). More relevant to the current study were findings by Li, Harmer and Acock (1996) who indicated that in undergraduate physical education classes, males demonstrated higher ego orientation than females with no significant difference for task orientation.

2.4.6 Differences between task and ego orientation.

As indicated above, the two dimensions of task orientation and ego orientation are fairly dissimilar and therefore this will be illustrated in Table 1 below (Potgieter, 2011). The characteristics identified below have been alluded to in the above text, but this table serves to clearly illustrate the differences.

Table 1

Differences between task and ego orientation

Task Orientation	Ego Orientation
• Minimal social comparison • Success is based on personal goals • Dominated by intrinsic motivation • Process is focussed on due to importance of learning • Effort is proportionately increased with challenge • Individuals are likely to take risks and are independent • Individuals demonstrate less stress and are more focussed on the task	• Rely on social comparison • Success is based on winning • Dominated by extrinsic motivation • Outcome oriented due to the focus on winning • Minimise effort at every chance to avoid challenges • Individuals avoid risks and are highly dependent • Individuals demonstrate high levels of stress and divided focus

2.4.7 Evidence.

Research has indicated that individuals with high task orientation showed greater adaptability in achievement scenarios than individuals who have a high ego orientation or low task orientation (McManus, 2004). This has been supported by reports stating that these individuals also showed greater persistence with tasks (Elliott & Dweck, 1988). This is due to the fact that they are able to adapt techniques in various situations in order to complete the task at hand successfully (Elliott & Dweck, 1988). Ego orientated athletes have been noted to adopt maladaptive strategies when the achievement setting is not suitable to their expectations, such as superficial learning techniques and avoidance of challenging tasks (McManus, 2004; Potgieter, 2011). These scenarios have been further linked to physical activity settings indicating the applicability to the research at hand (Papaioannou et al., 2006).

The descriptions above indicate that orientations may be linked to motivation. Individuals who are task orientated have been documented as being more inclined to intrinsic motivation and ego orientated individuals being more inclined to extrinsic motivation (Duda, 1998; Georgiadis et al., 2001; Wang & Biddle, 2003). This is simply due to the underlying notions associated with the two theories. Task orientated individuals seem to be intrinsically driven and ego

orientated individuals seem to allow external factors to influence their perceptions of achievement situations. It should be noted however, that ego orientated individuals are seen as being motivationally fragile (Wang & Biddle, 2003). They often doubt their own competence due to the fact that they determine the level of their performance based on other individuals' performances as opposed to self-referencing these norms (Wang & Biddle, 2003). Ego orientated athletes adopt the notion that they must be the best implying the notion that skill is fixed indicating the link to mind sets which will be discussed in greater depth in the following section (2.5) (Potgieter, 2011).

Research has also indicated that there is a positive relationship between sport participation and goal orientations showing the importance of including such a concept in research of this nature (Papaioannou et al., 2006). The fact that goal orientations may be split into two distinct categories indicates that these categories are identifiable and measurable. With this, there will also be various factors that will be related to these dimensions of goal orientation and it is therefore important to investigate whether the other factors included in this study are responsible for this.

2.5 Mind sets

Mind sets is a concept that was first proposed by Carol Dweck (2000). Initially the concept of mind sets was proposed mainly for the academic field, but it has since been applied to the sporting domain as will be elaborated on below (Biddle et al., 2003; Potgieter, 2011; Potgieter & Steyn, 2010). Mind sets refer to the ways in which people understand intelligence, personality and abilities (Dweck, 2000, 2008). Despite this concept relating to how individuals interpret their intelligence, it affects more than the domain of intelligence and has been shown to affect consumer preferences and goal setting (Murphy & Dweck, 2015; Priester & Petty, 2015). There are two completely different ways in which people understand intelligence which are known as fixed/entity or growth/incremental mind sets which will be unpacked further in this section (Dweck, 2000, 2008). It should however be noted that these two constructs are also orthogonal in nature and an individual may possess characteristics which categorise them into both mind sets (Dweck, 2000, 2008). Dweck has sought to investigate various mind sets and the manners in which people experience the world and its events (Priester & Petty, 2015). Mind sets are commonplace in activities of daily living and very often people do not realise that their behaviour is influenced by their mind set (Priester & Petty, 2015).

2.5.1 Fixed mind sets.

As mentioned above, the two mind sets that exist are fixed and growth mind sets (Biddle et al., 2003; Dweck, 2000; Potgieter, 2011; Priester & Petty, 2015). Individuals who possess fixed mind sets are of the belief that the set of characteristics that were obtained at birth are likely to remain as such without any change and often remain loyal to these characteristics despite changing contexts (Biddle et al., 2003; Dweck, 2000; Priester & Petty, 2015). These individuals view intelligence as a static trait that cannot be adjusted, but also refers to an individual's perceptions of their own talent and abilities (Dweck, 2010; Murphy & Dweck, 2015). When individuals present a fixed mind set, their primary concern is how they are being socially assessed and do not want to be identified as weak or inferior and would rather hide these deficiencies (Dweck, 2007, 2008). These individuals also avoid putting effort into a task as they believe that this effort will make them look unintelligent, due to the fact that they associate persistence with a lack of knowledge and execution of a specific task (Dweck, 2007; Murphy & Dweck, 2015). These individuals also lack adaptability and therefore struggle to recover from setbacks (Dweck, 2007). By definition, this mind set exists in direct opposition to the growth mind set which shall be further discussed below. This should however be considered with caution as Dweck (2000, 2008) states these constructs can be orthogonal in nature.

2.5.2 Growth mind sets.

In contrast to fixed mind sets is the growth mind set (Dweck, 2000, 2007, 2010; Murphy & Dweck, 2015; Potgieter, 2011). Individuals who possess growth mind sets believe that the characteristics obtained at birth are changeable and this may occur over time in the hope of improving and potentially attaining a certain goal (Biddle et al., 2003; Dweck, 2010; Priester & Petty, 2015). These changes are viewed as possible through education and effort, and effort is viewed in a positive sense as it indicates that the individual is exerting effort (Dweck, 2007; Murphy & Dweck, 2015). These individuals identify with potential and realise that skills, intelligence and ability are dynamic and changeable (Dweck, 2008, 2010). Individuals who have growth mind sets enjoy to learn and develop themselves and therefore believe that potential can be realised through practice and a lack of knowledge does not represent weakness, but rather, opportunity (Dweck, 2010; Murphy & Dweck, 2015). Individuals who possess a growth mind set are most often driven to pursue goals that encourage learning and therefore develop the perceived competence and level of mastery experienced by an individual (Murphy & Dweck, 2015).

2.5.3 Differences between fixed mind sets and growth mind sets.

As indicated above, the two dimensions of fixed mind sets and growth mind sets are fairly dissimilar and therefore this will be illustrated in Table 2 below (Potgieter, 2011). The characteristics identified below have been alluded to in the text above, but this Table serves to clearly illustrate the differences.

Table 2

Differences between fixed and growth mind sets

Fixed Mind set	Growth Mind set
• Focus on performance goals • Desire to prove own ability • Avoid challenges • Lack motivation to improve ability • Believe that there is no need for effort if individual is already skilled • Withdraw from challenges • Do not enjoy challenges	• Focus on learning goals • Focus on improving ability • Seek out challenges • Highly motivated to improve skill • Believe that effort is the key to success • Persist when challenged • Enjoy being challenged

2.5.4 Evidence.

There is limited evidence that exists linking mind sets to the main factor being studied in this research (motivation), but more evidence that links it to the other factors of study (Biddle et al., 2003; Potgieter, 2011; Potgieter & Steyn, 2010). It has been indicated that fixed mind sets more often than not predict amotivation (Biddle et al., 2003). This is due to the fact that individuals perceive themselves to be unable to learn and develop, they then lack the motivation to pursue anything in anyway as it will not benefit them. This is contextualized by amotivation and the absence of motivation to complete a task.

Mind sets are also influenced by the feedback individuals receive from parents, peers or coaches (Duda, 1998; Dweck, 2010; Williams, 1994). Dweck (2007) advances this statement by indicating that these feedback and praise can motivate individuals to do better and continue to develop, when the feedback is directed at the effort involved in completing a task. Development is one of the key characteristics of intrinsic motivation, thus indicating why

praise based on effort would result in a growth mind set. Dweck (2007) adds that a growth mind set improves motivation and resilience experienced by an individual. Individuals also have a greater ability to rebound from setbacks than individuals who have a fixed mind set (Dweck, 2007). In addition, when praise is relative to the intelligence of an individual, it gives them a sense of competency (Dweck, 2007). Individuals do not want to lose this feeling of competency and therefore adopt a fixed mind set (Dweck, 2007).

Empirical evidence reviewed, suggests that there may be relationships between mind sets and motivation, as well as the other constructs that have been included in this research. It has also been selected due to the fact that it shapes the way that individuals view the skills and abilities and the relationships that this may have on other variables included in this project. Individuals' views of their abilities can result in certain behavioural activities as well as certain motivational inclinations, goal orientations and perceptions of competence.

2.6 Theoretical interrelatedness: Empirical evidence.

The four constructs of motivation, perceived competence, goal orientations and mind sets have been selected due to the interrelatedness that has been indicated from previous research. In addition, when considering the definitions and descriptions of the theories, it is apparent that these links can be identified and assumed. However, for the research to hold any credibility or reliability, empirical evidence must be used to illustrate these relationships, therefore these relationships will be more explicitly defined below. The interactions that exist between perceived competence, goal orientations and mind sets with motivation have been explained individually in the respective sections above. This section will underline the relatedness and relationships that exist between the three other variables, excluding motivation.

Competence is an important psychological need due to the fact that it is necessary for individuals to develop and improve (Elliot & Dweck, 2005). This desire to develop and improve can be related to the varying mind sets that an individual may possess (Elliot & Dweck, 2005). This holds particular importance when it is identified that individuals who possess fixed mind sets often look for competence validation, whereas individuals with growth mind sets often seek to acquire competence (Elliot & Dweck, 2005). For this particular research, this holds value as it indicates that individuals who possess a fixed mind set may be more inclined to have a lower perceived competence due to the mere fact that they are uncertain of their ability and seek validation. Elliot and Dweck (2005) also stated that mind sets not only shape how we perceive our own competence, but also how we view other peoples'

performance. Apart from competence holding relationships with mind sets, it has also been seen to be associated with goal orientations.

Research has indicated that apart from relationships with motivation and mind sets, competence also has interactions with the goal orientation that people follow (Bong, 2004; Duda & Nicholls, 1992; Ryan & Deci, 1989; Wang & Biddle, 2003). It becomes apparent that goal orientations can be linked to competence as accounted for by various literature. The purpose of competence in this study intends to investigate how individuals perceive their levels of competence in relation to a particular task and therefore goal orientations are intricately linked to this in the way that they direct effort in relation to a given task. Research conducted has further indicated the relationships that exist between perceived competence and goal orientations. Duda and Nicholls (1992) expected to find links between task orientation and high perceived competence as well as ego orientation and low perceived competence, but their research showed weak correlations between goal orientations and perceived competence indicating no significant difference between the relationships of goal orientations with perceived competence. This was contradicted by Wang and Biddle (2003) who stated that competence is directly affected by goal orientations and this has a direct influence on intrinsic motivation. Research has indicated that ego orientated individuals may be more susceptible to motivational uncertainty due to doubts regarding their own competence (Wang & Biddle, 2003). However, Wang and Biddle (2003) found that perceived competence has a positive, but weak relationship with ego orientation and task orientation was seen to be more of a mediator between perceived competence and intrinsic motivation in that specific study. This is further supported as it has been documented that ego orientation may have less subsequent positive effects on intrinsic motivation and perceived competence in students than a strong task orientated individual would (Ryan & Deci, 1989; Wang & Biddle, 2003).

Kavussanu et al. (2011) indicate that participants' parents' perceptions of goal orientations may influence an individual's views of competence based on the orientation that they exhibit, therefore illustrating how goal orientation and competence are interrelated. This link has been further indicated by Williams (1994) where it was shown that participants with ego orientation were more concerned with information about the result of the task and peer evaluation, whereas task orientated individuals were more concerned with information about learning, effort and improvement. This can therefore be linked to the different mind sets that individuals may possess as these concepts are similar to the frameworks that support fixed mind sets with relationships having been found with ego orientated individuals and growth mind sets being

linked to individuals who are more task orientated respectively (Wang & Biddle, 2003). This will be discussed in greater detail below.

This section will seek to further clarify and unpack the relationships that exist between goal orientations and mind sets which have been identified in previous research. Without this evidence, some similarities may already have been identified from the definitions and descriptions which were discussed earlier in this section. There are similarities between these theories' characteristics, but they are not identical, this will be demonstrated below in Tables 3 and 4 (Potgieter, 2011). They are related through the mere fact that growth mind sets and task orientations place high emphasis on learning as a result of completing a task as well as self-referencing as the task progresses (Duda & White, 1992; Elliot & Dweck, 2005; Potgieter, 2011; Wang & Biddle, 2003; Van-Yperen & Duda, 1999). In contrast fixed mind sets and ego orientation are performance related and based on social comparison (Potgieter, 2011). The research conducted by Potgieter and Steyn (2010) uncovered that task orientation and the growth mind set relate significantly to positive reactions to success and failure. This is not the exact purpose of this research, but yet again serves as an indication of the similarities that exist between growth mind sets and task orientations. Additional evidence has indicated the predictive power of the growth mind set over creating a task orientated individual, whilst fixed mind sets are said to predict the development of individuals who are ego orientated (Wang & Biddle, 2003). This serves as an indication that not only do these variables influence and relate to motivation, but also to one another.

The similarities between task orientations and growth mind sets as well as ego orientations and fixed mind sets will be illustrated below in Tables 3 and 4 respectively. These tables will be used to clearly identify and articulate the overflow that exists between the concepts as they are only similar and not exactly the same (Potgieter, 2011).

Table 3

Similarities between task orientations and growth mind sets

Task Orientation	Growth Mind set
• Success based on personal goals • Dominated by intrinsic motivation • Learning process is important • High effort exerted for challenging tasks • Enjoy risks and independent • Minimally stressed and well-focussed	• Focus on learning goals • Focus on improvement • Seek challenges • Motivated to improve skill • Effort is key to success • Persistent • Enjoy challenges

Table 4

Similarities between ego orientations and fixed mind sets

Ego Orientation	Fixed Mind set
• Always concerned with social comparison • Success based on winning • Dominated by extrinsic motivation • Outcome oriented • Little effort for challenging tasks • Avoid risks and dependent • Highly stressed and have divided focus	• Focussed on performance goals • Look to prove ability • Avoid challenges • Lack motivation to improve • Believe that there is no need for effort if skilled • Withdraw from challenges • Minimal enjoyment when challenged

2.7 Conclusion

The review of literature that has been presented above indicates the advances that have previously been made in this field. As evidenced above, research has been conducted, but it has firstly been conducted over a large period of time and secondly, no single study has sought to underline the relationships that exist between all of the concepts which are in question. The

most similar research which has been done was that by Wang and Biddle (2003) who investigated determinants of active lifestyles in Singaporean university athletes incorporating the concepts of intrinsic motivation, mind sets, goal orientations and perceived competence. Therefore, the other literature which has been reviewed above has sought to give a snapshot of previous relationships that have been made between the concepts of perceived competence, goal orientations and mind sets with motivation. These are the additional findings that will be investigated for the purpose of the current research and compared to the results that will be found to see if they are related or unrelated. The relationships between all four concepts as described above will also be investigated despite the main aim being to investigate how perceived competence, goal orientations and mind sets are linked to motivation.

The chapter above has sought to give an understanding of how to define and understand the various theories to give a theoretical grounding for the current dissertation. It has also sought to demonstrate the relationships and interrelatedness that exists between these variables. An important point to note from this chapter is that motivation is not a unitary concept and therefore should not be viewed as such as the SDT proposes (Deci & Ryan, 1985a; Ntoumanis, 2001; Ryan & Deci, 1989; Vlachopoulos et al., 2000). It is a concept that is viewed along a continuum and therefore the other variables that are being measured may be related to a certain type of motivation that exists at any point within the continuum. Some of these relationships that have been found in literature have been explained and elaborated upon as these are the findings that this research is setting out to elaborate upon. The findings that are discussed include associations between intrinsic motivation and a heightened sense of perceived competence, task orientation and a growth mind set (Duda, 1998; Elliott & Dweck, 1988; Wang & Biddle, 2003).

This literature has given this study a theoretical basis to develop a suitable methodology which will be discussed in the following chapter. By completing a thorough review of literature it allows researchers and readers to understand some of the key underpinnings that are associated with the concepts and how this is related to the research design and aims of the research. This then allows for suitable methods to be identified and utilised which will be elaborated upon next.

CHAPTER 3 METHODOLOGY

3.1 Introduction

This chapter will seek to explain and justify the means by which this research hopes to answer the main research question as well as the sub-questions. This chapter is used to outline the process that was followed to find the necessary answers. This methodology was developed in relation to the research question which searches to investigate whether perceived competence, goal orientations and mind sets are related to the motivation of university students to participate in sports.

3.1.1 Research question.

- What is the relationship between perceived competence, goal orientations and mind sets on the motivation to participate in sports at university, if any exist at all?

Almost anything that can be thought of can be measured in modern life (Terre Blanche & Durrheim, 1999). There are two ways in which this may be done, either through qualitative measures or quantitative measures. This study will use the latter in an attempt to sufficiently and suitably quantify the data collected (Terre Blanche & Durrheim, 1999). This particular study utilised quantitative measurements to ensure that a level of objectivity was maintained when carrying out the processes of collection and analysis. The method is not entirely objective as results must still be interpreted, but it does give the research some credibility as the methods have been previously utilised and tested for reliability and validity and there are certain rules that should be adhered to (Terre Blanche & Durrheim, 1999). Quantitative measures have been selected for this particular study as the data that is obtained can be more generalizable to the larger population (Terre Blanche & Durrheim, 1999). The data is more generalizable due to the fact that a larger sample size can be utilised than in qualitative research as it would consume more time relative to quantitative data collection. The large samples and high volumes of data that are collected in quantitative research are done so through the use of measuring instruments such as questionnaires and surveys, amongst many others (Terre Blanche & Durrheim, 1999). This research project used four of such questionnaires, namely the Sports Motivation Scale (SMS-6) (Ostrow, 2002; Reilly & Korkusuz, 2008), the Perceived Competence Subscale of the Intrinsic Motivation Inventory (IMI) (Ntoumanis, 2001; Roberts, 1992), the Task and Ego Orientation in Sport Questionnaire (TEOSQ) (Duda, 1998; McManus, 2004; Ostrow, 2002) and the Self-theory Questionnaire (Biddle et al., 2003; Dweck, 2002).

Due to the quantitative measures that were utilised for this study, a deductive approach was utilised in order to draw answers from the data that were obtained from the questionnaires (Sanders, 2009; Terre Blanche & Durrheim, 1999). From a deductive approach, the theory is initially utilised in order to develop hypotheses or research questions, after which questionnaires or surveys are conducted or observations completed, where finally an interpretation is made of the data that was found (Somekh & Lewin, 2004; Terre Blanche & Durrheim, 1999). This therefore aligns the research with a certain paradigmatic position giving the research context and perspective. This paradigmatic position is primarily based on motivation and the SDT, as well as how perceived competence, goal orientations and mind sets influence this motivation to play sport in a South African university context. The current research investigates the relationship between motivation to play sport, perceived competence, task and ego orientation and mind sets as previous research has indicated relationships between some of the variables, but no research has investigated them simultaneously (Elliot & Dweck, 2005; McManus, 2004; Milavić, et al., 2010; Pelletier et al., 1995; Potgieter & Steyn, 2010).

This chapter will attempt to explain the research design that was used, the methods of sampling, data collection and data analysis. This chapter will also discuss some of the ethical issues that were encountered, while the methodology and limitations of this will also be discussed. The methodology chapter will also seek to explain how the measurement and analysis of the variables will occur and what rules are associated with these various methods to clearly explain the research to allow it to be replicated accurately (Terre Blanche & Durrheim, 1999). These rules that are mentioned are explicitly stated to ensure that the replicability of studies is possible through the exact same use of various instruments (Terre Blanche & Durrheim, 1999).

3.2 Research Design

The research design section of this chapter will attempt to explain the appropriateness of the characteristics that have been selected to answer the research questions. It refers to a simple outline of the research protocol that was conducted for this study (Terre Blanche & Durrheim, 1999). This section refers to the basic outline for how the data collection and analysis was conducted and how it will be explained in this particular study (Potgieter, 2011). It is at this point that the type of information to be collected is explained, the sources of information are uncovered and procedures for data collection explained (Kinnear & Taylor, 1996). These explanations are not done in great depth at this point as they will be covered more comprehensively later in this chapter, but they are rather identified so as to justify the research

design implemented. Information relevant to this research was collected through the use of the four questionnaires previously mentioned. Data was collected from various students participating in various sporting codes at Rhodes University. These questionnaires suitably operationalise the theories associated with them respectively into observable indicators that have been shown to be suitably objective, reliable and valid (Duda, 1998; Mallett, et al., 2007a; Mallett et al., 2007b; McManus, 2004; Ntoumanis, 2001; Ostrow, 2002; Potgieter & Steyn, 2010; Terre Blanche & Durrheim, 1999).

Thus, for this data to be collected and collated in relation to one another, a correlational analysis was conducted. A correlational analysis refers to the analysis of the strength of relationships that exist between two variables, which are measured using values ranging from +1 to -1, with +1 representing a perfect positive relationship and -1 representing a perfect negative relationship (Sanders, 2009; Somekh & Lewin, 2004; Terre Blanche & Durrheim, 1999). Correlational research allows for the identification of relationships that exist between variables, but it does not allow for inferences to be made regarding causality (Shaughnessy, Zechmeister, & Zechmeister, 2009). Therefore inferential statistics should be utilised to identify these relationships (Shaughnessy, Zechmeister, & Zechmeister, 2009). The inferences that are drawn from results use sample statistics to infer something about the population parameter (Shaughnessy et al., 2009). Thus, this research sought to cross-validate motivation with various other factors and analyse the potential consequences of these relationships as opposed to indicating and assuming causal relationships through correlational analysis (Hagger & Chatzisarantis, 2009; Mouratidis, et al., 2008). A correlational analysis was utilised due to the nature of the study, the variables mentioned prior are motivation and perceived competence, goal orientations and mind sets. These variables were assessed individually and not as mediators or moderators of motivation. It was also appropriate due to the fact that the relationships between each of the variables were investigated. Descriptive statistics were utilised as part of this research in order to understand general trends within the sample and distribution of attributes relevant to the research (Somekh & Lewin, 2004; Terre Blanche & Durrheim, 1999). Descriptive statistics assisted to attribute certain results to the characteristics possessed by the sample that was utilised and assisted in the analysis of data as well as the comparison with previous findings by other researchers if deemed to be necessary.

Due to the correlational nature of the research a deductive approach was used which involved analysis of data collected in order to deduce particular inferences (Sanders, 2009; Terre Blanche & Durrheim, 1999). As mentioned above, the data was collected through the use of

four questionnaires. The appropriateness of the questionnaires used is determined by the goals of the research and the units of analysis which will be discussed in further depth in the 'Methods of Data Collection' section of this chapter. However, it is also important to understand the sampling methods that were utilised for this particular study and why they were used beforehand.

3.3 Sampling

Sampling is a crucial stage of the methodology as it is at this stage that representability and appropriateness of the people, settings, and processes is questioned in relation to the research question. Sampling refers to the process of decision making regarding the variables that will be accounted for throughout the process of the research and how participants will be selected for the study (Durrheim & Painter, 2006; Potgieter, 2011). These variables, as previously mentioned include factors such as the people, events, behaviours and processes that will be quantified (Durrheim & Painter, 2006). These variables can be measured for participants' existing individually or in groups and for the purpose of this study, the measurement will be conducted on sports teams (Durrheim & Painter, 2006). These factors were measured in the demographics section of the research and included variables such as age, gender, sport played and years playing sport, amongst others.

The main aim of sample selection is to choose one that is representative of the population. This helps the researcher generalise the results as the sample may be viewed as a component of a population (Durrheim & Painter, 2006; Shaughnessy et al., 2009; Somekh & Lewin, 2004). In order for a sample to be representative, considerations need to be made with regard to the size of the sample, which can often be restrained practically by time or resources and therefore this is an important factor to consider (Durrheim & Painter, 2006; Shaughnessy et al., 2009; Somekh & Lewin, 2004). A large sample also assists in gaining statistical accuracy which is important for the current study due to its quantitative nature (Durrheim & Painter, 2006). Another consideration that is important to deliberate upon is that of focus, as detail and quality will be determined by it, therefore it is better to have a focussed research topic where sufficient detail can be obtained as opposed to a broad topic where inadequate research can be conducted (Durrheim & Painter, 2006).

The sample for this particular study was selected systematically in order to avoid bias of selection as well as to be able to account for any contradictions to the norm that theory may suggest (Durrheim & Painter, 2006). Bias refers to situations where the sample over/under

represented and it is the desire of the researcher to avoid this (Sanders, 2009). The systematic selection of participants refers to how the researcher gained access to the sample. The head of sport at the university was approached to gain access to all sports teams. This was done once the project had been given approval from the Rhodes University Psychology Ethics Review Committee (RUPERC) and the Humanities Higher Degree Committee (HHDC). Once approval was given by the head of sport the researcher sought approval from the human resources manager and the registrar. After this, the researcher had access to the team coaches, who were contacted in order to set a suitable time for the questionnaires to be completed by the sample. Participants were only included if they consented to the research after completing the informed consent form Appendix A. The participants were also informed that they were able to withdraw from the research at any stage if they felt uncomfortable or simply did not consent to participation any longer.

A non-probability sampling technique was used to select the various participants to partake in the study. Non-probability sampling is defined by Terre Blanche and Durrheim (1999) and Sanders (2009), as sampling that is conducted due to some factor such as accessibility or convenience as opposed to following a process of sample selection. The non-probability sampling technique that was utilised was quota sampling. Quota sampling applies known characteristics of the population in order to split the population into various groups (Sanders, 2009). This particular study followed this process as the sports system at the university already divides sports into various codes that are made public. Some codes are larger than others and possibly represent the population more appropriately. There is also evidence which suggests that sport at Rhodes University does not have strong support from management and students do not all take it as seriously as one another (Mabizela, 2015). Therefore, this is how non-probability sampling and subjective bias of the researcher may appear due to the fact that in conjunction with the supervisor, decisions were made regarding which sporting would complete the questionnaires (Sanders, 2009). The various sporting codes were selected based on the time of the year that the research was conducted and which sports were currently being participated in. Sports that were identified as having large numbers of participants as well as a split between race and gender were selected in an effort to make the sample representative. This decision was made in order to be able to generalise the sample to the overall population. Due to the fact that this was recognised and appreciated it could be accounted for during the research process.

As mentioned above, the data collection methods will be discussed in further depth below. This section of the chapter will discuss the various features and characteristics that were represented in the sample as well as what parts of the population were utilised to complete the sample.

Data was collected from a wide range of sporting codes, however, the larger sporting codes of rugby, hockey, soccer, rowing, netball, athletics and cricket were targeted in order to obtain a suitable sample size. A sample of 212 participants was obtained in order to keep the confidence interval as low as possible given the population size. Rhodes University is not one of the larger universities in South Africa with approximately 7000 students, therefore this contributed to the suitability of the sample size. In addition these students were selected in the hope of gaining a sample which was representative of the gender demographic of those participating in sports at Rhodes University. These students are taught to pride themselves on academic excellence with less emphasis being placed on sporting prowess (Mabizela, 2015). This is demonstrated on the “Why Rhodes” webpage the statement only includes one sentence regarding sport, primarily focussing on the academic aspects of the institution (Mabizela, 2015).

Participants were required to be bona fide students participating in university sport at any level, irrespective of gender and race so as to ensure that the results are generalizable to the wider university and South African context. This was in an effort to make the sample more representative of not only the Rhodes University population, but the South African university population at large. In addition, participants had to be registered and actively participating in sport to be included as a participant in the study. Students younger than the age of 18 were excluded from the study in an effort to maintain a sample that is generalizable to university age groups. This age restriction was also implemented in order to avoid ethical implications of working with minors. There was a demographics section in the questionnaires that was completed, prior to the four questionnaires, in order to gain an understanding of the inclusion criteria and variables mentioned above. If any participant did not meet the inclusion criteria mentioned above, they were immediately removed from the study. This was done by safely discarding the questionnaire completed by that participant. These sources were selected in an effort to ensure that the sample was a close approximation that was illustrative of the full population.

3.4 Methods of Data Collection

The methods of data collection section will describe and justify the various methods that were utilised to obtain data specific to this research. It will include details such as how data was

collected and how it was recorded and stored. This section will seek to justify why the various methods were relevant to the concept being measured as well as the levels of reliability that have been indicated in previous research. It will also explain how and where data was obtained, as well as time frames. Methods of data collection are defined by the object of study and therefore need to be appropriate to this (Terre Blanche & Durrheim, 1999). The objects of study are known as the units of analysis, which in the case of the current research project are motivation, perceived competence, goal orientations and mind sets (Terre Blanche & Durrheim, 1999). These units of analysis will be measured on groups of people playing for the various teams (Terre Blanche & Durrheim, 1999).

Data is fundamental for research to be conducted to report meaningful results (Terre Blanche & Durrheim, 1999). For this particular research, quantitative data was collected to make the findings meaningful through numerical representation. This data was obtained through the administration of four questionnaires, the SMS-6, the perceived autonomy subscale of the IMI, the TEOSQ and the Self-theory Questionnaire. These were thought to be the most valid in terms of measuring what the researcher intended to uncover, validity will be discussed in further depth in the relevant sections (Durrheim & Painter, 2006).

Firstly, once approval had been given by the necessary gatekeepers, the researcher gained access to the various sporting code coaches. Correspondence with the coach involved arranging an appropriate time for the participants to complete the questionnaires. The most suitable time was generally just before practices began or once practices were completed. This was done to intrude on the entire practices requesting completion of questionnaires by the athletes. Once this had been arranged, the researcher was suitably prepared in terms of paperwork (questionnaires and informed consent) and practice of administering the questionnaires. The researcher then met players at their respective practice sessions to conduct the research.

Before any questionnaires were completed, the researcher explained the purpose of the research as well as the basic constructs that were being examined. To ensure that all participants received identical information regarding the questionnaires and research, the researcher planned what would be said and ensured that all participants were able to ask any questions regarding the research. The researcher then ensured that all participants were above the age of 18. Any participants who were below the age of 18 were removed from the sample and given a task to do by the coach or dismissed to go home. The students who were above the age of 18 were then asked to sign a consent form stating that they were fully aware of what they were

participating in and consented to their participation. Age was also verified by the age that was stated in the demographics section of the questionnaires. Each participant was given a pencil and eraser to ensure that all answers were as accurate as possible, indicating the paper and pencil fashion of the research. In addition to this the participants were given a folder/envelope that contained all of the questionnaires that they were required to complete. The folder also assisted in keeping their answers confidential as they were concealed from the eye of the researcher and other participants. The fact that the research was explained to participants and an informed consent was signed by participants meant that there was no need for a cover letter to the questionnaires. Despite the fact that there was no deception from the researcher regarding the aims of the research, the titles of the questionnaires were removed in an attempt to gain more honest answers, avoiding participants answering in certain ways when they saw the title. This also increases the levels of reliability and validity of questionnaires (Nederhof, 1985).

Another factor considered was that if any questionnaires were not completed entirely and satisfactorily they were removed from consideration from the sample. This was considered so that the researcher could develop a contingency plan by either not considering these questionnaires or realising this before the end of the session and asking the participant to complete the questionnaire. This was considered in the case that the questionnaire was not completed or not completed acceptably. If not satisfactorily completed, it was then disregarded. The researcher, however made every attempt to clearly articulate the nature and length of the questionnaires. This was done due to the fact that the entire questionnaires had to be completed to allow for correlations and comparisons to be made.

The questionnaires took no longer than 15 minutes to complete. This time limit was confirmed through a pilot study which was conducted to ensure that all details of the research are correct before conducting it on the full sample. Participants were allowed to answer in their own time, to ensure that they did not feel pressured or rush their answers. If any participants needed more than the allocated 15 minutes, they were asked to remember their code and another session was organised in order to complete the questionnaire, but this time period was generally very flexible and no participants were required for follow up sessions. Questionnaires were coded in the case that participants were unable to complete their questionnaire. This was done in an attempt to ensure that questionnaires that were not completed, were in fact completed by the same participant and not by another participant. Coding was also conducted in an effort to avoid asking for personal details such as participants' names. This was done in an attempt to

maintain confidentiality of the participants during the analysis process as their names were also included on the informed consent forms. The questionnaires began with participants completing the demographics section of the questionnaire in an attempt to generate raw data for descriptive statistics. Coding also allowed the researcher a means to ensure that all questionnaires had been recorded and that none had been duplicated during the recording process.

3.4.1 Demographics (Appendix B).

This section was the first section that the participants were required to complete after being given a brief introduction regarding the purposes of the research. Demographic variables refer to variables which illustrate the mean characteristics of the sample to illustrate that it is representative of the population using variables mentioned below (Sanders, 2009; Somekh & Lewin, 2004). The demographics section was a section of the questionnaires that was predominantly used to compile the descriptive statistics and gain an overview of the sample that had been selected. The demographics section included questions regarding the participants' gender, race, sporting code currently played, age, residing on/off campus, year of study, years at Rhodes University, as well as an option to explain why they participate in sports at Rhodes University. As can be noted in Appendix B, race was left open ended as research has been conducted which shows that when using categorical answer styles for race, it can lead to stereotypes being reinforced and participants answering in particular manners (Greenwald & Krieger, 2006). The participants were then required to progress onto the four sections of the protocol that were most pertinent to the research question. As mentioned before, participation was completely voluntary, and participants were able to withdraw at any stage. Once this section was completed, participants were able to move onto the section that pertained directly to the research aims, beginning with the SMS-6.

3.4.2 SMS-6 (Appendix B).

This questionnaire is used to assess various components of intrinsic and extrinsic motivation as well as amotivation while indicating what level of motivation participants possessed as prescribed by self-determination continuum of motivation (Duda, 1998; Ostrow, 2002). This is a 28 item questionnaire (Reilly & Korkusuz, 2008). This questionnaire involves six sub-scales which relate to motivation entirely (Ostrow, 2002; Reilly & Korkusuz, 2008). Within the six sub-scales, there is one which measures intrinsic motivation, as well as four that measure external regulation (integrated regulation, introjected regulation, identified regulation and

external regulation), and one for amotivation (Duda, 1998; Ostrow, 2002; Reilly & Korkusuz, 2008). These areas of the questionnaire focus on perceived reasons for sport participation and attribute them to a certain type of motivation (Duda, 1998; Ostrow, 2002).

The SMS-6 is completed on a 7-point likert scale ranging from 1- *does not correspond at all* to 7- *corresponds exactly*. Participants were supposed to rate their level of agreement with certain phrases with their current reasons for practicing that particular sport. Examples of phrases included '*For the excitement I feel when I am really involved in the activity*' (intrinsic motivation scale), '*To show others how good I am at my sport*' (extrinsic motivation scales) and '*I don't seem to be enjoying my sport as much as I previously did*' (amotivation scale).

This is a widely used questionnaire and reports have found the reliability to be approximately 0.77 (Mallett et al., 2007b). Cronbach alpha scores of 0.7 and greater are generally accepted as being suitably reliable to be reused in further research (Ostrow, 2002). There has been debate over which motivation questionnaire should be utilised in sport (Mallett et al., 2007b). Despite the debate, Mallett et al. (2007b) found that the SMS-6 demonstrated suitable factorial and concurrent validity. This therefore indicated to the researcher that it would be suitable for this study, in addition to the fact that it measures the variety of types of motivation that exist along the continuum of motivation.

In addition, this questionnaire was selected for its ability to identify and categorise intrinsic motivation as one concept and measure it as such. This is due to the fact that when a task is intrinsically motivated it is more so carried out as a matter of instinct and desire than choice or coercion. It also holds value in how it measures for the various types of extrinsic motivation as mentioned in the literature review that motivation exists along a continuum and therefore varies in levels of intrinsic motivation and self-determination. It would also be of interest to view a scale that relates to amotivation due to the fact that people should not be amotivated when participating in sport out of choice, but there is always a chance of outliers or anomalies that may be unexplained.

Due to the fact that there is a theoretical overlap that exists between motivation and perceived competence, it was thought that it was best to answer the perceived competence sub-scale of the IMI. The perceived competence sub-scale of IMI was therefore answered next by participants.

3.4.3 Perceived competence sub-scale of IMI (Appendix B).

The IMI is a multi-dimensional scale that deducts an individuals' motivational inclination using various sub-scales (Ntoumanis, 2001). The IMI is used to measure an individual's overall intrinsic motivation through the use of five sub-scales of which only the perceived competence sub-scale was used for this research (Roberts, 1992). The IMI was initially designed to assess children's intrinsic motivation in relation to academic activities, but has since been adapted to sport situations with success (Deci & Ryan, 1985a; Ntoumanis, 2001). The various sub-scales all pertain to different aspects of intrinsic motivation and ways in which it may present itself (Roberts, 1992). The Perceived Competence Subscale of the IMI was utilised to measure perceived competence. The scale has been slightly modified to include the word sport with low reliability changes reported in many cases (Ntoumanis, 2001). This adaptation was conducted due to the fact that this questionnaire was previously used with children within the academic context (Deci & Ryan, 1985a). It includes 6 items relating to athletes perceived competence in sport. These six items relate to how competent individuals feel in relation to a specific task, which in this case is the sport that they participate in (Ntoumanis, 2001).

The perceived competence sub-scale of the IMI was completed on a 7-point likert scale (Ntoumanis, 2001). This scale ranges from 1-7 with 1 representing *not true at all* and 7 representing *very true* (Ntoumanis, 2001). Participants were required to rate their perceived competence in relation to the statements that were present in the questionnaires dependent on how true it is in relation to them. Examples of these phrases included '*I think I am pretty good at this sport*' and '*This is a sport that I could not do very well*'. Cronbach alpha scores of 0.8 have been reported by Ntoumanis (2001) for the Perceived Competence Subscale of this questionnaire.

The perceived competence sub-scale of the IMI was selected due to the perceived validity of the scale in relation to its association with the SDT and motivation. This is as a result of the scale measuring the same constructs that are discussed in SDT. In addition, it was noted that many of the other perceived competence questionnaires were either designed for use on children, were based on feedback and were not essentially self-referenced, based on comparative criteria or were not shown to be reliable within the sporting context (Barnett, Morgan, van Beurden, & Beard, 2008; Harter, 1982; Mouratidis et al., 2008). Despite this, it was still possible to use such references to support the review of literature.

Once the perceived competence sub-scale of the IMI was completed, the participants were required to progress onto the TEOSQ and complete it. The theory behind the TEOSQ as well as the structure of it is described below.

3.4.4 Task and Ego Orientation in Sport Questionnaire (Appendix B).

The Task and Ego Orientation in Sport Questionnaire is a questionnaire that indicates the orthogonality of this construct within an individual (Castillo, Tomás, Balaguer, Fonseca, Dias, & Duda, 2010; Duda & Nicholls, 1992; Duda, 1998; Ostrow, 2002). It assesses task versus ego orientation in the sport context (McManus, 2004; Ostrow, 2002). It includes 13 items relating to when athletes feel most successful in their sport which infer task or ego orientation in participants (Castillo et al., 2010; Duda, 1998; McManus, 2004; Ostrow, 2002; Potgieter, 2011). There are seven questions relating to task orientation and six questions relating to on ego orientation (Duda & Nicholls, 1992; Potgieter, 2011). When completing the questionnaire, participants were asked to think of when they felt most successful in their sport and answer the 13 questions in light of this thought (Ostrow, 2002; Potgieter, 2011; Roberts, 1992).

This questionnaire was assessed on a 5-point likert scale ranging from 1- *strongly disagree* to 5- *strongly agree* (Duda & Nicholls, 1992; Potgieter, 2011). Participants' goal orientations were rated in relation to statements such as '*I learn a new skill and it makes me want to practice more*' (task orientation) and '*I can do better than my friends*' (ego orientation) (Potgieter, 2011). The Cronbach alpha scores for this questionnaire range between 0.82 and 0.89 for task and ego orientation respectively (Duda, 1998).

The TEOSQ was selected to measure task and ego orientation in sport as it is specific to measurement in sport as the name suggests. The sport which the questionnaire was being related to was specified by the researcher prior to the commencement of the questionnaires by the participants. This was so, as the Appendix B, which was also used by McManus (2004) was used in relation to snow skiing. Whereas in this research, a variety of sports were included.

In addition, the TEOSQ measures two constructs that have been strongly linked to motivation in previous sport (McManus, 2004; Standage & Treasure, 2002; Wang & Biddle, 2003; Zahariadis & Biddle, 2000). In addition, these two constructs of task and ego orientation can be closely related to motivation simply in nature as they are generally intrinsically and extrinsically aligned respectively. This therefore indicates the validity of the questionnaire in relation to the concepts being measured.

Once the TEOSQ was completed, participants were required to move onto the final section of the questionnaire. The final section of the overall protocol required participants to complete the Self-Theory Questionnaire. This questionnaire is described in necessary detail below.

3.4.5 Self-theory questionnaire (Appendix B).

Despite the Self-Theory Questionnaire being used, there has been inconsistent findings based on this instrument despite the adaptation of it to the physical/sporting domain (Biddle et al., 2003). This therefore indicates that more attention is required to optimise the use of this questionnaire. The Self-theory Questionnaire is a questionnaire that is used to determine whether a person has a fixed or growth mind set (Potgieter & Steyn, 2010). It is an 8 item questionnaire with 4 items representing a fixed mind set and 4 representing a growth mind set (Dweck, 2002), despite other studies using 6 item versions such as Potgieter and Steyn (2010). Examples of these phrases include '*You can learn new things, but you cannot really change your basic level of intelligence*' (fixed mind set) and '*No matter how much intelligence you have, you can always change it a good deal*' (growth mind set) (Dweck, 2002).

Answers are given along a six point Likert scale ranging from 1- *strongly disagree* to 5- *strongly agree* (Potgieter & Steyn, 2010). The Cronbach alpha scores for this questionnaire were 0.74 for fixed mind sets and 0.80 for growth mind sets from a study conducted by Biddle et al., (2003). Biddle et al. (2003) measured the convergent validity of this questionnaire and found it to be suitable for use on participants aged 11-19. Despite this, the questionnaire was also found to be suitable for the current research as convergent validity simply indicates that a certain construct measures what it is supposed to and are related (Biddle et al., 2003).

The Self-theory Questionnaire has not only been selected for its utility to decipher whether individuals possess fixed or growth mind sets, it has been selected for its proven utility in the South African context as indicated by Potgieter (2011) and Potgieter and Steyn (2010). This is one of the few questionnaires that can reliably measure mind sets as proposed by Dweck (2000). In addition, there is limited research linking mind sets to motivation and this is therefore the most suitable measure for this context for the purpose of comparison (Biddle, et al., 2003; Dweck & Leggett, 1988; Wang & Biddle, 2003).

It should be noted in closing that all of the questionnaires above have been previously used by other researchers and have shown suitable levels of reliability and validity to be used in the current study. The data and scores that were collected from the questionnaires were recorded as per the respective manuals and stored safely in folders that were secured by password on the

researcher's laptop. The data was stored until such a time that it was required for data analysis after all the participants had completed the questionnaires and the researcher was satisfied with the number of participants.

As indicated in the literature, there are relationships between some of these variables and motivation that have been indicated in previous research, therefore this study looks to further previous research that has been conducted, thus supporting the use of these questionnaires. In addition, this research, through the use of these questionnaires will seek to indicate any further relationships that may exist between all of the variables being measured. It should also be noted that these questionnaires have been selected based on previous research and the results that have been found. The questionnaires were also selected based on similarities of context such as students who participate in sport, with very limited research having been conducted in the African/South African context. Despite prior research having been conducted using these questionnaires and showing reliability, it was still thought to be useful to utilise a pilot study so as to ensure that all factors in this study were catered for on a small scale before conducting the study on the full sample. The two main concerns were that the questionnaires were suitable for the sample in terms of understanding of the questionnaires and also to identify a definite time frame so as to inform the gatekeepers (coaches and managers) when sessions were organised.

In addition to the validity of the various questionnaires being mentioned in the respective previous sections, the pilot study which will be described below will also assist in indicating the validity of the questionnaires. The pilot study will allow the researcher to determine if the questionnaires are suitable in order to address the research questions and indicate whether or not participants understand the questionnaires.

3.5 Pilot Study

The pilot study was conducted using 10 participants from the netball club. A pilot study refers to a preliminary study that evaluates the conditions that are part of the study to ensure that the questionnaires are suited to the study (Potgieter, 2011). This was done as a second precaution as all of the questionnaires have been previously used and have been shown to indicate suitable reliability and validity which will be explored further below (Kavussanu, et al., 2011; Kimiecik & Horn, 2012; Mallett et al., 2007b; Mouratidis et al., 2008; Ntoumanis, 2001; Potgieter & Steyn, 2010; Wang & Biddle, 2003; Williams & Gill, 1995). In the proposal for this research it was stated that the completion of questionnaires would take no longer than 30 minutes and

this was supported as all participants completed the questionnaires within 10 to 15 minutes during the pilot study. This therefore allowed the researcher to give the other sporting codes who were included in the research a better indication of how long it took and indicated that it was not very time consuming. This timeframe was also identified to give coaches and managers an indication of how long the process would take. No changes were made to the study or the questionnaire as it was conducted smoothly and in the manner that had been expected from the prescribed methodology.

3.6 Data Analysis

This section explains the analysis of the research. This process occurred once the data had been collected and prepared. As mentioned in the previous sections, data was collected through the use of a demographics section and four other questionnaires that quantified the concepts of motivation, perceived competence, goal orientation and mind sets. The data preparation is a process that involves collection of data and the transformation of results which were already completed (Hesse-Biber, 2011; Jha, 2014). During the collection and recording stages utmost care was taken to ensure that the data was logged and transferred correctly from the questionnaires to the data base on the researcher's laptop. The data was cross checked for accuracy once it has been recorded.

The process then became more reflexive and time consuming involving the use of computer programmes (Hesse-Biber, 2011; Jha, 2014). Some time was saved as the questionnaires had already been transformed therefore the researcher was simply required to follow the guidelines in the respective manuals. The programme known as Statistica was utilised for the analysis of the data set. For this research, various functions within Statistica were utilised which will be described below. The collection and analysis of data was conducted so that deductive research could be completed where answers are drawn from the data itself and existing theories as described in the review of literature (Sanders, 2009; Somekh & Lewin, 2004). All statistical tests were conducted under the assumption of homogeneity of variance within the sample (Keeping, 1962).

3.6.1 Descriptive statistics.

The initial data analysis for this research took the form of descriptive statistics. Descriptive statistics refer to statistics that are used to summarise and simplify the data and demonstrate how the data is spread out (Sanders, 2009; Somekh & Lewin, 2004). These types of statistics are used to describe the data set (Potgieter, 2011). This style of statistical analysis will be

utilised to surmise the demographics section as well as the other questionnaires that were used in the study. This was done to give a snapshot of the sample that has been obtained, which also assists with identifying if the sample is representative of the population (Sanders, 2009). In addition, this form of statistics allows the researcher to identify where in relation to the 'norm' that the rest of the sample exists (Sanders, 2009).

Descriptive statistics are recorded in the form of frequencies (Potgieter, 2011). Frequency data is often illustrated with different categories and can be tabulated such as numbers of male and female participants in the various sports measured (Somekh & Lewin, 2004). The descriptive statistics that were used for this research included the overall means of the various measures. The mean refers to the overall average of the combined scores and gives an indication of the central tendency of the data (Sanders, 2009; Shaughnessy et al., 2009). The average is calculated by dividing the overall sum of the scores by the number of scores present in the sample (Shaughnessy et al., 2009).

Standard deviation and means were utilised as part of the descriptive statistics section and are measures of variance and central tendency respectively (Sanders, 2009). Standard deviation simply indicates how much a sample varies from the mean (Sanders, 2009; Somekh & Lewin, 2004). The standard deviation of the sample was calculated by calculating the square root of the variance (Somekh & Lewin, 2004). The calculations should indicate that approximately 95% of the scores found from the sample exist within two standard deviations of the mean and 99% within three standard deviations of the mean (Somekh & Lewin, 2004).

3.6.2 Inferential statistics.

Inferential statistics are statistics that are utilised by researchers to test the significance of the findings through statistical methods (Hanneman, Kposowa, & Riddle, 2012; Sanders, 2009). Inferential statistics are used by researchers to indicate whether the independent variable has an effect on the measurable variable such as the effect of gender on an individual's motivational or goal orientation (Shaughnessy et al., 2009). These statistics are predominantly used to answer the research questions that guided this project (Potgieter, 2011). Inferential statistics were identified through the use of Pearson's correlation coefficient. These tests are all parametric tests which assume that data is drawn from a sample with characteristics that are known to the researcher known as population parameters (Keeping, 1962). The inferential statistics will be used in an attempt to indicate relationships and correlations that exist between scores and sub-scores of the variables. The tests are used to investigate the relationships that

exist between the scores on the various questionnaires and the subscales that were used. These tests will also analyse the relationships that possibly exist between the certain variables and the specific sporting codes that were selected for this particular research project.

The Pearson's correlation coefficient will be used. A correlation is used to measure the direct relationships that exist between variables (Davey, Sterling, & Field, 2014). Pearson's correlation coefficient is a measure of the relationship that exists between two variables where the data is interval or ratio (Davey et al., 2014; Somekh & Lewin, 2004). The correlation coefficient is measured by a unit known as Pearson's r (Davey et al., 2014; Hanneman et al., 2012; Somekh & Lewin, 2004). The r value can range from -1 which represents a perfect negative relationship to +1 which represents a perfect positive relationship, a value of 0 would represent no relationship at all between variables (Davey et al., 2014; Somekh & Lewin, 2004).

The Pearson's correlation coefficient can be calculated manually, but for accuracy and to decrease the amount of time spent on this, the statistical programme Statistica was used. It assisted in visually presenting the analysed data which was presented in the results section of this project. Due to the nature of the programme, provisions will be made for it to be accurate, therefore limiting the chance of the researcher misrepresenting the data which would be highly unethical, which therefore leads onto the next section of this chapter, 'Ethics'.

3.7 Ethics

Ethics refer to measures that are taken to keep the sample and population safe and to maintain their trust as well as maintain their image (Andersen, 2000). It is crucial that ethics are strictly adhered to and ensure no harm is done to participants (Hewitt, 2007; Jordan & Meara, 1990).

It was important that the participants were able to benefit from the study in some way, which was in the form of knowledge generation when the results of the study were completed (Hewitt, 2007; Jordan & Meara, 1990). Participants were given autonomy in order to think and decide freely when completing the questionnaires without any extraneous influences from the researcher (Hewitt, 2007; Jordan & Meara, 1990). There was no misrepresentation of participants, and participants were given the opportunity to view interpretations that have been made regarding their responses to the questionnaires (Hewitt, 2007; Jordan & Meara, 1990). It was made clear to participants that confidentiality would be maintained throughout the analysis and writing up process so as to protect their identity through the use of the prescribed codes (Hewitt, 2007; Jordan & Meara, 1990). Data was stored within the researchers' computer in a specific folder relating to the research, with a password for safety, so that later analysis could

be done. In addition to ensure that the participants were fully aware of the purposes of the research and to indicate that they were willing to participate, they completed an informed consent which is attached as Appendix A.

The ethical concerns that were involved with this study were ensuring that all participants were able to consent for themselves and therefore over the age of 18. This was a field that was required to be completed in the demographics section of the questionnaire. Another ethical concern that was dealt with, was that of confidentiality. This was suitably dealt with by coding questionnaires so that participants' identities were not revealed allowing them to be known by a code as opposed to a name in the analysis. The researcher did however know the participants as he was present during the completion of the questionnaires and the participants were required to fill in an informed consent with their names. This was dealt with through coding. It was of concern also to ensure that participants were able to withdraw from the study at any stage and this was emphasised verbally and repeated in the informed consent form. Misrepresentation was also identified as a concern, therefore when transferring data, the researcher took utmost care and also double checked the raw data when complete. As mentioned above, privacy was also an issue which was ensured by storing the data in a laptop with a password which only the researcher had access to. The fact that the participants were part of the Rhodes University student body meant that permission had to be obtained through a letter to the registrar, director of student affairs and head of sport (Appendix C). After permission was given from these sources, coaches were then also contacted to make them aware of the research and to organise a suitable time to conduct the questionnaires. This was all in an attempt to respect the authority of the respective powers in relation to the sample.

It is important to note that the above research could not be conducted without prior ethical approval which was obtained from RUPERC and HHDC. RUPERC was responsible for ensuring sound research design as well as ensuring that suitable ethical consideration was given to the project. HHDC was responsible for ensuring that the project was acceptable by the faculty research standards.

3.8 Limitations of the Methodology

Despite all efforts to make this research reliable and generalizable, there were some limitations that were experienced. A researcher should be able to identify these flaws and difficulties. Researchers should be able to address them or warn against them for future research. In the methodology section, the limitations were few, but nevertheless should be identified.

There are limitations that exist for quantitative research such as not being able to gain the same, dense detail from the data as qualitative research, but for the constructs which were being investigated, it was considered to be the most appropriate (Rubin & Babbie, 2009). Despite this, there was a section after the demographics section which allowed for participants to qualitatively explain reasons as to why they participate in their specific sports. Quantitative measures were considered to be appropriate due to the fact that research of this type has typically used quantitative approaches as indicated in the review of literature and quantitative research allows for larger samples to participate allowing for generalizability and representability of the population (Rubin & Babbie, 2009; Terre Blanche & Durrheim, 1999). Due to the quantitative nature of the research, only questionnaires were used to obtain data, which again meant that detailed data was difficult to obtain, but due to the correlational nature of the research this was not a pressing issue. Interviews could have been included to use mixed methods research, to gain richer data. This would have however been time consuming based on the sample size that was used. It should also be considered that when conducting these questionnaires that the application should not vary and should be conducted in the manner explained in the manual for all groups of participants. The motivations of participants should also be noted when recording data as some participants may have felt slightly coerced by other team members' participation or may be participating for very different reasons to other participants, but it was hoped that the SMS-6 would assist in deciphering this.

Further limitations that were experienced include the fact that the data collection process was substantially delayed by students writing exams and ceasing sports practices, which was further compounded by the three week vacation immediately after. Data collection in the next term was also slow due to the fact that many people were not urgent in resuming sports practices. In addition to this, data collection was conducted at sports fields prior to or after practice, which meant that collection conducted was sensitive and subject to weather conditions which at times complicated the collection or simply meant that it could not be completed at that time and therefore had to be rescheduled.

A factor which was difficult to deal with and which at times hindered data collection was the lack of organisation and communication that was present within the sports administration department and amongst the various sporting codes. This was surprising as when contact was initially made, responses were speedy and accurate. It was however shocking to note that the contact details that the researcher was given to contact captains/coaches/chairperson's were either outdated or not present at all. Fortunately the researcher has been at the university for a

prolonged period of time and when this was the case, he was able to find a means to contact the relevant people to arrange for data collection to occur. As the data collection progressed, the researcher often found that when he was attending practice sessions to conduct the questionnaires, the practice would be cancelled/postponed/poorly attended, without the researcher having been made aware of this by the respective coach/captain. It also occurred on various occasions that the researcher was told to come at a certain time to conduct the research and the coach was still conducting practice forcing the researcher to wait for practice to be completed before the questionnaires could be completed by the participants. Other occasions when the researcher was told to come, the sessions were poorly attended and very few people were present to complete the questionnaires which meant that data collection would be further prolonged.

A factor which was not considered, was language barriers as the questionnaire was posed in English and a participant was unable to understand the content of the questionnaire. The researcher was however fortunate enough to have someone present who was able to translate the questionnaires for this participant.

It should also be noted that only sports people who play sport for Rhodes University were utilised for the research which limits the generalizability to the South African University context, but this was considered to be suitable due to the fact that there is limited sports psychology that has been conducted in South Africa in any case, let alone specific contexts. This therefore meant that the research would contribute meaningfully to the field.

3.9 Conclusion

In closing the chapter above, it alludes to the methods which were utilised to answer the research questions related to this study. This chapter gave an indication of the research design that was utilised as well as the sampling methods which were used to include participants. The above information indicates that a quantitative study was completed through the use of four questionnaires, these questionnaires included the SMS-6, the perceived competence sub-scale of the IMI, the TEOSQ and the Self-theory Questionnaire. These questionnaires were thought to be appropriate to the research question and were therefore used based on literature that was reviewed. This illustrated the manner in which data collection was going to be conducted and the methods for data analysis was also discussed. In closing the limitations that were experienced and identified were explained as well as the ethical considerations that had to be considered. Once all of the above was completed, the researcher was able to progress onto the

results and data analysis section of the project. This section will include the results that were found during the analysis of the raw data that was collected.

CHAPTER 4 RESULTS AND DATA ANALYSIS

4.1 Introduction

A reminder of the research objectives shall be given prior to the outset of the results. This research sought to investigate the relationships that motivation has with perceived competence, goal orientations and mind sets. These variables were investigated on a sample of South African University students. Apart from the relationships that exist between motivation and the other variables, the relationships that were identified between these variables were also investigated.

This chapter is the natural progression from the methodology chapter that was just completed. The methodology chapter looked to explain the various methods that were used during the design of the research, sampling, data collection, the pilot study and data analysis stages of this particular research. Four questionnaires were used in total, namely the SMS-6, IMI-PC, TEOSQ and Self-theory Questionnaire. The methods that were utilised to analyse these questionnaires provided scores that were recorded as descriptive and inferential statistics. The results that were found were collected in the hope of answering the research question in the best possible manner, and this was complimented by the various data analysis tools that were used. These methods were selected in order to attempt to answer the following:

- What are the relationships between perceived competence, goal orientations and mind sets on the motivation to participate in sports at university, if any exist at all?

In order to answer the question above, this chapter will present the results that were found, and considered to answer the research question in the most appropriate manner. This will first be done by describing the sample and then considering the various correlations and relationships that exist between the various factors.

4.2 Description of Sample

As mentioned earlier, the sample that was included in this particular research consisted of 212 participants from various sporting codes at Rhodes University. The descriptive data that was recorded included age, gender, race, season of sport and the sporting code that the participants participated in. These were all characteristics that were measured as part of the demographics section of the questionnaire, but this chapter will look to illustrate only those characteristics that are relevant to this particular study.

Of these 212 participants that were previously mentioned, there were 136 males and 76 females. There were 120 white/Caucasian participants, 84 black/African participants, 7 coloured participants and 1 Indian participant. The participants varied from 18 years of age to 30 years of age with an average age of 20.97 years. Participants had between 1-20 years of experience playing their specific sport. Participants also varied in the amount of time that they had spent at the university, with this varying between 1-8 years, with the academic year of study not always correlating to this due to students who either fail to obtain enough credits to continue the following year or students who have come to continue with post-graduate education. The sporting codes were however dominated by winter sports due to time of the year that data collection was completed, but efforts were made to obtain a fair sample of participants who participate in summer sports too. In addition to this sports were selected in order to represent differing races that are present within the population as well as making efforts to represent males and females. As previously mentioned, this was done through quota sampling where various characteristics of the samples were known by the researcher and supervisor, therefore informing decisions that were made based on selecting the sample.

When viewing the tables that follow below, efforts have been made in order to identify the number of participants associated with various variables, years of participation and percentages associated with these measurements. Fortunately in this study all questions were completed due to efforts made by the researcher to ensure that the questionnaires were suitably finished before and after completion of the questionnaires, therefore it was simple to compile and analyse the data with no data that was missing.

The relevant descriptive data is provided in Tables 5 to 8 with the main purpose of the study, the correlations, illustrated in Table 9. Table 9 will also include a note below where the various abbreviations that have been used on the table may be identified. With an explanation of the setup of the tables in mind, the descriptive findings will now be tabulated in order to give a visual and numerical understanding of the sample that was investigated.

Table 5

Descriptive statistics representing gender distribution amongst participants

Variable	Count	Percent
Male	136	64.15
Female	76	35.85

Table 5 indicates that there was 64.15% ($n=136$) of the sample that was male and 35.85% ($n=76$) of the sample that was female, indicating that a larger proportion of the sample was male.

Table 6

Descriptive statistics representing age distribution amongst participants

Variable	Count	Percent
18	14	6.60
19	36	16.98
20	50	23.58
21	41	19.34
22	36	16.98
23	10	4.72
24	12	5.66
25	7	3.30
26	2	0.94
27	2	0.94
28	1	0.47
30	1	0.47

Table 6 illustrates the age range of participants, and demonstrates that majority of participants that were recruited for this research fall between the ages of 19 and 24. The wider range shows that students who play the sports that were selected range from 18-30 years of age. The table shows that the largest proportion of students in the sample were 20 years of age which represents 23.58% ($n=50$) of the total sample.

Table 7

Descriptive statistics representing race distribution amongst participants

Variable	Count	Percent
Black	84	39.62
White	120	56.60
Coloured	7	3.30
Indian	1	0.47

Table 7 illustrates the various races that were represented in the sample that was obtained for this study. The table indicates that majority of participants were either black or white, with coloureds and Indians not featuring as prolifically in the selected sports. The results indicate that the selected sports are dominated by white students ($n=120$) as compared to black students ($n=84$), which represent 56.6% and 39.62% of the sample respectively.

Table 8

Descriptive statistics representing sport participation amongst participants

Variable	Count	Percentage
Rugby	41	19.34
Mens hockey	32	15.09
Ladies hockey	47	22.17
Netball	10	4.72
Athletics	6	2.83
Mens rowing	11	5.19
Ladies rowing	10	4.72
Mens soccer	24	11.32
Ladies soccer	10	4.72
Mens b.ball	11	5.19
Cricket	10	4.72

This table above represents the various sporting codes that were selected during the process of sampling. The table above indicates how these sports each contributed to the sample that was utilised for the research. As can be noted above, some sports had male and female teams that were represented such as hockey, soccer and rowing. The table indicates that majority of

participants that completed the questionnaires played rugby or ladies hockey and represented 19.34% ($n=41$) and 22.17% ($n=47$) of the total population respectively. The two other major contributors to the sample were men's hockey and men's soccer who contributed 15.09% ($n=32$) and 11.32% ($n=24$) respectively to the sample. These four selected sporting codes represented 67.92% ($n=144$) of the total population.

4.3 Inferential Statistics/ Correlations

From the four questionnaires that were completed by the participants, average scores were recorded from the results that were obtained (refer to Table 9). It was found that the sample showed greater levels of intrinsic motivation as opposed to the other forms of motivation. The sample showed a score of 21.07 out of a possible 28 for intrinsic motivation, where scores of 19.81 and 7.47 were found for identified regulation and amotivation respectively. The sample was also found to be more task orientated than ego orientated showing an average score of 4.14 out of a possible 5 for task orientation and a significantly lower score of 1.94 out of 5 for ego orientation. The sample was also seen to show relatively high levels of perceived competence with an average score of 4.97 out of 7. The final measure recorded was that of mind sets where the average score was 34.70 which on a scale from the mind set assessment tool indicates that the participants generally demonstrate a growth mind set believing that skill can change and indicating a willingness to work hard (Mind set Assessment Profile, n.d.).

The page below bears an illustration of the inferential statistics (Table 9) that were analysed as the core component of this research. The inferential statistics below use correlations to demonstrate the relationships that exist between particular variables that were used for this specific study.

This table illustrates the relationships that exist between the following variables. As previously mentioned, motivation is being measured in this research using the SDT continuum of motivation. Based on this, the SMS-6 is used to identify amotivation, external regulation, introjected regulation, identified regulation, integrated regulation and intrinsic motivation. All of these different categories of motivation will be identified in relation to perceived competence, goal orientations and mind sets. Perceived competence is a unitary concept and will therefore be compared to the various types of motivation. As mentioned in the literature review, goal orientations consist of ego orientation and task orientation, which will both be compared to the various types of motivation. The same will be done for mind sets which consist of fixed mind sets and growth mind sets.

Table 9

The relationships that exist between motivation, perceived competence, goal orientations and mind sets

	Means	Std. Dev.	Amot.	Ext. Reg.	Introj. Reg.	Id. Reg.	Integ. Reg.	IM	TO	EO	IMI-PC	FM	GM
Amot.	7.47	4.27	1.00	0.02	0.09	-0.09	-0.24*	-0.26*	-0.18*	0.02	-0.26*	0.09	-0.19*
Ext. Reg.	14.82	5.41	0.02	1.00	0.59*	0.55*	0.50*	0.47*	0.30*	0.35*	0.39*	-0.23*	0.26*
Introj. Reg.	16.07	5.36	0.09	0.59*	1.00	0.50*	0.46*	0.43*	0.32*	0.24*	0.27*	-0.09	0.25*
Id. Reg.	19.81	4.44	-0.09	0.55*	0.50*	1.00	0.71*	0.62*	0.40*	0.11	0.41*	0.00	0.48*
Integ. Reg.	20.16	5.22	-0.24*	0.50*	0.46*	0.71*	1.00	0.69*	0.50*	0.13	0.57*	0.03	0.46*
IM	21.07	4.16	-0.26*	0.47*	0.43*	0.62*	0.69*	1.00	0.53*	0.17*	0.48*	-0.02	0.42*
TO	4.14	0.57	-0.18*	0.30*	0.32*	0.40*	0.50*	0.53*	1.00	0.16*	0.40*	-0.02	0.53*
EO	1.94	0.73	0.02	0.35*	0.24*	0.11	0.13	0.17*	0.16*	1.00	0.27*	-0.31*	-0.01
IMI-PC	4.97	1.00	-0.26*	0.39*	0.27*	0.41*	0.57*	0.48*	0.40*	0.27*	1.00	-0.11	0.33*
FM	15.17	3.58	-0.09	-0.23*	-0.09	0.00	0.03	-0.02	-0.02	-0.31*	-0.11	1.00	0.15*
GM	19.54	2.71	-0.19*	0.26*	0.25*	0.48*	0.46*	0.42*	0.53*	-0.01	0.33*	0.15*	1.00

Note. Abbreviations may be interpreted as follows. Amot. = Amotivation; Ext. Reg. = External regulation; Introj. Reg. = Introjected regulation; Id. Reg. = Identified regulation; Integ. Reg. = Integrated regulation; IM = Intrinsic motivation; TO = Task orientation; EO = Ego orientation; IMI-PC = Intrinsic Motivation Inventory- Perceived competence subscale; FM = Fixed mind set; GM = Growth mind set.

* $p < 0.05$

Table 9 on the previous page illustrates the inferential statistics that were calculated as part of this research. It demonstrates the relationships that exist between a variety of motivational constructs as well as perceived competence and goal orientation and mind set constructs.

The correlations and relationships above that were investigated will be interrogated in terms of the type of relationship that is demonstrated and whether it is positive or negative. In order to do this, the first step will be to identify which relationships have been identified as significant during the Pearson's Correlation Co-efficient analysis. The significant relationships are the ones which have been demarcated with an asterisk. This figure indicates how reliable the result is and represents the strength of relationships between the variables. The figure marked by an asterisk indicates that the r value which represented the level of significance as significant and reliable. The values in the table refer to the correlations that exist between the two variables in question. It is important to note that figures running diagonally through Table 9 indicate intra-correlations and therefore score as 1.00, indicating a perfect positive relationship. Figures on the table will range from 1.00 to -1.00, with -1.00 representing a perfect negative correlation. Positive figures demonstrate a positive relationship and negative figures demonstrate a negative relationship. The findings below will be explained in terms of expected results and interesting findings, based on literature that has been covered for this research and will be explained in further depth in the discussion chapter.

4.4 Motivation and Perceived Competence, Goal Orientations and Mind sets

The main correlations that will be of interest are those that indicate significant relationships with the motivational factors. With the topic in mind, this dissertation investigated the relationships that exist between perceived competence, goal orientations and mind sets on the motivation to participate in sports at university. This is a clear indication that the main focus was in relation to the correlations that exist between perceived competence, goal orientations and mind sets with motivation. Once the main comparisons have been identified, further relationships can be unpacked as these concepts were selected as a study of this nature has never been conducted before, but various studies have used individual factors from this study. This means that there should be relationships between the other factors that will be explained in the section.

With a general view over the results, it appears that there are significant correlations that exist between perceived competence, goal orientations and mind sets. The findings that will be discussed are in relation to amotivation. The r value demonstrating the relationship between

amotivation and task orientation was -0.18 indicating a significant negative relationship, and almost no relationship at all with ego orientation. The strongest relationship ($r=-0.26$), which is demarcated by an asterisk in Table 9, existed between perceived competence (IMI Total) and amotivation, which indicates a negative and weak correlation between the two variables. This means that individuals who lacked motivation generally showed a lack of perceived competence. The relationship between amotivation and self-theory/mind sets is generally significant and negative, but the relationship with the growth mind set of the population demonstrated a very weak negative correlation with an r value of -0.19. This finding meant that people who lacked motivation did not show a general desire to develop their knowledge or improve.

4.4.1 Motivation.

4.4.1.1 External regulation.

External regulation is the next form of motivation that will be explored, it represents externalised form of motivation whereby external means are used as motivation to complete a task or an activity (Ryan & Deci, 2000). The general findings for the relationships that were identified were mostly expected. It was identified that there was basically no relationship ($r=0.02$) that existed between amotivation and external regulation. It was demonstrated that there were significant positive relationships between external regulation and the other styles of motivation. The stronger relationships were noted in the types of motivation that are characterised by greater amounts of extrinsic motivation, with the strength of the relationships decreasing gradually as extrinsic motivation decreased. It was found that the r value that illustrated the relationship between external regulation and introjected regulation was 0.59, whilst the score for intrinsic motivation was 0.47. These scores indicate that external regulation has moderate relationships with the variables along the continuum of motivation. The relationship between external regulation and goal orientations was slightly stronger with r values of 0.3 and 0.35 for task orientation and ego orientation respectively. There was a significant positive relationship ($r=0.39$) between external regulation and perceived competence. There were significant relationships that were demonstrated for both mind sets, however, external regulation was found to have a significant negative relationship ($r=0.23$) with fixed mind sets while there was a significant positive relationship ($r=0.26$) with growth mind sets. Despite these results being significant and positive, they do illustrate weak relationships between the variables.

4.4.1.2 Introjected regulation.

Introjected regulation refers to the internalisation of an external motivation (Inoue et al., 2015; Ntoumanis, 2001; Pelletier et al., 1995, 2001; Vallerand & Losier, 1999). The results indicate that there is no significant relationship ($r=0.09$) between introjected regulation and amotivation. The strongest relationship that exists between all the variables was with external regulation, demonstrated by a moderate, positive relationship ($r=0.59$). Once again, as the amount of extrinsic motivation decreased in the type of motivation, the strength of the relationship also decreased slightly, with intrinsic motivation demonstrating a significant, positive relationship of 0.43. Introjected regulation saw the exchange in strength of variables and relationships with goal orientations. The results indicated that there was a stronger significant relationship with task orientation than ego orientation, despite both being significant and positive. The r values were 0.32 and 0.24 respectively. The results also indicated a significant positive relationship ($r=0.27$) with perceived competence. A non-significant, negative relationship was found with fixed mind sets, but a positive relationship ($r=0.25$) with growth mind sets.

4.4.1.3 Identified regulation.

Identified regulation is the next type of motivation that will be compared to the other variables. Identified regulation refers to when an individual is able to identify with the perceived importance of a task, but does not receive inherent pleasure from the task (Ryan & Deci, 2000). It is with this variable that a negative relationship is noted along the motivational continuum, all be it non-significant ($r=-0.09$). Moderate, significant, positive relationships are demonstrated with external regulation and introjected regulation with r values of 0.55 and 0.5 respectively. The strongest relationship exists with integrated regulation ($r=0.71$), closely followed by intrinsic motivation ($r=0.62$). These both indicate strong, positive relationships between the variables. Both task orientation and ego orientation illustrate positive relationships with identified regulation, but only task orientation demonstrates a significant moderate relationship ($r=0.40$). Perceived competence also demonstrates a significant, moderate, positive relationship ($r=0.41$) with identified regulation. The results show that there is no relationship between integrated regulation and fixed mind sets, but there is a significant, moderate positive relationship ($r=0.48$) that exists between this variable and growth mind sets.

4.4.1.4 Integrated regulation.

This section explains the relationships that were demonstrated between integrated regulation and the various other variables that were measured. Integrated regulation refers to a type of motivation where the individual begins to embrace identified regulations (Ryan & Deci, 2000).

There is only one significant negative relationship ($r=-0.24$) that exists with other motivation variables, and it is with amotivation. External regulation and introjected regulation illustrate significant, moderate, positive relationships with this variable, with r values of 0.5 and 0.46 respectively. Identified regulation and intrinsic motivation have strong, positive, significant relationships with integrated regulation with scores of 0.71 and 0.69 respectively. Task orientation had a moderate, positive and significant relationship ($r=0.50$) with integrated regulation, while ego orientation showed a non-significant relationship. Perceived competence was also found to have a significant, positive relationship ($r=0.57$) with this variable that was moderate. When correlated with mind sets, there was a non-significant relationship between integrated regulation and fixed mind sets, but a moderate, positive and significant relationship with growth mind sets with an r value of 0.46.

4.4.1.5 Intrinsic motivation.

Intrinsic motivation was the final motivational construct along the continuum that was compared with the other variables in the study. Intrinsic motivation refers to motivation to do a task out of the inherent pleasure that the task gives the individual (Ryan & Deci, 2000).

Once again, amotivation was the only variable that had a significant, negative relationship ($r=-0.26$) with the variable of interest. There was a general trend that as the motivational constructs moved further along the continuum towards intrinsic motivation the strength of the relationship with intrinsic motivation increased, external regulation: $r=0.47$, introjected regulation: $r=0.43$, identified regulation: $r=0.62$ and integrated regulation: $r=0.69$. There were significant and positive relationships for both task orientations and ego orientations, although task orientations demonstrated a more moderate relationship ($r=0.53$) with intrinsic motivation than ego orientations ($r=0.17$). There was also found to be a moderate relationship ($r=0.48$) between this variable and perceived competence. There was also a moderate, positive and significant relationship between intrinsic motivation and growth mind sets, demonstrating a score of 0.42.

4.4.1.6 Summary.

The general findings from this section indicate that certain variables have stronger relationships with certain types of motivation than others. The findings show that as the type of motivation progresses closer to intrinsic motivation, there is generally a stronger relationship between motivation and the specific variable. This is with the exception of ego orientation and fixed mind sets, due to the fact that characteristically the concepts are quite different to intrinsic motivation. This was demonstrated with task orientation with the correlations varying from -0.18-0.53, generally increasing as the categories were categorised by more intrinsic motivation. The results for ego orientation were mixed and did not show any specific pattern. The scores indicating the relationships between motivation and perceived competence varied between -0.26-0.57. The score peaked at the relationship with integrated regulation. The findings for the relationships that existed between fixed mind sets and motivation were once again inconsequential due to the fact that they were inconsistent. These variables also showed few significant relationships and at times no relationships at all. The final area of interest is the relationship that exists between motivation and growth mind sets. The results of this study indicate that scores range from -0.19-0.48. Once again, the general trend was that as more intrinsic motivation was involved in the specific type of motivation, the stronger the relationship became. Although, the score did peak between identified regulation and integrated regulation with r values of 0.48 and 0.46 respectively.

4.5 Perceived Competence, Goal Orientations and Mind sets

This section of the chapter will attempt to investigate the significant relationships that were identified to exist between perceived competence, goal orientations and mind sets. This section has been included, not as the main aim of the study, but rather in an attempt to identify that these variables do have similarities and to show that relationships exist between them. It will indicate that relationships exist between these variables. The main aim is to further develop research in this area and support current findings that have been identified.

4.5.1 Goal Orientations.

4.5.1.1 Task orientation.

Task orientation is the first variable that will be explored in relation to the other variables that were used for the study. It can be seen from Table 9 that task orientation demonstrates significant, moderate and positive relationships with perceived competence and growth mind

sets. The results of these relationships were 0.4 and 0.53 respectively. A significant but very weak and positive relationship ($r=0.16$) exists between task orientation and ego orientation. In addition it can be noted that there is a non-significant, negative relationship between task orientation and fixed mind sets as these concepts are polar in description of characteristics as demonstrated in the literature review.

4.5.1.2 Ego orientation.

Moving onto the next variable that was measured, this research investigates the relationships that ego orientation had with the various other variables. Table 9 demonstrates that ego orientation had a significant, but weak relationship ($r=0.27$) with perceived competence. The relationship with task orientation was been elaborated upon above ($r=0.16$). Another significant relationship that was identified was the relationship that exists between ego orientation and fixed mind sets. This demonstrated a significant, negative and weak relationship ($r=-0.31$) between the two variables. Ego orientation was also found to have next to no relationship ($r= -0.01$) with growth mind sets.

4.5.2 Perceived competence.

The next variable that was measured according to Table 9 was perceived competence. The relationships that were identified between this variable and task/ego orientation have been discussed above. The relationships that exist between perceived competence and the remainder of the variables are as follows. Table 9 indicates that there is a significant, positive, but weak relationship ($r=0.33$) that exists between perceived competence and growth mind sets. This is contrary to fixed mind sets which were shown to have a non-significant, negative relationship with perceived competence that was very weak.

4.5.3 Mind sets.

The final constructs that will be discussed in this section of the results chapter pertain to the inferential statistics that were found in relation to mind sets. Table 9 indicates that fixed mind sets have a significant and positive relationship ($r=0.15$) with growth mind sets, it should however be noted that this relationship is very weak. The relationships between mind sets and the various other constructs have been discussed above.

The construct of mind sets was measured as the two variables of fixed mind sets and growth mind sets, but it was also measured as a unitary variable in relation to all of the variables. Mind sets as a unitary variable was not included in Table 9 as it was felt that the relationships between

growth and fixed mind sets with the other variables were more important. Despite this, a brief explanation of some of the findings shall be elaborated upon below.

This section will serve to discuss the significant findings that were uncovered in relation to mind sets. There is a significant relationship that is very weak and negative ($r=-0.17$) that exists between mind sets and amotivation. It was noted that identified and integrated regulation, as well as task orientation elicited weak relationships that were positive with mind sets. These three variables had r values of 0.28. An r value of 0.22 was found for the relationship that existed between intrinsic motivation and mind sets. This indicates a weak, but positive relationship between the two variables. Contrary to this ego orientation indicated a significant, weak and negative relationship ($r=-0.23$) that exists between the two variables. Significant relationships were found between mind sets and fixed and growth mind sets. It was noted that there was a significant, very strong positive relationship ($r=0.83$) that existed between mind sets and fixed mind sets. A similar result was found between mind sets and growth mind sets, although it was not as strong. The r value for growth mind sets was 0.68, which is still positive and demonstrates a strong relationship between the two variables.

4.6 Conclusion

The above results were based on the data collection and data analysis that was discussed in the methodology chapter of this research. This chapter served to give an overview of the results that were found as part of this research. The results were collated in an attempt to answer the research questions and aims that were discussed at the outset of the dissertation.

The findings in this chapter serve to indicate that there are relationships that exist between perceived competence, goal orientations and mind sets with motivation to participate in sports at a university level. The general findings indicate that there are significant relationships that exist between motivation and perceived competence. The findings show that the strongest relationships exist between integrated regulation and intrinsic motivation, which lie more towards the intrinsically motivated end of the motivation continuum. The findings also indicate that task orientation demonstrates stronger relationships with motivation than ego orientation does. These findings give a sense of how motivation, especially intrinsic forms of motivation relate to goal orientations, particularly task orientation which is also perceived to be more conducive to performance. It is shown in Table 9 that task orientation shows its strongest relationships with intrinsic motivation and perceived competence. When looking at findings pertaining to mind sets, the results indicate that growth mind sets have more significant

relationships with the other variables measured in this study than fixed mind sets. It is shown in Table 9 that growth mind sets demonstrates strongest relationships with identified regulation, integrated regulation and task orientation. Once again these findings demonstrate how more intrinsically regulated forms of motivation are related to another concept (growth mind sets) that is useful for performance in sport. Aside from this, it is also seen that a strong relationship is held with mind sets as a unitary variable.

The next chapter will serve to discuss the results in further depth and uncover the pertinence of the findings. This will be done through the use of examples from previous literature as well as making an attempt to indicate why the results that have been found are important to the current study.

CHAPTER 5 DISCUSSION OF FINDINGS

5.1 Introduction

The next chapter of this dissertation will discuss the findings of the research that was conducted in order to answer the research questions. This will be done by using the results to explain how they answer the research questions. This chapter will not discuss all of the findings from the research, it will discuss those that were mentioned in the previous chapter, focussing particularly on those that were identified as significant. In addition to this, literature will be used in order to support or contest the findings of the research. If findings from this research do not match those in previous literature, it is the hope that there will be enough support in order to justify the findings of this research. The use of other literature will also give context to the findings of this research and may allow for various alternative perspectives to be assumed when discussing the results. This is an important part of the discussion as it allows for a holistic perspective to be taken on the current research as well as the existing research within the field that explores and investigates similar concepts. Previous literature allows for various interpretations of the results found to be made. This chapter is the main part of the dissertation that justifies the importance of the research and indicates whether the methods and analysis were appropriate to adequately answer the research questions.

A review of the research questions will follow in order to identify the direction that the chapter will take, but also in an effort to act as a reminder of the purpose of the research. The main research question that this research has endeavoured to answer is:

- What is the relationship between perceived competence, goal orientations and mind sets on the motivation to participate in sports at university, if any exist at all?

In addition to this, the relationships between all variables have also been calculated and analysed too. Therefore additional research questions will explore the relationships that exist between perceived competence, goal orientations and mind sets. These relationships have been outlined in the previous results chapter which explained the findings of this research. The interpretive nature of this chapter will allow for the results to be elaborated upon in further depth. This chapter will also delineate some of the limitations and successes that were experienced in conducting this research. Recommendations for future research will also be proposed in the latter stages of the chapter.

The questionnaires that were used to obtain data for this research included the SMS-6, which was used to measure the various constructs of motivation. The perceived competence sub-scale of the IMI was used to measure perceived competence. The TEOSQ was used to measure the levels of task and ego orientation and the final questionnaire used was the Self-theory Questionnaire which measured the levels of growth and fixed mind sets within the participants. These questionnaires were conducted on a sample of 212 participants from Rhodes University in South Africa. All participants were bona fide students participating in various levels and types of university sport. Other demographic variables that were included in the questionnaires were not considered pertinent for the purpose of this study. A review of the data however indicates that 64.15% of the population were males. The average age of the sample was 20.97 years of age. Black, coloured, white and Indian groups were represented within the population. These participants were invited from a variety of sports including rugby, hockey, netball, athletics, rowing, soccer, basketball and cricket. If at any stage in the discussion, these variables are found to be of importance, they will be elaborated upon appropriately.

As previously mentioned, the next section of this chapter will look to further clarify and describe the results that were mentioned in the previous chapter. This will be done with the aid of various literature.

5.2 Relationships with motivation

This part of the discussion was the main focus of the study and will therefore further describe the relationships that perceived competence, goal orientations and mind sets had with motivation. What is important to note is that motivation was not used in this study as a unidimensional concept, but rather as a multi-dimensional concept that can be measured along a continuum (Ntoumanis, 2001; Standage et al., 2003). Motivation, as proposed by Deci and Ryan (1985b), is viewed along a continuum for the current study. This continuum provides the foundations for SDT, which consists of different types of motivation based on various characteristics demonstrated by individuals (Deci & Ryan, 1985b). Due to this, the three factors that are being described in relation to motivation could demonstrate interactions with a variety of different types of motivation. Despite this, the literature seems to indicate that these variables should show relationships with certain types of motivation, which is similar to the findings of this research.

General research into this area indicates that the following relationships exist. It has been posited that there are relationships between perceived competence and motivation, despite

inconsistent findings, general consensus seems to agree that perceived competence is a strong predictor of intrinsic motivation specifically (Duda & Nicholls, 1992; Georgiadis et al., 2001; Wang & Biddle, 2003). In relation to goal orientations, the general consensus that the characteristics associated with task orientations and ego orientations tend to assimilate intrinsic motivation and extrinsic motivation respectively (Duda, 1998; Georgiadis et al., 2001; Wang & Biddle, 2003). The general trend of literature delineating the links between mind sets and motivation tends to indicate, albeit limited that fixed mind sets can be seen to predict amotivation (Biddle et al., 2003). The characteristics associated with growth mind sets are similar to those associated with intrinsic motivation and therefore it is believed that links can be made between these two concepts (Dweck, 2007).

5.2.1 Motivation and perceived competence.

As mentioned above literature alludes to the fact that perceived competence is a strong predictor of motivation, more specifically intrinsic motivation (Duda & Nicholls, 1992; Georgiadis et al., 2001; Wang & Biddle, 2003). Perceived competence is one of the characteristics that must be satisfied for an individual to become self-determined and therefore it is apparent why it would be included as a variable in this study and the prior statement holds truth. Mouratidis et al. (2008) also state that perceived competence is pivotal in the quantification of motivation and the expression of self-determination. The findings explored this relationship in further depth will now be explained in further depth.

The most significant relationship that was demonstrated amongst the various categories of motivation was integrated regulation, which demonstrated a moderate, positive relationship ($r=0.57$) with perceived competence. The next most significant relationship that was demonstrated between perceived competence and the differing types of motivation was with intrinsic motivation, which also demonstrated a moderate, positive relationship ($r=0.48$). This is in support of the literature indicating that perceived competence should demonstrate positive relationships with types of motivation that are characterised by greater amounts of intrinsic motivation (Duda & Nicholls, 1992; Georgiadis et al., 2001; Wang & Biddle, 2003). Wang and Biddle (2003) identified in their research that perceived competence influences intrinsic motivation to participate in sport. Similarities could be drawn between these findings and the current findings as intrinsic motivation poses an inherent desire to participate in sport, although this was not exactly what was investigated in this research.

Literature suggests that intrinsic motivation is the only type of motivation that is entirely characterised by intrinsic motivation (Pelletier et al., 1995; Ryan & Deci, 2000; Vallerand & Losier, 1999). To contextualize this, all other forms of motivation are comprised of varying amounts of extrinsic motivation (Pelletier et al., 1995; Ryan & Deci, 2000; Vallerand & Losier, 1999). This could therefore serve as a justification for the unexpectedness of a strong relationship of integrated regulation with perceived competence, as by definition, it possesses an element of extrinsic motivation (Pelletier et al., 1995; Ryan & Deci, 2000; Vallerand & Losier, 1999). This finding is supported by Georgiadis et al. (2001) whose research indicated that self-worth often develops from contingent external criteria, which in the case of this research could be compared to extrinsic motivation. However, due to the fact that motivation has been described along a continuum for the duration of this dissertation, it may also be argued that integrated regulation is the type of motivation that possesses the most intrinsic motivation aside from intrinsic motivation itself. Therefore this finding may be expected, but significant in the way that it was not intrinsic motivation itself that demonstrated the strongest relationship with perceived competence.

A somewhat unexpected finding that was uncovered from this relationship was that which existed between perceived competence and external regulation. This relationship was found to not only be positive, but also on the borderline of having moderate strength ($r=0.39$). It could be argued that this finding was unexpected due to the fact that it is towards the opposite end of the continuum that is associated with extrinsic motivation. Therefore this contradicts the findings of Mouratidis et al. (2008) and Milavic et al. (2010) who indicated that perceived competence is generally associated and has stronger relationships with types of motivation that exist further along the continuum towards intrinsic motivation. However, Mouratidis et al. (2008) do allude to the fact that perceived competence should have a negative relationship with amotivation, which is demonstrated in the results with $r=-0.26$. This can be explained in relation to the other findings by the fact that they exist along a continuum. Amotivation, however does also exist along the continuum, but is characterised by a lack of motivation (Pelletier et al., 1995; Pelletier et al., 2001; Vallerand & Losier, 1999). As mentioned above however, Georgiadis et al. (2001) measured perceived competence as perceived self-worth. They stated that it can be developed from external criteria (Georgiadis et al., 2001). This provides support for relationships that are characterised by extrinsic motivation and have relationships with perceived competence.

Aside from the findings that have been discussed above, the results were consistent with previous literature and therefore contribute in a meaningful way due to the fact that there is

limited research in this area. The findings were consistent with literature in that the relationships increased and decreased as expected relative to the various types of motivation. Demonstrating stronger and more positive relationships with greater amounts of intrinsic motivation and vice versa. The next section of this chapter will explore the relationships that exist between motivation and another variable that was measured as part of this research project, that being motivation.

5.2.3 Motivation and goal orientations.

The next findings that will be discussed are those that relate to motivation and goal orientations. Papaioannou et al. (2006) state that there are strong relationships that exist between motivation and goal orientations. These findings are further supported in literature by a wide variety of researchers (Biddle, Soos, & Chatzisarantis, 1999; Duda & Nicholls, 1992; Kimiecik & Horn, 2012; McManus, 2004; Milavic et al., 2010, Ntoumanis, 2001; Potgieter, 2011; Potgieter & Steyn, 2010; Standage et al., 2003; Standage & Treasure, 2002; Wang & Biddle, 2003; Williams, 1994). Goal orientations present themselves as either task or ego orientations which refer to situations where individuals seek to demonstrate improvements in skill or learning of certain techniques or where an individual seeks to demonstrate superiority over peers respectively (Georgiadis et al., 2001; McManus, 2004; Papaioannou et al., 2006; Potgieter, 2011; Wang & Biddle, 2003). As the concept of goal orientations is divided into two categories, task orientation will be discussed in relation to motivation, followed by ego orientation.

It is interesting to note that based on definitions from the review of literature that task orientation would be more closely related to intrinsic motivation than ego orientation or extrinsic motivation (Biddle et al., 1999; Duda & Nicholls, 1992; Kimiecik & Horn, 2012; McManus, 2004; Milavic et al., 2010, Ntoumanis, 2001; Potgieter, 2011; Potgieter & Steyn, 2010; Standage et al., 2003; Standage & Treasure, 2002; Wang & Biddle, 2003; Williams, 1994). The results from this particular study indicate that there is a proportional relationship that exists between task orientation and the various types of motivation as the levels of intrinsic motivation increase/decrease. What is meant by this statement is that as motivation progresses along the continuum from extrinsic motivation to intrinsic motivation, the strength of the relationship increases. In simple terms, the more intrinsic motivation present in a given type of motivation will result in a stronger relationship with task orientations.

5.2.3.1 Motivation and task orientation.

All of the relationships that were investigated between task orientations and motivation were found to be significant, ranging from positive and moderate to negative and very weak. A few results will be used to demonstrate the findings from this section of the research in order to illustrate how levels of motivation increase/decrease proportionally in relation to task orientation. The strongest relationship that was demonstrated, existed between task orientation and intrinsic motivation. A relationship of $r=0.53$ was found. This finding is supported by the research conducted by Wang and Biddle (2003), Papaioannou et al. (2006) who state that task orientations are often related to intrinsic motivation. A result that was seen in the middle of the range of results was the relationship between task orientation and introjected regulation, which demonstrated a weak, but positive relationship. The r value for this relationship was found to be 0.32. The weakest relationship that was demonstrated was that between task orientation and amotivation where $r=-0.18$, demonstrating a very weak, negative relationship between these two variables. Standage and Treasure (2002) state that task orientated individuals often show stronger relationships with more self-determined forms of motivation and ego orientation demonstrates relationships with forms of motivation that are less self-determined. These findings in particular support the findings of this research.

The above findings fit well with the relationships that literature proposes should exist. Duda and Nicholls (1992) state that individuals who are task orientated thrive on exerting effort and believe that successful completion of a task is as a result of mastery. These individuals do not mind making mistakes and embrace challenges, and view success and progress as a self-referenced norm (McManus, 2004; Potgieter, 2011; Wang & Biddle, 2003). These characteristics are similar to those of intrinsic motivation and therefore could provide reason for the proportional relationships that were exhibited in relation to intrinsic motivation. With this in mind, a review of the characteristics of intrinsic motivation include the internal desire to complete a task with no separable reward, satisfaction gained from attempting a task and opportunities to improve specific aspects of their skill resulting in mastery (Ntoumanis, 2001; Pelletier et al., 1995, 2001; Ryan & Deci, 2000; Standage et al., 2003). Based on the above descriptions of the two concepts, it becomes apparent why there is a proportional relationship that exists between task orientation and the various types of motivation. It indicates why intrinsic motivation present decreases, the strength of the relationship with task orientation does too, and vice versa.

5.2.3.2 Motivation and ego orientation.

Based on the above definitions of task orientation and intrinsic motivation, the natural assumption would be that ego orientation would demonstrate strong relationships with motivation that is characterised by greater levels of extrinsic motivation. The results indicate a trend that is similar to this however, the results are not as consistent with the trend as they were for intrinsic motivation. In addition to this, not all of the relationships were found to be significant. The only relationships that were found to be significant were external regulation, introjected regulation and intrinsic motivation. Amongst these three types of motivation, the proportional relationship that exists between motivation and ego orientation was apparent. The strength of the significant relationships shall be discussed below.

The most significant relationship that was demonstrated from this research was that which existed between ego orientation and external regulation. For this relationship, a positive, but weak relationship ($r=0.35$) was found between the two variables. The next most significant relationship was that which existed between ego orientation and introjected regulation. This relationship demonstrated a positive, but weak relationship ($r=0.24$). The weakest relationship that was still found to be significant existed with intrinsic motivation. The relationship was positive, but very weak ($r=0.17$).

As stated above, based on definitions of task orientation and intrinsic motivation, the relationships described above could be expected. In order to give more clarity to this, characteristics of ego orientation and extrinsic motivation shall be elaborated upon. Ego orientation refers to a style of goal orientation characterised by inter-personal competition and often rely on separable rewards as a source of affirmation for completing a task (Duda, 1998; Geogiadis et al., 2001; McManus, 2004). On the other hand, extrinsic motivation is characterised by actions that are controlled by the chance of pride or embarrassment and as a bi-product, separable rewards may be received (Pelletier et al., 1995; Ryan & Deci, 2000; Standage et al., 2003; Vallerand & Losier, 1999). Based on these descriptions of the characteristics possessed by the concepts in question, the nature of the relationships can be understood better. Much the same as the relationships between task orientation and intrinsic motivation, the relationship between ego orientation and extrinsic motivation is proportional and opposite. It is clear that the relationship is not as strong or consistent, but the significant findings do demonstrate the trend that is present. As mentioned above, the findings of Standage and Treasure (2002) support these findings in stating that ego orientations may be associated

with less self-determined forms of motivation. McManus (2004) also alludes to this fact as it was demonstrated that ego orientation is often associated with a performance climate as opposed to a mastery climate, which shares characteristics with extrinsic forms of motivation.

The findings that have been elaborated upon above are consistent with previous literature, but also provide insight into the relationships that exist between these variables. The relationship is by no means perfect or reciprocal. This could be attributed to the orthogonality of the overall concept of goal orientations. This means that ego orientation and task orientation are by no means opposite, but rather exist and can be experienced simultaneously (Papaioannou et al., 2006). The findings from this research indicate that ego orientation and task orientation can be experienced simultaneously and do not necessarily exist or occur in isolation. Therefore, the findings of this research support this claim as ego orientation and task orientation also demonstrate a significant relationship with one another ($r=0.16$). The relationship is very weak, but is positive and identified as significant, thus indicating that as one increases, the other also has the potential to increase. This data is unique to South African university students, but supports findings from previous research (Papaioannou et al., 2006; Potgieter, 2011).

Overall, from the above, we can conclude that task orientation can be seen to have a positive relationship with motivation. It should be noted that task orientation is most closely related to intrinsic motivation, and least related to amotivation. It may also be noted that ego orientation shows a similar trend to intrinsic motivation, without the same consistency. Despite this, ego orientation demonstrates the strongest relationship with external regulation and the weakest relationship with intrinsic motivation. From this point, the next set of relationships will be explored. The next section will look to discuss the relationships that exist between motivation and mind sets.

5.2.4 Motivation and Mind sets.

As stated in the literature review, there is limited research that has investigated the relationships between motivation and mind sets (Biddle et al., 2003; Potgieter, 2011; Potgieter & Steyn, 2010). The aforementioned authors did make some conclusions regarding this relationship and therefore shall be referred to throughout this section. A review from the literature review, fixed mind sets refer to individuals who believe that skill/intelligence is fixed, avoid challenges, focus on performance goals and do not enjoy being challenged (Biddle et al., 2003; Dweck, 2000, 2007, 2008; Potgieter, 2011). Individuals who possess growth mind sets are fairly distinct from those who possess fixed mind sets in as much as they believe that skill/intelligence is

changeable, they seek challenges, focus on improving ability, thereby focussing on process goals and enjoy being challenged (Biddle et al., 2003; Dweck, 2000, 2007, 2008; Potgieter, 2011). This being said, it is only the characteristics that are distinct and an individual can share characteristics of both growth and fixed mind sets, illustrating the orthogonality of the concept (Biddle et al., 2003; Dweck, 2000, 2007, 2008; Potgieter, 2011). Mind sets are also orthogonal in nature and are divided into two categories of growth mind sets and fixed mind sets which will be discussed in this order (Biddle et al., 2003; Dweck, 2000, 2007, 2008; Potgieter, 2011).

Based on the definitions and descriptions provided above as well as the review of literature, the assumption would be that fixed mind sets would be related to amotivation or forms of extrinsic motivation and growth mind sets would be related to forms of intrinsic motivation (Biddle et al., 2003; Dweck, 2000, 2007, 2008; Potgieter, 2011). The results indicate that there is little to no relationship between motivation and a fixed mind set, but various relationships between the different types of motivation and a growth mind set.

5.2.4.1 Motivation and growth mind sets.

The existing literature seems to focus more on the associations and relationships that exist between motivation and growth mind sets (Biddle et al., 2003; Potgieter, 2011). Based on this literature and the definitions and descriptions that have been given in this dissertation, an assumption develops that the growth mind set and motivation will have a relationship. The results that illustrate this relationship were mixed and not quite perhaps as expected, but it is important to remember that this study has used the SDT as a framework and therefore, the SDT views motivation along a continuum and this will be important to consider when interpreting the results.

As mentioned, growth mind sets demonstrated significant relationships with all forms of motivation. The most significant relationship ($r=0.48$) however was found between identified regulation and growth mind sets. In saying this, integrated regulation and intrinsic motivation did not differ much from these findings. These two forms of motivation had r values of 0.46 and 0.42 respectively. All of these three forms of motivation demonstrate positive and moderate relationships between motivation and growth mind sets. External regulation and introjected regulation showed similar findings too with r values of 0.26 and 0.25 respectively. These results demonstrate a weak, but positive relationship between the two variables. The final significant finding was between amotivation and growth mind sets which were found to have a very weak and negative relationship ($r=-0.19$) with one another. These findings are

concurrent with those previously found by Dweck (2008, 2010) where it was stated that growth mind sets are positively associated with self-determined forms of motivation. These findings are further supported by Wang and Biddle (2003) who state that growth mind sets demonstrate strong relationships with intrinsic motivation. This is sufficient to support the current findings due to the limited difference between intrinsic motivation and identified regulation as well as the fact that the results were not separated by a vast difference.

The above results may be expected. This may be said as growth mind sets share similar characteristics with motivation. The difference therein lies in the fact that SDT was used as the theoretical framework for this research. Therefore the difference between intrinsic motivation and extrinsic motivation exists. In saying this, the characteristics of growth mind sets are similar to those of intrinsic motivation (Biddle et al., 2003; Potgieter, 2011; Potgieter & Steyn, 2010; Ryan & Deci, 2000; Vallerand & Losier, 1999). The fact that SDT was used as the dominating framework for this research means that motivation as a concept can have varying levels of intrinsic motivation and extrinsic motivation, which could act as a potential reason for the findings (Ryan & Deci, 2000).

The fact that identified regulation shows the strongest relationship with growth mind sets may be slightly unexpected as it is not the most self-determined form of motivation, and by definition is characterised by more extrinsic motivation than intrinsic motivation (Ryan & Deci, 2000; Vallerand & Losier, 1999). In saying this, Ntoumanis (2001) states that it can be difficult to find tasks that exist within this category due to the mix of intrinsic and extrinsic motivation. With this in mind, the next two strongest relationships that were identified were with forms of motivation that are characterised by greater amounts of intrinsic motivation. These two types of motivation were identified regulation and intrinsic motivation. Both of these types of motivation were found to have similar relationships to one another as well as integrated regulation. These two forms of motivation may perhaps be expected to have stronger relationships with growth mind sets due to the fact that they possess similar characteristics (Biddle et al., 2003; Potgieter, 2011; Potgieter & Steyn, 2010; Ryan & Deci, 2000; Vallerand & Losier, 1999).

Introjected regulation and external regulation demonstrated weaker relationships with growth mind sets in comparison to the variables described above. This could possibly be due to the fact that as mentioned above, forms of motivation that are characterised by greater amounts of intrinsic motivation are more likely to be related to growth mind sets. These findings however

support the need for a continuum of motivation as even forms of motivation that are towards the extrinsic motivation end of the continuum may be characterised by some intrinsic motivation (Ryan & Deci, 2000). The final finding of amotivation demonstrating a weak, negative relationship with growth mind sets may be expected as by definition, these concepts are very different (Biddle et al., 2003; Dweck, 2007; Potgieter, 2011; Potgieter & Steyn, 2010; Ryan & Deci, 2000; Vallerand & Losier, 1999).

Overall the results were mixed, but did support the need for a continuum of motivation as levels of intrinsic motivation may still be present even if an individual is extrinsically motivated. The finding of a negative relationship between amotivation and growth mind sets may be expected and typifies the opposite nature of amotivation and growth mind sets. The next section of this chapter will look to discuss how motivation and fixed mind sets relate to one another.

5.2.3.2 Motivation and fixed mind sets.

Overall, the results demonstrating the relationships that exist between motivation and fixed mind sets were mixed, with no particular pattern as may have been expected as elaborated upon above. Due to the fact that these results were mixed and perhaps not as expected, this section will discuss the significant finding that existed between external regulation and fixed mind sets. In addition, unexpected findings will also be discussed.

As mentioned above, the only significant result that was found for these two variables existed between a type of motivation that exists towards the extrinsic side of the motivation continuum and fixed mind sets. The strength of this relationship negative and weak ($r=-0.23$). This is contrary to what literature states in that Biddle et al. (2003) stated that fixed mind sets more often than not predict amotivation. This can be understood by considering the characteristics that are associated with both amotivation and fixed mind sets, as they are fairly similar. In addition to this, the fact that this is the only relationship that was found to be significant goes against what the limited literature suggests as well as the fact that fixed mind sets and growth mind sets are opposite in terms of characteristics and therefore, based on the fact that growth mind sets demonstrated relationships with various types of motivation that fixed mind sets would too. This is also slightly unexpected due to the orthogonality of the mind sets construct in as much as it may be expected that as an individual can possess both fixed and growth mind sets that some of the relationships would be transferable from growth mind sets. The findings of the current research were supported by Dweck (2008, 2010) and Wang and Biddle (2003)

whose research indicated that fixed mind sets are associated with lower levels of self-determined motivation.

Based on the discussion above, it would be expected that fixed mind sets would also demonstrate significant relationships with various other types of motivation, primarily towards the extrinsic motivation end of the motivation spectrum. This would be based on the definitions of fixed mind sets and extrinsic motivation as proposed in the review of literature (Biddle et al., 2003; Dweck, 2000, 2007, 2008; Ryan & Deci, 2000; Potgieter, 2011; Vlachopoulos et al., 2000).

The other types of motivation all showed next to no relationship with fixed mind sets at all. As mentioned above, this is unexpected, but could perhaps demonstrate that the mind sets is not as orthogonal as literature presents it to be. These findings may also be attributed perhaps to the environment and may be unique to a South African university context. The result could perhaps demonstrate that there actually is no relationship at all between fixed mind sets and motivation and therefore could contribute to the existing literature, by filling an existing gap. This finding could be as a result of the fact that the sample showed a general trend towards task orientation which demonstrated no relationship with fixed mind sets, but proportional relationships with motivation. In addition the fact that the only significant relationship that exists is weak and negative ($r=-0.23$) may illuminate this fact further. Perhaps literature has not elaborated on this relationship for this specific reason, and this is supported by the fact that research conducted by Potgieter (2011) focussed solely on the growth mind set.

This section of the chapter uncovered the findings that exist between mind sets and motivation. This section seems to indicate that mind sets may not be as orthogonal as literature may propose they are. The results did indicate that there are moderate relationships that exist between growth mind sets and forms of motivation that are characterised by intrinsic motivation. Overall this research contributes meaningfully as there seems to be definite limitations in the existing literature, particularly in relation to fixed mind sets and motivation. The next section of this chapter will look to explore the inter-relatedness that exists between the other variables. These variables include perceived competence, goal orientations and mind sets. The relationships that exist between these variables will be discussed in order to address the research questions associated with this dissertation.

5.3 Conceptual Interrelatedness: The Discussion

The main purpose of the research has been addressed above by elaborating on the relationships that motivation has with perceived competence, goal orientations and mind sets. This section of the discussion chapter will look to answer the rest of the research questions. In doing so, the interactions that exist between perceived competence, goal orientations and mind sets will be discussed. This shall be done firstly to make this a unique piece of research, but in addition to this, it will be done as there is limited research that has investigated these relationships, and therefore this will look to contribute to the void in existing literature. The first relationship that will be discussed will be between perceived competence and goal orientations, followed by perceived competence and mind sets and finally goal orientations and mind sets.

5.3.1 Perceived competence and goal orientations.

Literature has seemed to indicate that goal orientations may influence an individual's perception of competence based on the type of orientation exhibited (Kavussanu et al., 2011). Literature alludes to the fact that there may be relationships that exist between task orientation and higher levels of perceived competence and ego orientation with lower levels of perceived competence, but this was not measured as part of the current research (Duda & Nicholls, 1992; Williams, 1994). The current research project simply sought to investigate whether there was a relationship between task orientation and ego orientation with perceived competence.

Both ego orientation and task orientation demonstrated positive and significant relationships with perceived competence. Task orientation however showed to have a moderate relationship ($r=0.40$) with perceived competence and ego orientation was found to have a weak relationship ($r=0.27$) with perceived competence. As explained above, perceived competence has been found in previous research to be a mediator between goal orientations and motivation and therefore supports the findings of the current research project which demonstrates relationships between the variables (Georgiadis et al., 2001; Wang & Biddle, 2003).

These relationships may be expected as there does not seem to be any literature that contradicts this (Duda & Nicholls, 1992; Williams, 1994). It is expected that task orientation would have a stronger relationship with perceived competence than ego orientation. Individuals seek tasks where they can learn, must exert effort and seek improvement (Williams, 1994). These findings were supported by Wang and Biddle (2003) who found similar findings, with task orientation demonstrating a stronger relationship with perceived competence than ego orientation, with ego orientation being found to have a weak relationship with perceived competence.

As mentioned the above findings were expected and have sought to address the shortcomings of the existing literature by contributing to existing research. The next part of this chapter will uncover and explain the findings that exist between perceived competence and mind sets.

5.3.2 Perceived competence and mind sets.

This is the second relationship that will be discussed as part of this section of the discussion chapter. The idea that a relationship is not as far-fetched as it may appear as Elliot & Dweck (2005) state that perceived competence is a concept that is necessary for an individual to develop and therefore can be related to mind sets an individual possesses. Elliot & Dweck (2005) elaborate upon this by stating that individuals who have a growth mind set seek to develop competence and those with a fixed mind set seek competence validation. There is a stark difference that exists between these two statements as one is internally referenced and the other is externally referenced, therefore indicating how the link to perceived competence may exist. This has been demonstrated through the results and it is the hope that the discussion of these results will further elaborate on this.

The results showed that fixed mind sets had a non-significant relationship with perceived competence, demonstrating a weak and negative relationship ($r=-0.11$). This was expected as mentioned above, as individuals who have fixed mind sets view intelligence as unchangeable and do not enjoy being challenged (Biddle et al., 2003; Dweck, 2000, 2007, 2008; Ryan & Deci, 2000; Potgieter, 2011; Vlachopoulos et al., 2000). This could therefore be perceived as being synonymous with low perceived competence or a lack of perceived competence. The important finding from this research was that growth mind sets were found to have a significant relationship with perceived competence. The relationship was found to be weak, but positive ($r=0.33$). This concurs with what literature suggests in as much as being orthogonal with fixed mind sets, growth mind sets share a relationship with perceived competence. These findings may indicate that mind sets are not as orthogonal as literature may perceive these concepts to be (Biddle et al., 2003; Dweck, 2000, 2007, 2008; Potgieter, 2011).

Overall these findings may be perceived as being expected with a non-significant relationship between fixed mind sets and perceived competence, and a contrasting relationship experienced between growth mind sets and perceived competence. Once again, the findings have shown that the concept of mind sets may not be perceived as orthogonal in the context of South African university students playing sports. The next section of this chapter may shed further light on

the discussion of the orthogonality of mind sets, as the relationships between the two types of goal orientations will be explored against the two categories of mind sets.

5.3.3 Goal orientations and mind sets.

As demonstrated in the review of literature, these two concepts may possibly have more in common and demonstrate better relationships than they did with perceived competence. This may be as a result of the two concepts sharing similar, but not identical characteristics (Potgieter, 2011). This research has not replicated previous research, but findings from Potgieter and Steyn (2010) and Wang and Biddle (2003) have indicated that there are relationships between these variables, particularly between growth mind sets and task orientations. The findings of this research were mixed in the extent to which they were un/expected, and this shall be further elaborated upon below. The significant findings were expected for task orientation and growth mind sets, but not entirely for ego orientations and fixed mind sets. The results were as expected for the relationships that were discovered between ego orientations and growth mind sets as well as task orientations and fixed mind sets.

As mentioned, the relationships found between ego orientations and growth mind sets as well as task orientations and fixed mind sets, were expected. These results were non-significant and both showed almost no relationships with one another. On the other hand, ego orientations and fixed mind sets showed a negative, weak relationship ($r=-0.31$) with fixed mind sets. The other significant finding was the relationship that exists between task orientations and growth mind sets. This relationship was both positive and moderate ($r=0.53$). McManus (2004), as mentioned previously found associations between task orientation and mastery climates as well as ego orientation and performance climates. These findings may be assimilated to those found in this research as mastery climates are characterised by factors similar to growth mind sets and performance climates are characterised by factors similar to those that characterise fixed mind sets.

From the above findings, it was stated that the relationship between ego orientations and fixed mind sets was negative. This was unexpected, as previous research has indicated that there is a relationship between these two concepts (Wang & Biddle, 2003). Aside from this, the characteristics that were compiled in Table 8 referring to the two concepts were similar and therefore a positive relationship could be expected (Potgieter, 2011). The relationship that was demonstrated between growth mind sets and task orientation was expected and was aligned with what literature has previously found (Potgieter, 2011; Wang & Biddle, 2003). These

findings could possibly have been as a result of the characteristics that were compiled in Table 7 as well as definitions of the two concepts being so similar (Elliot & Dweck, 2005; McManus, 2004; Potgieter, 2011; Wang & Biddle, 2003).

The findings that were found in this section were enlightening as they supported some research that has been previously conducted. The results also demonstrated that understandings of these concepts and the relationships that exist between them may require further research in order to fully understand.

5.4 Summary

The findings that were discussed above have contributed to the existing body of literature and have also filled certain shortfalls in the existing literature. This section of the discussion chapter will look to summarise the findings of the research.

The results of the research were first obtained through the use of SMS-6, IMI-PC, TEOSQ and the Self-theory Questionnaire. The questionnaires were used in order to primarily investigate the relationships that exist between perceived competence, goal orientations and mind sets with motivation. The questionnaires were conducted in a South African university sports context. Participants were required to respond to the questionnaires and these results were then compiled, analysed using Pearson's correlation co-efficient and interpreted. A summary of the findings shall be given below.

The main purpose of the research was to demonstrate the relationships that exist between motivation and perceived competence, goal orientations and mind sets. Firstly these relationships shall be summarised, followed by a summary of the inter-relatedness that exists between the other variables. A summary of these relationships will follow.

It was demonstrated that perceived competence showed relationships that were supported by literature with regards to the positive relationships elicited with amotivation, integrated regulation and intrinsic motivation. An unexpected finding that contradicted literature was the relationship with external regulation that was positive, where literature alludes to the fact that it should be a negative relationship. The next stage was the investigation of the relationships that exist between goal orientations and motivation. The relationships that existed between task orientations and motivation were all as were expected and were supported by literature. The same can be said for the relationships that were found between ego orientations and motivation. These findings support suggestions in literature regarding the orthogonality on the goal

orientations construct. The final relationships that were explored as the main part of the research were between mind sets and motivation. The relationships between the growth mind sets and motivation were all as expected and showed proportional relationships as levels of motivation progressed along the continuum. With regards to the relationships that were found between fixed mind sets and motivation, no distinct pattern was demonstrated. The findings did in some way support previous findings from literature, however the negative relationship that was demonstrated with amotivation was somewhat unexpected. These findings suggest that the concept of mind sets may not necessarily be orthogonal.

The inter-relatedness that was demonstrated between the other variables included in this research shall now be summarised. This has been included in this research as it has not been included in one single research project before as well as to contribute to the existing body of knowledge. The first relationship that will be summarised is that which exists between perceived competence and goal orientations. It was demonstrated that a positive relationship exists between both ego orientation and task orientation with perceived competence. The findings were expected to some extent as task orientation demonstrated stronger and more positive relationships with perceived competence than ego orientation.

The next relationship that shall be summarised as part of the inter-relatedness section is the relationships that were explored between perceived competence and mind sets. It was found that there were non-significant relationships between fixed mind sets and perceived competence and the contrary between perceived competence and growth mind sets. Both of these findings were supported by the previous literature that is sparse in nature.

The final relationships that shall be summarised as part of this section are between goal orientations and mind sets. No significant relationships were demonstrated between ego orientations and growth mind sets as well as task orientations and fixed mind sets. All of these relationships showed almost no relationships at all. These findings were expected and supported by literature. An unexpected finding that was found was between ego orientations and fixed mind sets. This relationship was negative, where literature proposes that these concepts should have a positive relationship. The final relationship that was explored was that between task orientations and growth mind sets. This relationship was positive and was expected as well as supported by previous findings.

Overall the findings of this research have provided insight into an area of research that still requires a vast amount of exploration. The unexpected findings can provide another perspective

from which to view these concepts. The expected findings mean that this area of research gains more credibility and the findings may be generalised to more settings. In addition to this, this research was conducted in a South African university context and therefore provides additional data for the field of research. It also means that research can be replicated in similar settings and comparisons can be made between various findings in the future.

CHAPTER 6 CLOSING THOUGHTS

6.1 Introduction

The final chapter of this research project is vital in order to give a review of the research that was conducted. This chapter is crucial as it will include limitations and successes as perceived by the researcher. The chapter will also include a section that will mention recommendations for the future. These sections are included in this chapter to give a reminder of the research that was conducted, but it is also done in the hope that it will assist in the development of research in this field. The limitations, successes and recommendations should allow readers to understand what went well and what did not go well. This is done in the hope that if the research is replicated that the same difficulties are not experienced. The research should also demonstrate whether findings are reliable, valid, generalizable and credible.

This research was conducted as a void in literature was identified. This void existed in that firstly the four variables that were measured had never all been included in one research project and examined in such a manner before. The second way in which this research filled the void was that this research had not been conducted in a South African University context. These two factors meant that the research would shed light on the relationships that exist between the four variables of motivation, perceived competence, goal orientations and mind sets. In addition, it gave insight into how these variables interact with one another in a South African university context.

The methodology that was utilised was used in previous research and was found to be suitable for the requirements of the current research (Elliot & Dweck, 2005; McManus, 2004; Pelletier et al., 1995; Potgieter & Steyn, 2010). Data was collected using pencil and paper methods. The researcher would attend the various sport practices and inform the potential participants of the research after which, if they agreed, they would sign informed consent forms and complete the four questionnaires (SMS-6, IMI-PC, TEOSQ and Self-theory Questionnaire). Once the questionnaires were complete, the researcher collected the completed questionnaires and proceeded with data collection. A number of sports were used in order to gain a representative sample from the university. The only inclusion criteria were age which was set at 18 to avoid ethical implications and that participants were required to be bona-fide students at Rhodes University. After data collection, the data was analysed using Pearson's correlation co-efficient in order to demonstrate the inferential relationships that existed between the variables. During

data analysis, the findings were interrogated further and discussed, these findings shall be mentioned briefly as part of this chapter.

The research highlighted some expected findings as well as some unexpected findings which were elaborated upon in the discussion chapter. The research sought to investigate the relationship that exists between perceived competence, goal orientations and mind sets with motivation. It was highlighted that generally perceived competence demonstrated expected relationships with motivation, apart from the relationship with amotivation which was unexpected. The relationships between motivation and goal orientations were all expected and demonstrated the orthogonality of the goal orientations construct. Motivation and mind sets showed mixed relationships. Growth mind sets demonstrated expected relationships with motivation, however fixed mind sets demonstrated mixed relationships that did not follow any particular pattern. The findings demonstrated that this construct may not necessarily be orthogonal. The above provides a basic summary of the main findings of this research, but other research questions demonstrate the desire of this research to address the conceptual inter-relatedness that exists between perceived competence, goal orientations and mind sets which shall be summarised below.

The relationships between perceived competence, goal orientations and mind sets were also explored and generally demonstrated expected relationships. Task orientations demonstrated more positive relationships with perceived competence than ego orientations did. Despite this, ego orientations still showed positive relationships with perceived competence. The relationships between perceived competence and mind sets were expected as growth mind sets were found to have significant relationships with perceived competence and fixed mind sets were found to have non-significant relationships with perceived competence. The final relationships that were explored were between mind sets and goal orientation. These relationships were found to have mixed results in that there were some expected and unexpected findings. The expected findings included the lack of relationships between ego orientations and growth mind sets as well as task orientations and fixed mind sets. It was also shown that task orientations and growth mind sets had a positive relationship and this was also expected. Despite this, the negative relationship between ego orientations and fixed mind sets was unexpected as explained in the discussion.

From this point, the findings of this research can be used for comparison in future research. However, the limitations, successes and recommendations should be taken into consideration. These points shall be mentioned and discussed in further depth below.

6.2 Limitations and successes

It was thought that the research that was conducted for this project was successful. Despite this, it would be impossible to make the research credible without identifying the limitations and successes that were associated with the project. These points also allow for future research to develop the field and not encounter the same problems that this project experienced.

6.2.1 Successes.

The successes associated with this project were that it has filled certain shortcomings of the existing literature. It has addressed the issue of compiling research where all of the four variables are included in the same research project and analysed in relation to one another. The research also sought to fill an area of research in the context in which it was conducted. It was firstly done in a university context, which is an area that evidently needs to be addressed from the sparsity of research in this area. The context in which it was conducted was a South African context, which yet again has not been explored thoroughly and therefore the research can contribute to the porous field of evidence. Based on this, the methods that were used were suitable, but certain areas that were identified require improvement and have been discussed below. In addition, some concepts had varieties of questionnaires that could be utilised and others had very limited options. Therefore, it was considered a success that the researcher was able to identify questionnaires that were suitable for the research and did not experience many difficulties with the questionnaires during the whole research process.

6.2.2 Limitations.

As mentioned, it is important that the limitations and difficulties that were experienced as part of the research are identified. This will aid in the identification of the recommendations that should be noted for future research. The following limitations should be considered in conjunction with the methodological limitations that were outlined at the end of the methodology chapter. The first difficulty that was experienced was concerned with data collection. Data collection experienced difficulties due to the fact that the data was collected using pencil and paper techniques. This meant that the data collection was time consuming and it became difficult to complete the research within the time frame that was desired, although

this did not have serious implications. The researcher physically attended the sessions to conduct the questionnaires which was demanding and therefore resulted in further time consumption. As the questionnaires were conducted at practice sessions, the data collection was sensitive to bad weather. If the weather was not good and windy or raining, it meant that the data collection had to be suspended for another time. A further issue that was encountered once was that of language barriers, this was only encountered on one occasion and therefore did not have a drastic outcome on the research. It was also managed due to the fact that there was an individual who was able to translate the questionnaires for the individual who did not understand.

Perceived competence was a difficult construct to suitably select a questionnaire for within this context. The difficulty was experienced for a variety of reasons such as a lack of research in the area, limited studies which utilised university populations and more focus on younger populations. This was evidenced by research conducted by Harter (1982) and Williams and Gill (1995), who both used children as the sample and used questionnaires that were tailored for younger populations. It was also noted by the researcher that perceived competence was a concept that appeared to be unitary from the questionnaire, therefore a scale which identifies differing levels of competence may be more suitable for future research.

A further limitation that should be noted is that the research was conducted in a South African, university context and can therefore only be generalised to these contexts. In saying this, comparisons can be made to various other settings where research is conducted in the future. With regard to the South African context, sports are generally only split into summer and winter sports and therefore this would need to be considered for future research as seasons differ and the terminology for when sports are played is different. Building on the idea of the South African context, it could be perceived that the sample did not truly reflect the demographic split that exists within South Africa and the university specifically. This could possibly have been due to bias from the researcher despite all efforts to avoid any sort of bias in selection. Despite this, it is still felt that the sample is able to represent the South African university context positively.

6.2.3 Recommendations.

Based on the limitations and difficulties that have been identified above, it is important that recommendations are suggested for future research so that similar difficulties are not

experienced. This is in an effort to advance the field of knowledge. The recommendations shall be discussed in a similar fashion to the way that they were described above.

The difficulties that were experienced with data collection can be overcome in a simple fashion by conducting the questionnaires online. This would mean that completion of questionnaires would not be reliant on ideal weather. It would also mean that the researcher would not be required to deal with the organisation of attending practices and would not experience the same time consuming demands that were experienced with the pencil and paper technique. Online data collection would also mean that transcription of results would be electronically conducted as opposed to addressing each questionnaire individually. This could also potentially allow for larger number of participants to be included in the research.

In order to develop this area of research, it would be vital that this research is replicated in other contexts. This could mean that university attending participants are utilised in a different country or it could mean that different age groups are compared to the university aged participants that were utilised for this research project. As a result of the differing names for seasons and times of the year when sports are played, perhaps listing all the months of the year for participants to check could be an alternative. These months could then be coded for the data analysis section. This was not a factor that was of importance for this particular research project, but it could be used in the future and therefore has been noted.

CHAPTER 7 REFERENCE LIST

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CHAPTER 8 APPENDICES

8.1: Appendix A

RHODES UNIVERSITY DEPARTMENT OF PSYCHOLOGY AGREEMENT BETWEEN STUDENT RESEARCHER AND RESEARCH PARTICIPANT
--

I (participant's name) _____ agree to participate in the research project of (researcher's name) _____ on the relationships between goal orientations, mind sets and perceived competence on the motivation to participate in sports.

I understand that:

1. The researcher is a student conducting the research as part of the requirements for a Psychology Masters by Thesis degree at Rhodes University. The researcher may be contacted on g12n3580@campus.ru.ac.za. The research project has been approved by the relevant ethics committee(s), and is under the supervision of Mr. Gary Steele in the Psychology Department at Rhodes University, who may be contacted on g.steele@ru.ac.za / 0466038504.
2. The researcher is interested in gaining a quantitative understanding of the factors that may potentially affect students' motivation to participate in sports at Rhodes University. These factors include goal orientations, mind sets and perceived competence.
3. My participation will involve completing four questionnaires which will take no longer than 40 minutes I will be required to fill out various scales as truthfully as possible.
4. I may be asked to answer questions of a personal nature, but I can choose not to answer any questions about aspects of my life which I am not willing to disclose.
5. I am invited to voice to the researcher any concerns I have about my participation in the study, or consequences I may experience as a result of my participation, and to have these addressed to my satisfaction. *The Rhodes University counselling centre may be contacted for further support on 0466037070 although there should be no side effects to this study.*
6. I am free to withdraw from the study at any time – however I commit myself to full participation unless some unusual circumstances occur, or I have concerns about my participation which I did not originally anticipate.
7. The report will consist of aggregated data, which condenses the findings of the study, while maintaining the confidentiality of participants. The report will be designed in such a way that it will not be possible to be identified by the general reader due to the statistical nature of the data collection and analysis. The report will also be made available for me to read upon completion of research.

Signed on (Date):

Participant: _____ Researcher: _____

8.2: Appendix B

CODE:

Please tick, circle or fill in the necessary requirements below.

Demographics

Gender: Male ☐

Female ☐

Other ☐

Age:

Race:

Sporting code currently participating in:

Athletics: ☐

Rugby: ☐

Hockey: ☐

Soccer: ☐

Rowing: ☐

Netball: ☐

Cricket: ☐

Basketball: ☐

Other: ☐

Specify:

Years of experience playing sport mentioned above:

Accommodation: On campus: ☐

Off campus: ☐

Season of sport mentioned above:

Winter: ☐

Summer: ☐

Other: ☐

Years at Rhodes University:

Academic year of study:

Reasons why you play sport at Rhodes University:

.....

.....

.....

.....

.....

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

SMS-6

- Does not correspond at all 1**
- Corresponds a little 2-3**
- Corresponds moderately 4**
- Corresponds a lot 5**
- Corresponds exactly 6-7**

Why do you practice your sport?

1. For the excitement I feel when I am really involved in the activity	1 2 3 4 5 6 7
2. Because it's part of the way in which I've chosen to live my life	1 2 3 4 5 6 7
3. Because it is a good way to learn lots of things which could be useful to me in other areas of my life	1 2 3 4 5 6 7
4. Because it allows me to be well regarded by people that I know	1 2 3 4 5 6 7
5. I don't know anymore; I have the impression of being incapable of succeeding in this sport	1 2 3 4 5 6 7
6. Because I feel a lot of personal satisfaction while mastering certain difficult training techniques	1 2 3 4 5 6 7
7. Because it is absolutely necessary to do sports if one wants to be in shape	1 2 3 4 5 6 7
8. Because it is one of the best ways I have chosen to develop other aspects of my life	1 2 3 4 5 6 7
9. Because it is an extension of me	1 2 3 4 5 6 7
10. Because I must do sports to feel good about myself	1 2 3 4 5 6 7
11. For the prestige of being an athlete	1 2 3 4 5 6 7
12. I don't know if I want to continue to invest my time and effort as Much in my sport anymore	1 2 3 4 5 6 7
13. Because participation in my sport is consistent with my deepest principles	1 2 3 4 5 6 7

Does not correspond at all 1
Corresponds a little 2-3
Corresponds moderately 4
Corresponds a lot 5
Corresponds exactly 6-7

14. For the satisfaction I experience while I am perfecting my abilities	1	2	3	4	5	6	7
15. Because it is one of the best ways to maintain good relationships with my friends	1	2	3	4	5	6	7
16. Because I would feel bad if I was not taking time to do it	1	2	3	4	5	6	7
17. It is not clear to me anymore; I don't really think my place is in sport	1	2	3	4	5	6	7
18. For the pleasure of discovering new performance strategies	1	2	3	4	5	6	7
19. For the material and/or social benefits of being an athlete	1	2	3	4	5	6	7
20. Because training hard will improve my performance	1	2	3	4	5	6	7
21. Because participation in my sport is an integral part of my life	1	2	3	4	5	6	7
22. I don't seem to be enjoying my sport as much as I previously did	1	2	3	4	5	6	7
23. Because I must do sports regularly	1	2	3	4	5	6	7
24. To show others how good I am at my sport	1	2	3	4	5	6	7

DIRECTIONS: Give your reaction to the following statements in regards how you usually or generally feel about the sport you participate in as the athlete. You are asked to rank your reaction by indicating:

TEOSQ

Strongly Disagree 1

Disagree 2

Neutral 3

Agree 4

Strongly Agree 5

I feel most successful in my sport when...

1. I'm the only one who can do the play or skill.	1	2	3	4	5
2. I learn a new skill and it makes me want to practice more.	1	2	3	4	5
3. I can do better than my friends.	1	2	3	4	5
4. The others can't do as well as me.	1	2	3	4	5
5. I learn something that is fun to do.	1	2	3	4	5
6. Others mess up and I don't.	1	2	3	4	5
7. I learn a new skill by trying hard.	1	2	3	4	5
8. I work really hard.	1	2	3	4	5
9. I score the most points/goals/hits, etc.	1	2	3	4	5
10. Something I learn makes me want to go and practice more.	1	2	3	4	5
11. I'm the best.	1	2	3	4	5
12. A skill I learn really feels right.	1	2	3	4	5
13. I do my very best.	1	2	3	4	5

DIRECTIONS: For each of the following statements, please indicate how true it is for you, using the following scale:

IMI-PC

Not at all true 1-2

Somewhat true 3-5

Very true 6-7

1. I think I am pretty good at this sport.	1 2 3 4 5 6 7
2. I think I do pretty well at this sport, compared to other students.	1 2 3 4 5 6 7
3. After working at this sport for a while, I feel pretty confident.	1 2 3 4 5 6 7
4. I am satisfied with my performance in this sport.	1 2 3 4 5 6 7
5. I am pretty skilled at this sport.	1 2 3 4 5 6 7
6. This is a sport that I could not do very well.	1 2 3 4 5 6 7

DIRECTIONS: Use the 5 point scale to rate the importance of statements below.

Self-theory questionnaire

Strongly Disagree 1

Disagree 2

Disagree a little 3

Agree a little 4

Agree 5

Strongly Agree 6

How do you feel about ...

1. No matter how much skill you have, you can always change a good deal	1 2 3 4 5 6
2. You can learn new things, but you cannot really change your basic level of skill	1 2 3 4 5 6
3. I like my sport best when it challenges me	1 2 3 4 5 6
4. I like my sport best when I can do it really well without too much trouble	1 2 3 4 5 6
5. I like sport that I'll learn from even if I make a lot of mistakes	1 2 3 4 5 6
6. I like my sport best when I can do it perfectly without any mistakes	1 2 3 4 5 6
7. When something is hard, it just makes me want to work more on it, not less	1 2 3 4 5 6
8. To tell the truth, when I work hard, it makes me feel as though I'm not very skilled	1 2 3 4 5 6

8.3: Appendix C

Date: 24/04/2015

Dear Siya,

Re: letter of permission.

I am writing to you regarding my masters research project in Psychology. I hereby request permission to conduct a research project with Rhodes University students. The aim of this research is to investigate the relationships that exist between goal orientations, mind sets and competence on the motivation to participate in sports amongst Rhodes University students. The research will also look to uncover whether any of these factors influence students, decisions to participate in sports at Rhodes University. I would like to distribute questionnaires to between 250-350 students across various sporting codes including rugby, hockey, soccer, rowing, cricket as well as potentially others in the hope of obtaining a sample of 150-250 students. These questionnaires would take no more than 40 minutes and the participation will be on a voluntary basis assisting with the random sampling of participants. The participants, identity will remain strictly confidential throughout the process of data collection and analysis.

In terms of recruiting participants, the researcher will gain access to respective sporting codes year by liaising with the head of sports and then the respective coaches.

Students that volunteer should be participating in sports at Rhodes University and registered as students at the University. Those students not registered as students at Rhodes will be excluded as their motivations may be different from an individual who is registered as a student.

I have obtained ethical clearance from RUPERC and HHDC. I would appreciate your permission to carry this research. Many thanks.

Best regards,

Marcus Nel