How Nonverbal Behaviour and Game Context Alter Athletes Perceptions: A Study of Nonverbal Influence on Expectancy of Success and Impression Formation in Different Game Scenarios, Immediately After an Opponent's Mistake

Parmida Razavi

Bachelor of Kinesiology Honours

Applied Health Science

Submitted in partial fulfillment of the Requirements for the Degree

Master of Sciences

Faculty of Applied Health Sciences, Brock University

St. Catharines, Ontario

ABSTRACT

Nonverbal behaviour is a social cognition component of sport psychology. The purpose of this study was to determine the impact of non-verbal behaviour (NVB), and game scenarios immediately after a mistake was made. Participants (N = 103) were randomly assigned to one of six groups, comprised of one of two body languages, dominant (n = 51) and submissive, and one of three game scenarios, winning (n = 34), tied (n = 34), and losing (n = 35). Due to a high internal consistency between factors of performance outcomes and psychological characteristics one composite variable was created for each variable. Results revealed that dominant NVB was rated significantly higher than submissive NVB in each category, while game situation did not show any significant differences for performance outcome or psychological characteristics. NVB can be a readily accessible resource that should utilized by athletes to gain an advantage over their opponent.

ACKNOWLEDGEMENTS

I would like to express my gratitude to my thesis advisor Dr. Philip Sullivan, whose understanding and patience allowed me to work at my own rate and steered me in the right direction whenever I needed it. I would also like to thank the other members of my committee, Dr. Kim Gammage, and Dr. David Gabriel for their guidance through this process and for providing a great deal of feedback. Finally, I would also like to thank Dr. Todd Loughead from the University of Windsor for taking time out of his busy schedule to serve as my external.

I also like to thank my peers, without their support and countless volunteering hours, I would not have been able to do this. Lastly, I would also like to thank my family for the continuous support they have provided me through my entire life.

TABLE OF CONTENTS

LIST OF FIGURES

1.1 Introduction

Non-verbal behaviour (NVB) is a unique language that identifies cues from an individual's behaviour. It provides information reflecting an individual's intrinsic response, rather than a learned behaviour; this behaviour has been utilized to detect lies and to confront confessions (Navarro & Karlins**,** 2008). Research on NVB was initiated when researchers noticed primates used dominant and submissive behaviours to demonstrate their hierarchical position within their environment (Bernstein, 1970, DeWaal, 1998). Dominant and submissive NVBs have been used to efficiently indicate information about rank and status in social animals (Carpenter, 1965; Darwin, 1872; DeWaal, 1998). Evolutionary research indicates that animals are hardwired to reliably produce and perceive such cues, consequently adapting to and exchanging important social information (Tracy & Robins, 2008).

Body language, a common phrase used to define NVB, is a universal way in which individuals communicate their emotions to their surroundings in order to either protect, defend, or express themselves (DeWaal, 1998). The basic characteristics of body language include: facial expressions, body posture, interpersonal distance, body orientation, and gestures. As research continues to progress, it has also integrated tone of voice and heart rate (Lewis, 2012; Navarro & Karlins, 2008). Body language can be accompanied with or without verbal dialogue and is expressed consciously, involuntary, and frequently subconsciously (Lewis, 2012). NVB is based on situational contexts, such as environmental circumstances and the presence of others, which influence how it is interpreted. For example, children become more expressive when playing in pairs or when losing, compared to when playing by themselves or winning (Mui, Goudbeek, & Swerts, 2009).

1.2 Types of NVB

1.2.1 Dominant

Two of the most common body language expressions are dominant and submissive behaviours. Dominant NVB is coined differently in various literatures. The two most frequent synonyms are high power pose (i.e., power posing; Cuddy, Wilmuth, & Carney, 2012) and pride pose (Tracy & Robins, 2008). A dominant individual is one who stands and walks with a straight posture consisting of shoulders pulled back and chest out, whose limbs are spread from the torso in order to occupy maximum space, whose head is held up so that the chin is parallel to the ground, and who maintains 90% eye contact (Weinberg, 1988). Pride posing has similar characteristics with the inclusion of the head being slightly tilted upwards at about 20 degrees accompanied by a slight smile (Tracy & Matsumoto, 2008). Power posing is a term created by Cuddy, Wilmuth, and Carney (2012) to signify poses that display a high-power status. In their research, two types of poses were examined, the high power one which displays dominance and constructed power, and the low power pose that portrayed submissive behaviour was seen as contractive. Cuddy and her colleagues (2012) demonstrated that an expansive pose reflects and constructs power. A prime example of a dominant stand is the Usain Bolt signature pre- and post-performance pose, with his legs approximately sixty-five centimeters (.65 m) apart, his left arm extended upwards, occupying as much space as possible, his shoulders pulled back, his chest out, and his head tilted up. All of these component are demonstration of pride.

Evolutionary selection of the "Alpha" human is embedded in the dominant displays of power (Darwin, 1872; 1965; DeWaal, 1998). Having the ability to

demonstrate a dominant NVB has been a crucial component of how individuals, and especially athletes, are perceived by their opponents. Expressing NVB such as in moments of success using features of dominance, or failure by demonstrations of submissive body language, may not be learned. This is evident through a study conducted by Tracy and Robins (2008) who concluded that blind and congenitally blind Olympic athletes demonstrate dominant behaviour without ever being socially exposed to it. This suggests that "pride display is a universal response to status raising events" (Tracy & Robins, 2008, p. 394)

1.2.2 Submissive

Submissive behaviour is depicted by a slouched posture with the head and chin pointing downwards, limbs close to the torso to minimize space occupied by having the body crumpled inwards, shoulders positioned anterior to the body, and eyes gazing at the floor for most of the time (Weinberg, 1988). Shame is expressed through a slumped posture displaying narrow shoulders with the head tilted down (Tracy & Robins, 2008). Similarly, a contractive closed posture or low power pose is revealed when the arms and legs are being wrapped around the body while looking downwards (Cuddy et al., 2012; Yap, So, Melvin, Tan, & Teoh, 2011).

1.3 Manipulations and Psychological Outcomes of Expressing NVB

1.3.1 Manipulation and Outcomes of Power Posing and Dominance

Power posing has a variety of behavioural and psychological advantages that may increase performance and outcomes especially in stressful social situations, or

within unexpected conflicts. First, power posing increases goal-oriented behaviours and cognitive processing, allowing the individual to be perceived as smarter (Guinote, 2007). Second, individuals using power posing feel more optimistic and positive, therefore it may enhance the confidence and the enthusiasm they project (Anderson & Berdahl, 2002). Decreases in stress and anxiety levels are also enhanced by power posing due to an increase in testosterone, a hormone corresponding to status seeking, while suppressing cortisol levels, which are associated with low status (Carney, Cuddy, & Yap, 2010). This form of dominance stance allows an individual to remain calm and in control during a stressful situation (Carney, Yap, Lucas, Mehta, McGee, & Wilmuth, 2013). The combination of high testosterone coupled with a low cortisol level that manifest after a two-minute display of power posing (Cuddy et al., 2012) is attributed to an increase in engagement and performance in competitive tasks (Sherman, Lee, Cuddy, Renshon, Oveis, Gross, & Lerner, 2012). While numerous interesting findings were revealed within Cuddy et al., studies, the results should be interpreted with caution. The original study utilized a very small sample size of 42. When other researchers (Cesario, McDonald, 2013), (Garrison, Tang, Schmeichel, 2016), (Ranehill et al., 2015), tried to replicate the study at a much larger scale they were not able to find significant findings within their results. Yet, researchers did find that adopting powerful postures lead to an increase sense of self reported of power however, there was no empirical evidence of significant differences in an individuals behaviour or hormonal levels (Ranehill et al., 2015).

It is important to note that an increase in testosterone levels promotes positive feedback. It reinforces dominance, which has psychological and environmental benefits,

causing more testosterone release, leading to an even greater increase in the dominant NVB, and consequently, secreting testosterone even further (Archer, 2006, Merton, 1948). Testosterone increases with success and diminishes after a defeat (Booth, Shelley, Mazur, Tharp, & Kittok, 1989). Such an interplay of testosterone levels reinforces the likelihood of whether or not one competes again (Mehta & Josephs, 2006). Interestingly, not only individuals who competed and won had an increase in testosterone after their victory, but also the defeated who were interested in reclaiming their title also showed an increase in testosterone.

Cuddy et al. (2012) demonstrated that portraying a high-power pose not only positively influenced pre-performance preparation, but also affects the performance itself during a stressful social encounter. In one study (Cuddy et al., 2012) low and high-power poses were performed prior to and during the preparation of a speech delivery. Participants were given five minutes to outline their qualifications in preparation for a job interview. Then, they were asked to present to two interviewers who were instructed not to give any physical nor verbal feedback during the interaction. These scenarios were videotaped. Those individuals who were manipulated to demonstrate high-power pose beforehand such as the superman pose or sitting in a chair with hands behind the neck and with feet up on the desk, demonstrated a positive presence during the delivery of the speech, thus influencing the judges' evaluation and increasing their hiring chances. The low-power posing condition, which consisted of either the participant standing or sitting with their feet and arms crossed over and looking down with a slouched posture, received a significantly lower evaluation by the judges in the blind trial. Contrary to low-power poses, undertaking a high-power pose boosts self-esteem,

confidence, risk tolerance, mood, pain tolerance, recalling concepts, which also reduces feelings of fear while it increases a sense of power (Bohns & Wiltermuth, 2012). Aside from the aforementioned benefits, power posing also positively influences action orientation and thought abstraction (Cuddy et al., 2012).

1.3.2 Manipulation and Outcomes of Pride

William and DeSteno (2008) found that individuals who were manipulated to practice pride in response to success were more likely to persevere in similar tasks, suggesting that experiencing pride directly influences aspirations and willingness to achieve. Similarly, participants who were manipulated to experience pride demonstrated an improvement in task performance both during and immediately after the pride experience (Herrald & Tomaka, 2002). Consequently, individuals are motivated to attain success in socially valued domains, and socially valued achievements enhanced perceived status. In a separate study (Martens, Tracy, & Shariff, 2012), pride experiences were manipulated in individuals prior to a group task. The results demonstrated that others in the group as well as outside observers perceived that those individuals were behaving in a more dominant manner. Thus, it is suggested that pride experiences foster interpersonal behaviour enhancing status (Williams & DeSteno, 2008).

1.3.3 Outcome of Submissive Behaviour

In contrast, shame and submissive poses constitute destructive disadvantages to the individual. Demonstrating a low-power stance for a long period of time that may

come naturally from a defeat can be harmful to the individual's health. Participants demonstrating a low-power posture were seen to have an increase in self report stress incidences in social groups (Riskind & Gotay, 1982), which hinders memory and immune function and increases hypertension (Segerstrom & Miller, 2004). Low-power posing is also experienced as an increase of chances of, and/or enhancement of depression and helplessness (Riskind & Gotay, 1982).

1.4 Interpretation

Although individuals use a small range of cues to influence perception, Warr and Knapper (1968) predicted that it wasn't only directly visible cues that impacted a person's perceptions. They proposed that perception of others are highly influenced by the individual's reputation that is stored in memory, as well as pivotal information that is formed from the context of that athlete and opponent. In one study it was demonstrated that NVB that's not visible to the eye was still highly influential, but that is different from reputation (Cuddy, Wilmuth, Yap, & Carney, 2015). It was indicated that unobservable NVB that is enacted prior to an interaction affects performance and, consequently, influences how a person is perceived.

The ability to interpret the social status of others is primarily due to the ability to naturally recognize pride displays (Tracy & Robins, 2008). Research demonstrates that those who are perceived to be experiencing pride are assumed to be of high status (Tiedens, Ellsworth, & Mesquita 2000). The ability to portray that one is entitled to a higher status results in adaptive advantages (Tracy & Robins 2008).

Athletes are able to spot their opponent's NVB and respond accordingly. It has been shown that athlete's behaviour changes during competition; demonstrating submissiveness leads to a decrease in motivation when trailing and demonstrating pride enhances motivation when leading during a game (Furley & Schweizer, 2014). An athlete is also thought to be more confident if they observe submissiveness or anxious body language by their opponents prior to their performance (Furley, Dicks, & Memmert, 2012). Athlete perceptions of their opponents' NVB have been observed to influence not only their self-efficacy, but also their behaviour (Furley et al., 2012). Such findings have important implications for athletes who may be trailing during a game; assessing and understanding these implications may help assist them in preventing a tragic loss.

1.5 Sports Specific Body Language

The study of body language in the culture of sport is a relatively new topic. Studies have demonstrated that athletes are constantly deriving information from their surroundings to predict outcomes (Robbins, Lauver, Davis, Langley, & Carlstrom, 2004). In one study, it was shown that dominant and neutral NVB showed favourable characteristic traits over submissive behaviours in the sport of baseball (Furley & Dicks, 2012). In the study, reflective gear was used at night around models' heads, ankles, knees, elbows, and hands when performing a wind-up pitch and a set pitch. A total of six videos were taken of the perceived opponent each portraying dominant, neutral, and submissive NVB. In the study 40 baseball players, with an average of nine years playing experience rated the opponent on their perception of player, quality of pitch, and outcome expectancy. Results showed that impression formation was largely influenced by

submissive behaviour, where significant differences were seen in comparison to dominant and neutral NVB. The behaviours demonstrated similar impression formation and expectancy of success. There was no significance difference between conditions evident for quality of pitch.

Van der Kamp and Masters (2008) study outlined just how important NVB is to the perceivers, specifically in a sport context. The research demonstrated that the posture that was adopted by a goalkeeper highly influenced the penalty takers' shooting behaviour and their perception of the goalkeepers' size. Their findings revealed that the goalkeeper, by raising and lowering their arms were able to simulate the Müller-Lyer illusion (Figure 1). The following optical illusion is based on line segments of the same length with arrows at each end. The lines that have arrows pointing outwards are depicted to be longer than ones with arrows pointing inwards. A goalkeeper was able to make themselves appear to be up to three to five percent smaller or larger to the penalty taker by lowering their arms or raising them up in a "V", which is equivalent to six cm – nine cm, for an average goalkeeper of a height of 1.86 m (Figure 2). The penalty takers shot farther from the body in response to perceiving a larger size of the goalkeeper when arms were up, and closer to the body when the arms were down.

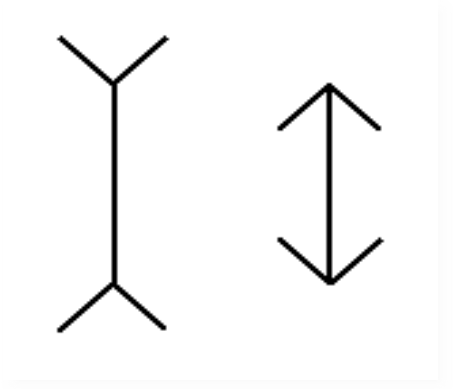

Figure 1 The Müller-Lyer illusion

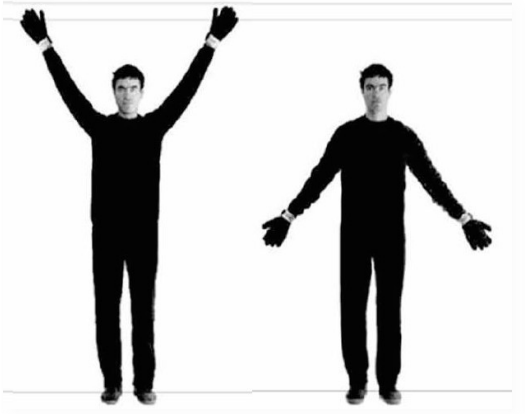

Figure 2. Goalkeeper stimulating the Müller-Lyer illusion.

In tennis, another sport that has shown significant results in impression formation, evidence exists that players use warm-up time to form an impression of their opponent, influencing their confidence in beating that opponent (Buscombe, Greenlees, Holder, Thelwell, & Rimmer, 2006). Furley and Schweizer (2014) showed that individuals were able to correctly infer who was winning and who was losing without looking at scores by simply watching NVB of a table tennis game. This demonstrates that there are subtle body language changes that occur with athletes who are leading,

portrayed by a dominant behaviour, versus those who are trailing, depicted by submissive behaviour. These characteristics are not only recognized by outsiders but most importantly, they are observed by the competitors. Furley and Schweizer (2014) have also been able to demonstrate that both players and coaches change characteristics of their NVB as a function of leading and trailing during a competition. Novice and expert players were shown 36 clips of European championship handball, each with a duration of 4 seconds. Regardless of experience levels, participants were able to accurately estimate whether in each video the observed team was leading or trailing.

An athlete's eye contact plays an important role when depicting a dominant body language. One study showed that soccer penalty takers who displayed 90% gaze towards the goalkeeper prior to the run up were evaluated as executing a more accurate penalty kick compared to athletes who only displayed 10% gaze (Greenlees, Leyland, Thelwell, & Filby, 2008). It has been speculated that it is not necessarily the gaze direction which the athlete demonstrates, but the physical and biological component of demonstrating a dominant NVB. This constitutes the head tilted up or, at least, parallel to the ground, in comparison to a submissive body language, where the head is pointing down (Carney, Hall, & Smith LeBeau, 2005; Carney et al., 2010). Post-performance NVB could also be seen as inferring positive effects on subsequent teammates, such as during a soccer penalty shootout (Moll, Jordet, & Pepping, 2010). Celebratory behaviours of soccer penalty kicks increased the likelihood of winning the shoot out, and decreased the likelihood of the opposing team scoring. Celebratory moves including arms extending away from the body or above the head, hands made into first and chest expansions after scoring one goal were all related to teams ultimately winning penalty

shootouts. This research not only emphasizes how pride and dominance positively impacts self and teammates behaviours, but also demonstrate how these behaviours negatively influence the opposing team outcomes.

Athletes use cues early in social encounters to form impressions of their opponents and to make a judgment of their chances of success during that interaction. This relationship supports outcome expectations taken prior to competition and performance (Feltz & Riessinger, 1990; Weinberg, Gould, & Jackson, 1979), as well as during the competition (Greenlees, Bradley, Holder, & Thewell 2005a). Grant (1968) suggests that the result of a sporting match can be predicted prior to the start of the match based on the quality of the opponent's reputation and NVB (i.e., the extent of eye contact, facial expression and clothing). These results support that pre-performance NVB influence athletes' impression formation thus subsequently impacting their performance outcome.

1.6 Failure in Sport and Consequences

In every athlete's career, there are moments where they are unable to perform to their optimal level or worse, demonstrate a decrease in their performance and skill capability, which hinders the overall perception of their own competence (Horn, 1985). Displays of shame manifest themselves in response to failure or events that lower one's status in the absence of a threat. Shame behaviours are naturally perceived as low status (Shariff & Tracy 2009). Shame is recognized as one of the most painful emotions to psychologically experience (Izard, 1971) since it physically makes the individual feel vulnerable and smaller in comparison to others (Tangney, 1997). Shame displays such

as slumped posture, head tilted downwards or narrowing of the shoulder, have been recorded in correspondence to failures or losses in fights in children as young as two and a half years old (Stipek, Recchia, McClintic, & Lewis, 1992) all the way up to the highest level of sporting events in the Olympics (Tracy & Matsumoto, 2008).

While the extent of submissive NVBs may not be exhibited equally during all failures, they still manifest themselves during the smallest defeats. There are numerous dangers in demonstrating a losing NVB. Conversely, the winning opponent may not hold back or worse, with increased motivation may increase competition. "This reasoning suggests that certain evolved behaviors may be dysfunctional in certain domains of modern life. What makes sense for a primate losing a fight may lead to exacerbating the downward spiral for athletes on the losing side*"* (Furley & Schweizer, 2014, p. 27).

Carney et al. (2010) showed that in a stressful situation involving social evaluation, people who are perceived to be relatively powerless shrink and hunch over, thus adopting a negative NVB causing them to feel even more powerless. It has been demonstrated that socially we tend to mirror some behaviours and emotions such as happiness and sadness, while, with behaviours such as dominance and submissiveness, we tend to reciprocate the opposite (Burgoon, 1993). Therefore, during an important match, if an opponent shows high levels of dominance, an athlete may demonstrate submissive properties, and subsequently feel powerless. Furthermore, by adopting a negative NVB, athletes may feel even more vulnerable. Consequently, the opponent could increase their chances to win when they perceive their rival is finding him/herself in such a defenseless state. What is astonishing is that all these behavioural

communications and perceptions can occur prior to the start of the game. Behaviours can be observed during warm-ups or an interaction prior to the game event (Greenlees et al., 2005a, 2005b, Greenlees et al., 2008).

1.7 Game Context

1.7.1 Winning Streak

The context of how well a game is going for athletes plays an important role in their chances of winning and, subsequently, their continued efforts when playing. It has been suggested that being ahead in competitions will increase the likelihood of winning (Berger & Pope 2011). Teams that are ahead early in the game win two-thirds of the time (Cooper deNeve, & Mosteller 1992); chances of winning increase up to seventy-five percent (75%) at half time, and continue to increase as the match gets closer to the end of the game (Stern, 1994). With comebacks being possible yet very rare, it has been estimated that in sports such as basketball, baseball, football, and hockey, being ahead at three-quarters of the game will often lead to that team winning (Cooper et al., 1992). The following research shows that athletes, who are winning, are more likely to succeed for the remainder of the duration of the game than those who have not been showing the same level of skill acquisition

1.7.2 Losing and Tied Streak

On the contrary, athletes who are losing tend to get discouraged and reduce their efforts (Fershtman & Gneezy, 2011). This is consistent with the prospect theory where diminishing sensitivity plays a key role. Individuals tend to work harder when

they are closer to their goal than further away from it (Heath, Larrick, & Wu, 1999). Being too far behind eventually becomes demotivating and a reduction in performance occurs resulting in athletes losing motivation and, consequently, giving up (Berger & Pope, 2011; Freshman & Gneezy, 2011). This also demonstrates that athletes who are losing will most likely continue to lose during the game as their motivations, physical as well as mental efforts start to drop. On the other hand, being in a tied position becomes slightly tricky in predicting outcomes. In a research done by Berger and Pope (2011), receiving competitive feedback of being in a tied situation had small changes in the athlete's efforts, similar to being told that they were far behind or not getting any feedback, at all.

Athletes are therefore able to infer the chances of their opponent's success based on their previous performance. This research suggests that an athlete can use their opponent's previous performance to infer the likelihood of how well their opponent will do in the upcoming moments in the game. Individuals who are trailing are predicted to lose, while the ones who are leading are anticipated to a win, and those who are tied being slightly unpredictable as their efforts do not substantially increase.

CHAPTER TWO: RATIONALE, RESEARCH QUESTION, AND HYPOTHESIS

2.1 Sport Objective and Failure

In sports, the main focus of the athletes is to dominate the opponent not only physically, but mentally. If an athlete can demonstrate mental dominance over their opponent, they are already several steps ahead of the game. From previous research, it is evident that as one shows dominance, the opponent may likely negatively reciprocate the behaviour (Burgoon, 1993); any behaviour that is associated with a positive feedback system can amplify the dominance behaviour (Archer, 2006). Demonstrating a sense of dominance becomes very crucial when an athlete is placed at the slightest position of disadvantage where their competence might be at stake, such as missing the ball or a hit. A demonstration of dominance then serves a number of positive functions. For example, it could mean increasing status, raising testosterone through enhancement in strength, confidence, and pain tolerance, while constructing power and minimizing stress level (Cuddy et al. 2010).

Failing during a sporting match is inevitable. Michael Jordan missed 16.5% of his free throw shots during his career (basketballPerformance.com). However, what is key is how well athletes can get themselves back up to their optimal level or at least, what the perception thereof might suggest. This moment of perception could be what sets great athletes apart from the rest. Research demonstrates a strong correlation between how athletes are perceived and their NVB (Robbins et al., 2004). Utilizing Cuddy's (2012) research on power posing and dominance demonstrations, and incorporating it into a sports setting could be very beneficial. It has been shown that athletes who display signs of dominant NVB are perceived as more threatening to their

opponents. They are seen as being more willing to explore a higher task difficulty with a higher expectancy of success (Greenlees et al., 2008), in comparison to those individuals with submissive body language regardless of how much they are leading. NVB factors have a strong influence on physical and mental performances in sport (Cox & Whaley, 2004; Eccles & Harold, 1991).

Multiple studies have looked at how impression formation is portrayed and changes with different contexts. In one study (Manley et al., 2008), it was demonstrated that athletes utilize numerous cues to form impressions of their coach. These cues were factored into dynamic; different types of NVB such as gestures and facial expressions , third-party reports; such as coaches reputations and qualifications, and static cues; including demographic factors such as gender and race. Importance was given to dynamic cues, which incorporate all aspects of NVB, as well as third-party cues, which were categorized as qualifications and achievements of the coach. This study emphasized that multiple sources are used to retrieve information and make impression. In another study (Greenlees & Buscombe, 2005b) impression formation was altered when different visual representations of the same individual were presented. The study utilized general versus tennis specific clothing to determine if the type of clothing altered the impression formation beyond dominant and submissive NVB. Results demonstrated general clothing positively impacted attributes of that athlete specifically when paired with dominant NVB more than any other four combinations of clothing and NVB groups within the study. In another study (Greenlees et al., 2008), similar impression formation patterns were seen when looking at NVB in a combination of red and white clothing. While these studies demonstrate how with new information impression formation changes, this pattern may

not always hold true. This is shown in a study done by Furley et al. (2012) where colour specific clothing did not alter impression formation or expectancy of success that was made of a penalty taker.

2.2 Greenlees Studies

In a study done by Greenlees, Buscombe, Thelwell, and Holder (2005a), 18 expert table tennis players watched four videos of different players warming up. Sixteen videos of 90 seconds each were filmed from four table tennis players each in four different scenarios. The athletes in the video demonstrated dominant as well as submissive body languages as per Weinberg's (1988) guidelines, including a variation of specific and general sport clothing. The study concluded that dominant body language actors received more favourable impression ratings than submissive body language actors. Nine out of ten perceptions of target players (assertive, competitive, aggressive, experience level, fit/ unfit, confidence, composure, negative/positive, focus, with the exception of tense and relax*)* significantly contributed to a dominant NVB. Participants also reported a lower confidence in beating the opponent who demonstrated dominant body language and higher confidence in beating those with submissive body language.

In another study by Greenlees and colleagues (Greenlees, Leyland, Thelwell, & Filby, 2008), a steady intent gaze and uniform colours were used to examine impressions that were formed of the opposing soccer player by the goalkeeper. Participant goalkeepers (n = 12) viewed first person video clips of four different soccer players in preparation of a penalty kick. Each clip was 10-12 seconds long with a

combination of a steady gaze (10% or 90%) and uniform colours (white or red) depicted by each player. Participants were then asked to rate each penalty taker, based on a nine-dimensional characteristics model, perceived accuracy, perceived power, and outcome expectancy. Goalkeepers rated the perception of the target player and their accuracy considerably more positively when the athlete displayed a 90% gaze, in comparison to a 10% gaze. The goalkeeper outcome expectation of saving the opponents ball was also much less when there was a higher display of gaze. Greenlees et al., concluded that athletes have the ability to create impressions of dominance through prolonged gazes prior to a sporting encounter. Based on this research, there is evidence that interpersonal processes influence penalty kicks. While there were a limited number of participants in this study, the goal of this thesis research is to build upon Greenlees et al., (2005a, 2005b, 2006, and 2008) findings and to incorporate the benefits of a dominant stance with a larger number of participants in three (3) different game scenarios.

2.3 Demonstration of Dominant and Submissive NVB

Intense expressions are recognized more readily than weak and subtle ones since intense expressions maximize activation of actions within the body (Carroll & Russell, 1996, Hess, Blairy, & Kleck, 1997; Ekman, 1993). This suggests that even if an athlete unconsciously demonstrates a feature of defeat, the ability of portraying an amplified display of dominance may have advantages. NVB can demonstrate emotional cues that influence, if not overpower, facial recognition (Aviezer, Hassin, Bentin, & Trope, 2008). During a sporting event, it has been demonstrated that faces may, at times, be non-diagnostic for distinction of dominant and submissive NVB in contrast to

a whole body NVB, which becomes much more amplified during peak emotions (Aviezer, Trope, & Todorov 2012). Displays of profound dominance also have advantages in terms of how the opponents form an impression of the athlete's skills and behaviour (Shariff & Tracy 2011). Shariff and Tracy (2011) showed high power and pride expressions can overpower situational circumstances, even when the context contradicts high-status messages. High power has the capability to neutralize or even override information determining status discrimination.

Research suggests that when learning about an athlete's abilities, achievement becomes much more informative than failure (Mende-Siedlecki, Cai, & Todorov, 2012; Skowronski, & Carlston 1987). This would result in the opponent recalling their rival's dominant moments over their failures, when faced with a dominant posture even after a defeat. The impression that an individual has of their teammate and opponents around them is powerfully influenced by the behaviours that they are associated with (Todorov & Uleman, 2002). Impression formation based on behaviour generates automatic inferences regarding character traits (Todorov et al., 2003).

2.4 Research Question

While previous studies have researched individual perceptions with regards to NVB in a sport specific context, no empirical research has directly examined how an athlete's dominant or submissive body language affects expectancy of their success in different game scenarios (i.e., when winning, losing, or tied). Previous studies have focused on NVB during pre-performance, such as the warm-up (Buscome et al., 2006, Greenlees et al., 2005a, 2005b) and within performance (i.e. prior to a penalty kick in

soccer; Greenlees et al., 2008), yet none were placed within seconds during a game. The objective of this research is to examine whether being in a winning, losing, or a tied condition, in relation to dominant and submissive NVBs, affects an athlete's expectations of their opponent's characteristics, accuracy, power, and outcome expectancy right after the athlete has encountered a mistake in a hypothetical tennis match.

2.5 Hypothesis

The following hypothesis were given in response to the research question: Opponents who demonstrate a dominant body language will be perceived to have a higher expectancy of success, power, and accuracy and will be rated higher on athletic characteristics compared to individuals who portray a negative body language. Participants will rate their opponents' expectancy of success, accuracy, power, and athletic characteristics higher when the participant is in a losing scenario, rather than in a tied or winning game situations. Based on previous literature, posture and demonstrations of dominance can overpower game context and the status of an individual.

There will be interaction between variables where opponents that are winning and demonstrating dominance will be scored more positively than those who are losing and demonstrate submission.

CHAPTER THREE: METHODOLOGY

3.1 Participants

Ethics Clearance was given by the Social Science Research ethics board of Brock University in order recruit participants within this study, Appendix A.

Participants (N = 103) were recruited for this study, of which 52 were female and 51 males. Majority of the participants were undergraduate applied health science students, and were recruited through posters and or in class presentations within kinesiology and health science classrooms. The average age of participants was 20.35 years (SD = 2.33) with an average 0.65 (SD = 1.75) years of experience in playing recreational tennis. Based on previous research, six groups of 14 participants were required for this study due to the power and alpha. Due to the number of participants that were recruited for this study groups of 17 participants were made within each of the six groups. Greenlees et al. (2005a; 2005b) previous experiments showed large effect sizes (η^2 =.87, and η^2 =.90, respectively) for a dominant and submissive body language was manipulated. Considering these effect sizes, an alpha of .05 and a power of .80, a sample size of 14 participants per conditions was required (Cohen, 2008).

3.2 Procedure

After having signed a consent form, Appendix B, participants were randomly placed in one of the following six scenarios: winning with dominant NVB, losing with dominant NVB, tied with dominant NVB, winning with submissive NVB, losing with submissive NVB, and tied with submissive NVB.

Participants first filled out a demographic questionnaire, Appendix C, then proceeded to read a paragraph-long script that outlined one of three different game

scenarios of how a match was going (i.e., winning, losing or tied) between them and an opponent, the target. This script can be viewed in Appendix D. At the end of the paragraph, they were notified that their opponent has just missed a shot. A short video clip was then played on a 13-inch laptop, where the same-sex model was preparing and going through their serving routine, depicting either dominant or submissive body language. The opponent was shown making his/ her serve. Immediately after the ball made contact with the racket, the film clip went black and the participant was asked to make assessments of the expected performance and psychological characteristics of the target model, Appendix C.

3.3 Materials.

Four film clips of approximately 14 seconds long were created, consisting of two dominant and two submissive NVBs, one from each gender. All footage was filmed on a tripod-mounted camera at a distance of 18 meters away from the participant serving line of the opposing court. The models used were each novice tennis players who had played tennis recreationally but had never competed. All four clips were filmed at the same outdoor venue yet on different days, and subsequently different weather conditions. While the female model was filmed on a sunny day, the male model was filmed on a cloudy day.

Body language was manipulated using Greenlees et al. (2005a, 2005b, 2008) and Weinberg's (1988) guidelines. For the dominant body language condition, the models were instructed to stand and walk with an erect posture, with shoulders pulled back, chest out, head and chin held up, while maximizing space that they occupied, with eyes looking

directly at the opponent (i.e., camera); see Figures 4,6,8 and 10. For the submissive body language condition, the models adopted a slouched posture, with the head and chin pointing down, their shoulders inward, minimizing the amount of space they were occupying, while avoiding eye contact; see Figures 3, 5, 7 and 9. Models were instructed to maintain the same exact serving routine and duration within each category to eliminate biases. Each model practiced this procedure numerous times to ensure consistency between and within each routine.

Once the model had reached the serving line from the base line, the camera was zoomed from a wide field of view, consisting of half of the court, to a much narrower one, focusing only on the model. This was done so that body language could be more easily interpreted and to minimize any other distractions. Each of the target models' routines consisted of walking up to the serving line, bouncing the ball a few times then tossing the ball into the air in preparation of hitting the ball, all while maintaining the appropriate NVB. When the racket made contact with the ball the video stopped and a black screen appeared.

A selection of twenty video clips were made for the purposes of the study. Each was viewed to determine if all the criteria of dominant and submissive NVB were met, as well as to ensure a consistant time frame and routine. From those clips, twelve were chosen that met all the guidelines and were perceived to be optimal. All clips were rated by a panel of 12 independent raters on a 7-point Likert scale assessing the body language of the actors from very submissive to very dominant. The highest rated clips for dominant and lowest for submissive NVB of each sex were used for the study.

3.4 Measures

Perceptions of the target models psychological characteristics and outcome expectations were measured according to Furley et al., study in 2012, of which it's measurements were modified from studies done by Greenlees et al. (2005a, 2008). Specifically, the following dimensions were scored: *Assertive – Not Assertive; Competitive – Uncompetitive; Experienced – Novice; Confident – Unconfident; Composed – On Edge; Focused – Not Focused; and Relaxed – Tense,* on a 7 point Likert-scale. A higher score demonstrated a more positive reflection on the opponent. The previous scales were used as a valid method of measuring interpersonal attitudes and have been used considerably within the interpersonal perception literature (Argyle, 1994; Warr & Knapper, 1968).

The manipulation of outcome expectations followed the design used by previous research analyzing NVB in sport (Furley et al., 2012). Participants were asked to rate the perceptions of their opponent's outcome expectation on a 7-point Likert-scale. The following three items were asked to analyze outcome expectations of the models tennis serve: *expectancy of success* (whether the model will gain a point or lose a point), *accuracy* (very inaccurate to very accurate), and *power* (from very weak to very powerful). Each of the terms are defined below.

Expectancy of success: The expectancy of the opponent success in gaining a point from serve they made.

Accuracy of shot: Expectancy of accuracy of the opponents' ball landing within the box without going outside or hitting the net.

Power: Expectancy of power of the tennis serve.

Figure 3. Broad view of submissive male opponent walking towards the baseline prior to their routine.

Figure 4. Broad view of dominant male opponent walking towards the baseline prior to their routine.

Figure 5. Narrow view of submissive male opponent in the middle of their serving routine.

Figure 6. Narrow view of dominant male opponent in the middle of their serving routine.

Figure 7. Broad view of submissive female opponent walking towards the baseline prior to their routine.

Figure 8. Broad view of dominant female opponent walking towards the baseline prior to their routine.

Figure 9. Narrow view of submissive female opponent in the middle of their serving routine

Figure 10. Narrow view of submissive female opponent in the middle of their serving routine

CHAPTER FOUR: RESULTS

Preliminary analyses examined the correlations among the three performance outcome and seven psychological characteristics. Each set of variables were characterized by significant correlations, and relatively high internal consistencies. All three performance outcomes variables *(Power of Shot, Accuracy, and Expectancy of Success)* were intercorrelated at $p < .001$, with a strong Pearson correlation coefficients ranging from 0.495-0.502, Table 1. The Cronbach's alpha within this set was 0.744. Within the psychological characteristics, Table 2, relaxed was uncorrelated with most of the other variables, but all other correlations ranged from 0.251-0.687, considered as slightly moderate to strong correlation. The Cronbach's alpha for this set was 0.804. Due to the patterns that emerged, one composite variable was created for each of these data sets. In both cases a score was calculated for each participant by averaging the scores of each category. Subsequent analyses were based on the mean scores for expected performance outcome and psychological characteristics. Mean scores for both of these composite variables for all levels for game situation and NVB are given in Table 3.

Table 1

Correlation Amongst Outcome Expectations

	Power of Shot	Accuracy of Shot	Expectancy of Success
Power of Shot	1	-	-
Accuracy of Shot	.495**	1	-
Expectancy of Success	.502**	.499**	1

** p < .001

Table 2

Correlation Amongst Psychological Characteristics

	Assertive	Competitive	Experience	Confidence	Composure	Focuses
Assertive	1	-	-	-	-	-
Competitive	.636**	1	-	-	-	-
Experience	.426**	.543**	1	-	-	-
Confidence	.687**	.614**	.506**	1	-	-
Composure	.287**	.243*	.251*	.537**	1	
Focuses	.417**	.512**	.454**	.586**	.396**	1
Relaxed	.047	-.091	.114	.112	.543**	.213*

* p < .05 ** p < .001

Table 3

Descriptive for Psychological Characteristics and Outcome Expectancies by Condition.

	Psychological Characteristics M (SD)	**Expected performance outcome M (SD)**
Dominant Winning	5.06 (0.62)	4.59 (0.91)
Dominant Tied	4.21 (1.13)	4.43 (1.09)
Dominant Losing	4.88 (1.06)	4.51 (0.51)
Submissive Winning	3.86 (1.05)	3.31 (1.16)
Submissive Tied	4.05 (0.69)	3.45 (0.78)

Table 4

Descriptive Statistics for Psychological Characteristics and Outcome Expectancies for NVB.

	Psychological Characteristics M (SD)	**Expected performance outcome M (SD)**
Dominant	4.72 (1.01)	4.51 (0.85)
Submissive	4.16 (1.03)	3.70 (1.14)

In order to examine if there were main or interaction effects, both variables (psychological characteristics, expected outcome) were entered as dependent variable in a 2 × 3 MANOVA with NVB and game situation as independent variables. The assumptions of independence of observation as well as equal cell sizes were met. Box's test of covariance matrices suggested that this assumption for homogeneity was not upheld *(F* = 2.06, *p* <.05*)*. The MANOVA showed a significant interaction between NVB and game situation on the linear composite of dependent variables (*F* (4, 194) = 2.94, *p* <.05). However, examination of two univariate effects showed that neither performance outcome (*F* (2,96) = 9.51 *p* >.05) nor psychological characteristics trait (*F* (2,97) = 2.60*, p* >.05) supported a significant univariate interaction, failing the reject the third hypothesis regarding an interaction between variables. Therefore, interpretation moved to significant main multivariate effects.

The multivariate main effect for NVB, Table 4, was significant (*F* (2, 97) = 2.60, *p* <.05, η^2 = 0.165) as predicted in the hypothesis, therefore rejecting the null as dominant NVB was rated significantly higher than submissive. Yet the main effect for game situation was not, consequently, failing to reject the null based on the second hypothesis. This multivariate main effect for NVB comprised significant univariate effects for both expected performance outcomes (*F* (1, 97)=17.43, *p* <.001*,* η^2 = 0.159) and psychological characteristics (*F* (1, 97) = 8.58, *p* <.05, η^2 = 0.081). In both cases, the main effect was due to scores in the dominant NVB condition being significantly higher than those in the submissive NVB condition.

CHAPTER FIVE: DISCUSSION

The objective of this study was to examine whether game situation and body language affected an athlete's ratings of their opponent's characteristics and performance outcome expectancy, immediately after their opponents had made a mistake. There were three hypotheses that were made based on the research question. First, it was hypothesized that the opponents who demonstrated dominant body language would be perceived to have a higher expectancy of success, and would be scored higher on athletic characteristic than those demonstrating submissive behaviour. Second, it was hypothesized that participants who were losing would rate their opponents higher on expectancy of success, and athletic characteristic than those participants that were in a tied and ultimately winning scenarios. Lastly, it was hypothesized that there would be an interaction effect between game situation and nonverbal behaviour.

Due to high internal consistencies of within all the seven athletic characteristic, with the exception of relaxed, and the three performance outcomes, each variable was summed into one composite factor within that category and looked at independently. The results of this study demonstrate that those demonstrating dominant NVB were perceived as having a higher expectancy of success and scored higher on ratings of athletic characteristics than those demonstrating submissive behaviours. There were no significant differences evident within game situation. Lastly, despite the violation of Box plot assumptions, no significant univariate interactions were found when looking at psychological characteristic and performance outcome.

5.1 NVB Effects on Characteristic and Outcome Expectations

Results from this experiment showed that NVB has a significant impact on participants' ratings of the perceptions of their opponents. In the present study, athletes that demonstrated dominant NVB were scored significantly higher in the composite variable of characteristic, consisting of: assertive – not assertive; competitive – uncompetitive; experienced – novice; confident – unconfident; composed – on edge; focused – not focused; and relaxed – tense (with the exception of tense and relaxed being uncorrelated amongst the others), and the composite variable of performance outcome expectation which consisted of: *Power of shot, Accuracy, and Expectancy of success.* Models that portrayed a dominant NVB were expected to do better, and as hypothesized were seen more positively than those who displayed negative NVB.

The results are consistent with research that has looked at athletic characteristic and outcome expectancies based on NVB. In the study done by Furley et al. (2012), pre-performance video footage of a soccer penalty was presented to goalkeepers via video or point light displays. Results demonstrated that despite the absence of gaze and clothing a significant effect of body language was evident, where dominant displaying players were shown to be rated as having more positive impression formed by the goal-keeper participant. Confidence in saving the penalty kick, as well as power of shot, was also shown to have significance in correspondence to NVB.

Buscome et al. (2006) looked at how initial body language and clothing affected impression formation of participants viewing target players' performance during warmup and stretching in the sport of tennis. In the study, there was significant main effect for body language and outcome expectation which consisted of participants rating the number of times out of 10 that they would defeat their opponents and their certainty on a

1-10 point scale, as well as opponent performance, consisting of: quality of forehand, movement and speed around the court, and power. Both categories were shown to be rated significantly higher when the opponent demonstrated dominance rather than submissive NVB.

In the study conducted by Greenlees et al. (2005b) participants watched a tennis opponent warming up. In this study impression formation was split into two categories consisting of episodic judgments of opponents on: lethargic/energized; under prepared/prepared; not confident/confident; not focused/focused and tense/relaxed, as well as dispositional judgment on: aggressive/nonaggressive; not competitive/mentally tough. Outcome expectation was also factored in with an agreement or disagreement along with a 10 hierarchically order statement. A significant effect was found in both episodic and dispositional judgments as well as outcome expectation for dominant NVB, with clothing yielding no main effects. Consistent with the present study, the studies done by Furley et al. (2012), Buscome et al. (2006) and Greenlees et al., (2005b), demonstrated that NVB was the only influencing factor for impression formation.

Greenlees et al. (2005a), found similar findings when looking at table tennis players prior to a sporting event. They found significant effects of body language and clothing on outcome expectation, and just significant effects of body language for impression formation. These results affected pre-match cognition, behaviour, and ultimately outcome of a sporting event. In that study, it is important to note that measurements for impression formation and outcome expectation did differ from the current study. While impression formation was measured similar to the current research, there was an addition of other descriptor; negative- positive, fit –unfit, and aggressive-

not aggressive. Outcome expectations were measured on an agreement of yes or no from the participants with a 1-10 likelihood of defeating their target player, and the degree of certainty the participant has in doing so.

Greenlees et al., (2008) looked at 12 experienced soccer goalkeepers and found significant effect of both gaze and uniform colour on impression formation, specifically perception of penalty takers ability, consisting of power and accuracy on a 9-point scale, and expectancy of success, with a yes or no initial statement followed by a 10-point certainty manipulation.

The results from the previous and present study showed support for the influence that NVB has on the perception of an opponent, suggesting that those who portray dominant behaviours are perceived more positively than those demonstrating submissive behaviours, which may come naturally in moments of defeat. Consistent with the present research, it was revealed in the present study that participants perceived lower chances of beating an opponent who showed dominant behaviours than those demonstrating submissive behaviours. This study demonstrated that NVB has a robust impact on how athletes are viewed. While previous studies demonstrate that NVB influence our impression formation of our opponents during pre-match (Buscome et al, 2006, Greenlees et al., 2005b), this is one of the only studies that evaluates how an athlete's opponent is perceived within seconds of a hypothetical match. Results from this study are also supported by Warr and Knapper (1968), who proposed that information gathered from interactions is used by the observer to form an impression of an opponent.

The results from this study show that there were significant differences

between submissive and dominant behaviours that opponents perceived in the evaluation of their opponents' outcome expectancies. Individuals who displayed dominant behaviour were scored significantly higher in outcome expectation in comparison to their nonverbal submissive demonstrator counterparts, despite the having had made a mistake. Utilizing this study, we demonstrated that not only does NVB prior to a game influence the future prediction of performance, but also NVB occurring within a game.

5.2 Game Context effects on Characteristics Traits and Outcome Expectancy and Interaction

In contrast to the findings that were revealed when looking at NVB and athletic characteristics and performance outcomes, there were no significant effects of game context on either outcome. It was demonstrated that the participants who were losing scored their opponent the highest in athletic characteristic, followed by the participants who were winning, and lastly the participants who were tied with their opponent. Similar to the present study, in the studies done by Furley et al. (2012), Buscome et al. (2006) and Greenlees et al. (2005b), NVB was the only influencing factor for impression formation, whereas secondary variables (i.e. clothing type or colors) did not play a significant role in changing impression formation and outcome expectation of the opponent. With previous research it was demonstrated that both observed and situational characteristics influence how athletes inferred information to form impression of their opponent (Warr & Knapper, 1968), yet within this study the only characteristics that had an impact was observed. Consistent with Greenlees et al. (2005b), the main effect was

found in racket sport games for body language, but other conditions became insignificant to player's perception. There are psychological and physiological changes that occur once an athlete is leading or trailing which changes not only their presence but also their outlook on their opponent perception, however no empirical study has exclusively looked at this factor.

The results did not provide support for the hypothesized impact of game context; statistically, those who are winning will continue to do so, and vice versa for those who are losing, yet this was not reflected as game context did not influences subsequent performance outcomes expectations. This study may provide some preliminary evidence that demonstrates the key importance of how we perceive athletes and the important role that NVB has on that perception.

It was also predicted that there would be an interaction between variables. There was no significant interaction between NVB and game situation on either of the composite variables of opponent characteristic or performance outcome expectancy. It is hard to predict if a larger sample size that would meet all the assumptions, would have given similar results. Not having had found an interaction effect within this experiment were also seen in Furley et al., (2012), Greenlees et al (2005b) in regards to body language and tennis specific clothing on judgments of opponents, as well as outcome expectation,

5.3 Limitations and Future Directions

Although this study contributes to the literature with regards to body language, there are several limitations that should be acknowledged. While there was sufficient

sample size, abnormalities in the data were present. It was shown that the effect of NVB had major implications on how athletes are perceived; with a larger sample size there may have been interactions detected that were missed within the present study without violating assumptions.

An artificially simulated environment also exposed several limitations to the present study including model differences and impression analysis.

Due to the nature of this study, artificially created stimuli were made utilizing two novice demonstrators. Therefore, there may have been unnatural emotions that were not depicting what they were intended to. Despite having had numerous clips to choose from, and a very careful selection process, the possibility cannot be ruled out that the behaviour did not come across the way it was intended to. For example, while one model was trying to ignore eye contact in the submissive category, it is speculated that they may have come across as being focused, which was a positive characteristic that was originally anticipated to be much higher in the dominant category than in the submissive one. Potential problems could also arise from one demonstrator being more expressive than the other, consequently, having one video clip portrayed more information. Attempts were made to rule out any difference by having each participant hit specific points of the Warr and Knapper (1968) expectations, but discrepancies could still arise.

Finally, while it has been shown that we make impressions of our opponents in the first seven seconds of meeting them (Pitts, 2013), we build upon those interpretations throughout our interaction. It is not with certainty how much that initial impression formation would influence our upcoming perception of that opponent after

they have made one mistake, versus several in a row. While research shows how an opponent may be perceived instantaneously, in a non-simulated environment a specific initial impression may have be made, which could have been overriding their NVB at that specific moment in time. For example, if an athlete uses a part of their serving routine to close their eyes and have their head down, then the same action may come across as two contradicting information. Similar to this study, if the opponent has just seen the athlete for the duration of a serving routine they may depict the athlete as submissive, yet on the contrary, if the opponent is used to the athletes serving routine then a prolong duration of the same behaviour may result of an outcome of dominant behaviour. It would be interesting to do a similar study while taking the participant through a longer viewing time to see how perceptions may change throughout the game. A longer duration would also allow for impressions to be built upon, and changes to be made throughout to see if NVB would have similar effects if dominance is perceived after the opponent makes one mistake versus numerous in a row or even spaced out through the game. Longer duration would also allow for the second variable, game scores, to be more heavily considered into the equation. If the perceiver is constantly receiving information about the score it may have a bigger impact on characteristic traits and outcome expectancy than the present results.

Demographic factors also play an important role in the limitations that were present in this study. Due to the nature and restrictions of the study, a majority of the participants were novices in the sport, which may not be the same as how expert athletes would interpret the same stimuli. It would be interesting to see if expert players would demonstrate same differences as novice in regard to NVB and game situation in

response to an opponent's outcome expectations and psychological characteristics

Building upon the limitations of this study, there are several avenues of future directions that could be explored. First, it would be intriguing to see if the same pattern emerges when utilizing pro-athlete participants with similar ranking demonstrators. Second, it would be interesting to take clips of an actual tennis game from the start of a match, and stop it at specific times after an opponent has made a mistake. This would allow participants a chance to form initial impressions of an opponent and then have them make predications based on their opponents NVB after one mistake or even consecutive mistakes in a row. This process would assist in predicting whether the findings of this study hold true when an initial impression has already been developed. Another question that arises from this study is the importance of gaze. Previous research has consistently demonstrated that gaze is a crucial part of impression formation and expectancy of success (Greenlees et al., 2008). In multiple serving clips of Serena Williams in the Cincinnati Open (2013), it was shown that she did not engage in a prolonged gaze duration towards her opponent, however, she is seen to be very focused and assertive throughout all her serves. This questions the value that direct gaze has in a sporting event. Submissive expressions have been linked to serve as a function of avoidance (Sharrif & Tracy, 2011), yet there is a fine line between avoidance of eye contact and not making direct eye contact. Furley et al. (2008) demonstrated using point light displays that a dominant stance can be very valuable, despite not being able to view direct gaze or direction. Consequently, it would be interesting to see how both dominant and submissive NVB are portrayed with different amount of gaze (i.e., 90%

versus 10%) in order to determine how similar groups compare to one another and what difference direct eye contact would make.

5.4 Implications

The NVB of individuals can influence immediate reactions of opponents such as anxiety and concern *(*Dijker, 1987). Interpreting the opponents' NVB induces a change in our own perceived competence in successfully competing against them (Greenlees et al., 2007). These results have important implication for not only athletes, but also for coaches and practitioners. Utilizing the results that were obtained through this study, athletes can develop a positive presentation especially in high stress situations, where it becomes very beneficial to be portrayed as more dominant and assertive, inducing a desired impression of themselves. Since beliefs influence performance, athletes can be coached to look and feel more confident and therefore play better. While practicing such techniques, their opponents may not feel as competent, therefore shifting the situation in their favor. This study demonstrated that with only seconds of viewing a serving routine, significant differences can be seen from participants picking up on subtle changes in their opponents' NVB. This finding holds true for both individual and sport teams (Furley et al., 2014).

Athletes can use NVB through interaction, to make proper interpretations, and therefore decisions concerning their forthcoming move, and consequently altering their chances of success. During a sporting event, it becomes crucial to maintain gaze and/or a dominant body language, which reproduces beneficial interpersonal responses that has a great impact in behavior. Furthermore, this influences athletes to create favorable impressions in sporting encounters. Such cues can influence emotional and defensive

responses of the perceiver. As an athlete, becoming self-aware of not only ones' own emotions, but also their self- representation through NVB can have great implications concerning the success of their career.

NVB influences the judgment and assessment athletes make of their opponents. These early cues become important information that affect impression formation of athletes. This becomes a vital tool for athletes to use in order to diminish negative perspectives and enhance their abilities by the way they portray themselves. This study shows that while participants were not instructed to look at any specific aspect of the video, rankings did differ depending on what group the participant was placed in. This provides evidence that even subtle cues with regards to NVB become relevant information that opponents pick up on without being instructed to do. Through the limitation of this study, we can conclude a vast implication fit to be used by any upcoming athlete. Since the study used novice participants who were asked to rank novice players, it can therefore be concluded that despite the score of the game, portraying a dominant behaviour will allow an athlete to gain a competitive advantage over their opponent.

References

Anderson, C., & Berdahl, J. L. (2002). The experience of power: examining the effects of power on approach and inhibition tendencies. *Journal of Personality and Social Psychology, 83, 1362.*

Archer, J. (2006). Testosterone and human aggression: An evaluation of the challenge hypothesis. *Neuroscience & Biobehavioral Reviews*, *30*, 319–345.

Argyle, M. (1994). *The psychology of interpersonal behaviour.* (5th ed). London: Penguin.

Aviezer, H., Trope, Y., & Todorov, A. (2012). Body cues, not facial expressions, discriminate between intense positive and negative emotions. *Science, 338,* 1225-1229.

Aviezer, H. I. L. L. E. L., Hassin, R., Bentin, S. H. L. O. M. O., & Trope, Y. A. A. C. O. V. (2008). Putting facial expressions back in context. *First Impressions*, 255-286.

Berger, J., & Pope, D. (2011). Can losing lead to winning? *Management Science*, *57,* 817-827.

Bernstein, I. S. (1970). Primate status hierarchies. Primate behavior*: Developments in Field and Laboratory Research, 1*, 71-109.

Bohns, V. K., & Wiltermuth, S. S. (2012). It hurts when I do this (or you do that): Posture and pain tolerance. *Journal of Experimental Social Psychology, 48,* 341-345.

Booth, A., R. (1989). Testosterone, and winning and losing in human competition. *Hormones and Behavior, 23,* 556-571.

Burgoon, J. K. (1993). Interpersonal expectations, expectancy violations, and emotional communication. *Journal of Language and Social Psychology, 12,* 30-48.

Buscombe, R., Greenlees, I., Holder, T., Thelwell, R., & Rimmer, M. (2006). Expectancy effects in tennis: The impact of opponents' pre-match non-verbal behaviour on male tennis players. *Journal of Sports Sciences, 24,* 1265-1272.

Carney, D. R., Hall, J. A., & LeBeau, L. S. (2005). Beliefs about the nonverbal

expression of social power. *Journal of Nonverbal Behavior*, *29,* 105-123.

Carney, D. R., Cuddy, A. J., & Yap, A. J. (2010). Power posing brief nonverbal displays affect neuroendocrine levels and risk tolerance. *Psychological Science*, *21,* 1363-1368.

Carney, D. R., Yap, A. J., Lucas, B. J., Mehta, P. H., McGee, J. A., & Wilmuth, C. (2013). Power buffers stress–for better and for worse. Unpublished Manuscript.

Carpenter, C. R. (1965). *Naturalistic behavior of nonhuman primates*. Pennsylvania State Univ Pr.

Carroll, J. M., & Russell, J. A. (1996). Do facial expressions signal specific emotions? Judging emotion from the face in context. *Journal of Personality and Social Psychology*, *70,* 205.

Cesario, J., & McDonald, M. M. (2013). Bodies in context: Power poses as a computation of action possibility. *Social Cognition*, *31*, 260-274.

Cohen, R. A. (2011). Yerkes–Dodson Law. *In Encyclopedia of Clinical Neuropsychology* . Springer New York.

Cooper, H., DeNeve, K. M., & Mosteller, F. (1992). Predicting professional sports game outcomes from intermediate game scores. *Chance, 5*, 18-22.

Cox, A. E., Whaley, D. E. (2004). The influence of task value, expectancies for success, and identity on athletes' achievement behaviors. *Journal of Applied Sport Psychology, 16,* 103-117.

Cuddy, A. J., Wilmuth, C. A., & Carney, D. R. (2012). The benefit of power posing before a high-stakes social evaluation.

Cuddy, A. J., Wilmuth, C. A., Yap, A. J., & Carney, D. R. (2015). Preparatory Power

Posing Affects Nonverbal Presence and Job Interview Performance. *Journal of Applied Psychology, 100,* 1286.

Darwin, C. (1872). The origin of species by means of natural selection.

Darwin, C. (1965). The expression of the emotions in man and animals. (Vol. 526). University of Chicago press

De Waal, F. (1998). *Chimpanzee politics: Power and sex among apes*. Baltimore, MD: Johns Hopkins University Press.

Eccles, J. S., & Harold, R. D. (1991). Gender differences in sport involvement: Applying the Eccles' expectancy-value model. *Journal of Applied Sport Psychology*, *3,* 7-35.

Ekman, P. (1993). Facial expression and emotion. *American Psychologist, 48,* 384.

Essential tennis – Lessons and Instructions for Passionate Players. (Oct 16, 2013). *Serena Williams Serve- 2013 Cincinnati Open* [Video File]. Retrieved from https://www.youtube.com/watch?v=LbEtdSKN9VU

Feltz, D. L., & Riessinger, C. A. (1990). Effects of *in vivo* emotive imagery and performance feedback on self-efficacy and muscular endurance. *Journal of Sport and Exercise Psychology*, *12,* 132-143.

Fershtman, C., & Gneezy, U. (2011). The tradeoff between performance and quitting in high power tournaments. *Journal of the European Economic Association*, *9,* 318-336.

Furley, P., Dicks, M., & Memmert, D. (2012). Nonverbal behavior in soccer: the influence of dominant and submissive body language on the impression formation

and expectancy of success of soccer players. *Journal of Sport & Exercise Psychology*, *34*I*,* 61-82.

Furley, P., & Dicks, M. (2012). Hold your Head High. The influence of emotional versus neutral nonverbal expressions of dominance and submissiveness in baseball. *International Journal of Sport Psychology*, *43,* 294.

Furley, P., & Schweizer, G. (2014). The expression of victory and loss: Estimating who's leading or trailing from nonverbal cues in sports. *Journal of Nonverbal Behavior*, *38,*13-29.

Garrison, K. E., Tang, D., & Schmeichel, B. J. (2016). Embodying power: A preregistered replication and extension of the power pose effect. *Social Psychological and Personality Science*, *7*, 623-630.

Grant, R. W. (1986). The psychology of sport. Jefferson, NC: McFarland & Company.

Greenlees, I., Bradley, A., Holder, T., & Thelwell, R. (2005a). The impact of opponents' non- verbal behaviour on the first impressions and outcome expectations of table-tennis players*. Psychology of Sport and Exercise*, *6,* 103-115.

Greenlees, I., Buscombe, R., Thelwell, R., Holder, T., & Rimmer, M. (2005b). Impact of opponents' clothing and body language on impression formation and outcome expectations. *Journal of Sport and Exercise Psychology*, *27,* 39-52.

Greenlees, I., Leyland, A., Thelwell, R., & Filby, W. (2008). Soccer penalty takers' uniform colour and pre-penalty kick gaze affect the impressions formed of them by opposing goalkeepers. *Journal of Sports Sciences*, *26,* 569-576.

Guinote, A. (2007). Power affects basic cognition: Increased attentional inhibition and

flexibility. *Journal of Experimental Social Psychology, 43,* 685-697.

Hareli, S., Shomrat, N., & Hess, U. (2009). Emotional versus neutral expressions and perceptions of social dominance and submissiveness. *Emotion*, *9*, 378.

Heath, C., Larrick, R. P., & Wu, G. (1999). Goals as reference points. *Cognitive Psychology*, *38,* 79-109.

Herrald, M. M., & Tomaka, J. (2002). Patterns of emotion-specific appraisal, coping, and cardio vascular reactivity during an ongoing emotional episode. *Journal of Personality and Social Psychology*, *83,* 434.

Hess, U., Blairy, S., & Kleck, R. E. (1997). The intensity of emotional facial expressions and decoding accuracy. *Journal of Nonverbal Behavior*, *21,* 241-257.

Horn, T. S. (1985). Coaches' feedback and changes in children's perceptions of their physical competence. *Journal of Educational Psychology*, *77,* 174.

Izard, C. E. (1971). The face of emotion.

Lewis, K. M. (2000). When leaders display emotion: How followers respond to negative emotional expression of male and female leaders. *Journal of Organizational Behavior, 21*, 221.

Lewis, M. (2012). *Social Cognition and the Acquisition of Self*. Springer Science & Business Media.

Martens, J. P., Tracy, J. L., & Shariff, A. F. (2012). Status Signals: adaptive benefits of displaying and observing the nonverbal expressions of pride and shame. *Cognition & Emotions, 26*, 390-406.

Mehta, P. H., & Josephs, R. A. (2006). Testosterone change after losing predicts the decision to compete again. *Hormones and Behavior*, *50,* 684-692.

Mende-Siedlecki, P., Cai, Y., & Todorov, A. (2012). The neural dynamics of updating person impressions. *Social Cognitive and Affective Neuroscience*, nss040.

Merton, R. K. (1948). The self-fulfilling prophecy. *The Antioch Review*, *8*, 193-210. Michael Jordan (Basketball-Reference.com)

Moll, T., Jordet, G., & Pepping, G. J. (2010). Emotional contagion in soccer penalty shootouts: Celebration of individual success is associated with ultimate team success. *Journal of Sports Sciences*, *28,* 983-992.

Mui, P., Goudbeek, M., & Swerts, M. (2014, January). Is Perceived Expressivity of Game Players a Cue to Game Outcome Prediction Accuracy?. In *Proceedings of the Cognitive Science Society* (Vol. 36, No. 36).

Navarro, J., & Karlins, M. (2008). What every body is saying. New York, NY: Harper Collins, *27,* 90.

Pitts, A. (2013). You only have 7 seconds to make a strong first impression. *Business Insider*.

Ranehill, E., Dreber, A., Johannesson, M., Leiberg, S., Sul, S., & Weber, R. A. (2015). Assessing the robustness of power posing: No effect on hormones and risk tolerance in a large sample of men and women. Psychological science, 26, 653-656.

Riskind, J. H., & Gotay, C. C. (1982). Physical posture: Could it have regulatory or feedback effects on motivation and emotion? *Motivation and Emotion*, *6,* 273- 298.

Robbins, S. B., Lauver, K., Le, H., Davis, D., Langley, R., & Carlstrom, A. (2004). Do Psychosocial and study skill factors predict college outcomes? A meta-analysis. Psychological bulletin, *130,* 261.

Runeson, S., & Frykholm, G. (1983). Kinematic specification of dynamics as an informational basis for person-and-action perception: expectation, gender recognition, and deceptive intention. *Journal of Experimental Psychology*: General, *112,* 585

Segerstrom, S. C., & Miller, G. E. (2004). Psychological stress and the human immune system: a meta-analytic study of 30 years of inquiry. *Psychological Bulletin*, *130,* 601.

Shariff, A. F., & Tracy, J. L. (2011). What are emotion expressions for? *Current Directions in Psychological Science, 20,* 395-399.

Sherman, G. D., Lee, J. J., Cuddy, A. J., Renshon, J., Oveis, C., Gross, J. J., & Lerner, J.S. (2012). Leadership is associated with lower levels of stress. *Proceedings of the National Academy of Sciences*, *109,* 17903-17907.

Skowronski, J. J., & Carlston, D. E. (1987). Social judgment and social memory: The role of cue diagnosticity in negativity, positivity, and extremity biases. *Journal of Personality and Social Psychology, 52,* 689.

Stipek, D., Recchia, S., McClintic, S., & Lewis, M. (1992). Self-evaluation in young children. *Monographs of the Society for Research in Child Development*, i-95.

Sportsnetwork. 2009, August 16. Usain Bolt beats Gay and sets new Record - from Universal Sports. Retrieved from https://www.youtube.com/watch?v=By1JQFxfLMM.

Srull, T. K., & Wyer, R. S. (1989). Person memory and judgment. *Psychological Review*, *96*(1)*,* 58.

Tangney, J. P. (1997). How Does Guilt Differ from Shame?. *Guilt and children, 1.*

Tiedens, L.Z., Ellsworth, P. C., & Mesquita, B. (2000). Sentimental stereotypes:

Emotional expectations for high-and low-status group members. *Personality and Social Psychology Bulletin*, *26,* 560-575.

Todorov, A., & Uleman, J. S. (2002). Spontaneous trait inferences are bound to actors' faces: evidence from a false recognition paradigm. *Journal of Personality and Social Psychology, 83,* 1051.

Tracy, J. L., & Robins, R. W. (2008). The nonverbal expression of pride: evidence for cross cultural recognition. *Journal of Personality and Social Psychology*, *94,* 516.

Tracy, J. L., & Matsumoto, D. (2008). The spontaneous expression of pride and shame: Evidence for biologically innate nonverbal displays. *Proceedings of the National Academy of Sciences*, *105,* 11655-11660.

Van der Kamp, J., & Masters, R. S. (2008). The human Müller-Lyer illusion in goalkeeping. *Perception*, *37,* 951-954.

Warr, P.B., & Knapper, C. (1968). The perception of people and events. London, England: Wiley & Sons.

Weinberg, R. S., Gould, D., & Jackson, A. (1979). Expectations and performance: An empirical test of Bandura's self-efficacy theory. *Journal of Sport Psychology*, *1,* 320-331.

Weinberg, R. S. (1988). The mental advantage: Developing your psychological skills in tennis. *Human Kinetics Publishers*.

Williams, L. A., & DeSteno, D. (2008). Pride and perseverance: the motivational role of pride. *Journal of Personality and Social Psychology*, *94,* 1007.

Yap, D. F., So, W. C., Melvin Yap, J. M., Tan, Y. Q., & Teoh, R. L. S. (2011). Iconic

gestures prime words. *Cognitive Science*, *35,* 171-183.

Appendix A: Ethics Clearance

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

Social Science Research Ethics Board

Certificate of Ethics Clearance for Human Participant Research

DATE: March 18, 2016

PRINCIPAL INVESTIGATOR: SULLIVAN, Philip - Kinesiology

FILE: 15-185 - SULLIVAN

TYPE: Masters Thesis/Project STUDENT: Parmida Razavi
SUPERVISOR: Philip Sullivan

TITLE: The effects of demonstrating a submissive or dominant non-verbal behaviour on the perceived expectancy of an opponents skill execution immediately after a failure in different game context.

ETHICS CLEARANCE GRANTED

Type of Clearance: MODIFICATION Expiry Date: 2/28/2017

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

Modification: Two additional questions added to protocol.

The Tri-Council Policy Statement requires that ongoing research be monitored by, at a minimum, an annual report. Should your project extend beyond the expiry date, you are required to submit a Renewal form before **2/28/2017**. Continued clearance is contingent on timely submission of reports.

To comply with the Tri-Council Policy Statement, you must also submit a final report upon completion of your project. All report forms can be found on the Research Ethics web page at http://www.brocku.ca/research/policies-and-forms/research-forms.

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

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

We wish you success with your research.

Approved: K Maich

Kimberly Maich, Chair
Social Sciences Research Ethics Board

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

If research participants are in the care of a health facility, at a school, or other institution or community organization, it is the responsibility of the Principal Investigator to ensure that the ethical guidelines and clearance of those facilities or institutions are obtained and filed with the REB prior to the initiation of research at that site.

APPENDIX B: Informed Consent

Date: Winter of 2016 - Summer 2017 Project Title: Nonverbal influence on expectancy of success and impression formation in different game scenarios, immediately after an opponent's mistake.

Student Investigator (SI): Parmida Razavi, Department of Kinesiology, Brock University Email: parmida.razavi@brocku.ca Phone: (905) 688-5550 Ext.4787

INVITATION: Faculty Supervisor Philip Sullivan, PhD, Department of Kinesiology, Brock University Email: psullivan@brocku.ca Phone: (905) 688-5550 Ext.4787

All are welcome to take part in this research. The purpose of this study is to determine how different types of body language will alter the perception of an opponent immediately after a mistake was made within different game context. Exclusion criteria: professional tennis players.

WHAT'S INVOLVED: As a participant, you will be asked to fill out a quick demographic questionnaire, then read a script outlining a match between you and an opponent, followed by a short clip of your opponents serve, from which you will be required to rate your opponent on several different characteristics. This study should take about 15 minutes of your time.

POTENTIAL BENEFITS AND RISKS: There are no known or anticipated risks associated with participation in this study as well as no expected benefits for participants. From participating in this study, the scientific community can gain a better understanding of how much body language effects the perception of an opponent. As well it will assist to explain how an athlete can use body language to their advantage or avoid showing negative non verbal behaviour (NVB) that could be disadvantageous to their career.

CONFIDENTIALITY: All information provided is considered confidential; your name will not be included in the data collected in the study. Furthermore, because of our interest in the average responses of the entire group of participants, no one will be identified individually in any way.

Data collected during this study will be stored in a locked office. Data will be kept for two years following the completion of the study after which all data will be shredded. Access to this data will be restricted to Principal Student Investigator and the Faculty Supervisor.

VOLUNTARY PARTICIPATION: Participation in this study is voluntary. If you wish, you may decline to answer any questions or participate in any component of the study. Further, you may decide to withdraw from this study at any time and may do so without any penalty. If you wish to withdraw from the study, all your information will be shredded and destroyed.

PUBLICATION OF RESULTS: Results of this study may be published in professional journals and presented at conferences. Feedback about this study will be available from Parmida Razavi. If you wish to receive the results upon completion, you may do so by contacting parmida.razavi@brocku.ca.

CONTACT INFORMATION AND ETHICS CLEARANCE:

If you have any questions about this study or require further information, please contact Parmida Razavi or Philip Sullivan using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics Board at Brock University **15-185**. If you have any comments or concerns about your rights as a research participant, please contact the Research Ethics Office at (905) 688-5550 Ext. 3035, reb@brock- u.ca.

Thank you for your assistance in this project. Please keep a copy of this form for your records.

Consent Form: I agree to participate in this study described above. I have made this decision based on the information I have read in the Information-Consent letter. I have had the opportunity to receive any additional details I wanted about the study and understand that I may ask questions in the future. I understand hat I may withdraw this consent at any time.

Name:_____ Date: _____

Signature: _____

APPENDIX C: Questionnaires

Age:

Sex:

Years/months/weeks experience in playing tennis:

Please choose one:

Very True for me	Somewhat True for me				Very True for me	Somewhat True for me
____	____	I feel I'm not very good when it comes to playing sports	**OR**	I feel I'm really good at many sports	____	____
____	____	I am not quite so confident when it come to taking part in sporting activities	**OR**	I am the most confident when it comes to taking part in sporting activities	____	____

After Watching the clip by circling one number on on the following scale (1= very low and 7 =very high), please indicate how would you rate your opponent, Sam, on the following characteristics.

Perception of target player Scale

Not assertive	1	2	3	4	5	6	7	*Assertive*
Not competitive	1	2	3	4	5	6	7	*Competitive*
Novice	1	2	3	4	5	6	7	*Experience*
Unconfident	1	2	3	4	5	6	7	*Confident*
On edge	1	2	3	4	5	6	7	*Composed*
Not focused	1	2	3	4	5	6	7	*Focused*
Tense	1	2	3	4	5	6	7	*Relaxed*

Outcome expectation

By circling one number on the following scale (1= very low and 7 =very high), please indicate how would you rate your opponent on their power, accuracy and expectancy of success.

Power of shot.

Very weak	1	2	3	4	5	6	7	Very powerful

Accuracy of shot.

Very inaccurate	1	2	3	4	5	6	7	Very Accurate

Expectancy of Success

Will lost a point	1	2	3	4	5	6	7	Will gain a point

Terminology definitions:

** Power of a shot: How hard the opponent will hit the ball.*

** Accuracy of shot: The likelihood that the ball will get in the box without going outside or hitting the net.*

**Expectancy of success: The likelihood that the opponent will gain a point after the shot they made.*

APPENDIX D: Scenario A

Please read the following paragraph, upon completion notify the researcher and a short clip will be played, from which you will be asked to respond to a set of questionnaire on the following page

Today is tournament day and you're going head to head with your rival Sam. As an athlete, you know she/he has had about the same amount of experience as yourself. You have been preparing and anticipating this match for a long time, knowing it's one of the deciding matches that will get you that much closer to the next level in your athletic career. It's now more than half way through the game. Throughout the match so far, there has been a lot of great serves and plays but ultimately you're winning in the game at this point.

Sam has the upcoming serve, as the game gets a bit more intense he/she ends up missing his/her point from his/her first serve, and is now preparing for his/her second serve

APPENDIX D: Scenario B

Please read the following paragraph, upon completion notify the researcher and a short clip will be played, from which you will be asked to respond to a set of questionnaire on the following page

Today is tournament day and you're going head to head with your rival Sam. As an athlete, you know she/he has had about the same amount of experience as yourself. You have been preparing and anticipating this match for a long time, knowing it's one of the deciding matches that will get you that much closer to the next level in your athletic career. It's now more than half way through the game. Throughout the match so far, there has been a lot of great serves and plays but ultimately you're tied in the game at this point.

Sam has the upcoming serve, as the game gets a bit more intense he/she ends up missing his/her point from his/her first serve, and is now preparing for his/her second serve

APPENDIX D: Scenario C

Please read the following paragraph, upon completion notify the researcher and a short clip will be played, from which you will be asked to respond to a set of questionnaire on the following page

Today is tournament day and you're going head to head with your rival Sam. As an athlete, you know she/he has had about the same amount of experience as yourself. You have been preparing and anticipating this match for a long time, knowing it's one of the deciding matches that will get you that much closer to the next level in your athletic career. It's now more than half way through the game. Throughout the match so far, there has been a lot of great serves and plays but ultimately you're losing in the game at this point.

Sam has the upcoming serve, as the game gets a bit more intense he/she ends up missing his/her point from his/her first serve, and is now preparing for his/her second serve.