MOTIVATION AND ATTRIBUTIONS: WHY DO TEAMMATES GET INJURED?

By

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LIST OF ABBREVIATIONS

Abbreviation   **Description**

LOC – Locus of Control

PLOC – Perceived Locus of Causality

I. INTRODUCTION

When it comes to participation in sports, one thing is for certain: Injuries always happen. Due to these injuries, athletes often miss practice time and occasionally competitive play. These injuries tend to be facilitated by various personality factors. (Salas, 2015; Doty, 2017; Johnston, & Carroll, 1998; Tracey, 2003). These personality factors play a key role in to returning to the sport as well as continued participation in the sport. Studies have shown how personality factors can influence many different factors regarding an athlete's performance, including injuries, motivation, actions, and attributions (Salas, 2015; Doty, 2017; Johnston, & Carroll, 1998; Tracey, 2003). While athletes all have their own unique personality factors that help facilitate many elements of their own sport, it can be assumed that these factors can also impact those around them, such as teammates and coaches by building, maintaining, or enhancing relationships with these individuals.

The purpose of this study is to determine whether there is a relationship between athletes' most dominant type of motivation and the perceived locus of causality when considering teammate injuries during both practice drill and competitive play situations. To assess motivation and perceived locus of causality of teammate injury in these situations, athletes will be tested to determine their motivation type and their perceived locus of causalities of each hypothetical situation (practice and competitive play). Analyses will test whether specific motivation types will predict specific perceived locus of causality responses for practice drill and competitive play situations.

II. LITERATURE REVIEW

Introduction

This section will examine the background literature for this study. Specifically, how different personality factors have been utilized and observed through other studies and how they can be relevant to the current study. Additionally, this section will examine the link between motivation and sports. While the current study is testing motivation and perceived locus of causality, it is important to determine and expand upon the link between motivation and perceived locus of causality in injuries to a teammate as this can lead to many different implications for sports teams and organizations when it comes to the dynamics of the team.

Team Dynamics

When it comes to sports in both individual and team sports, there is usually some sort of team dynamics that are involved in the success of the individual or team. These team dynamics can attempt to explain psychological forces such as personality styles, or organizational culture. These forces can impact the behavior such as communication, cohesion, and performance of individuals working together in teams (Wakeman, & Langham Jr., 2018). A framework that is taken from aviation training, Crew Resource Management, or cockpit resource management (CRM) is a set of training procedures that focuses and promotes interpersonal communication, leadership, and decision making in team scenarios (Wakeman, & Langham Jr., 2018). While CRM was created to improve flight crew effectiveness, safety, and efficiency, it is often used in other fields of work such as in medicine and surgery to promote teamwork within medical professionals and

patient safety (Wakeman, & Langham Jr., 2018). A study at the Baylor College of Medicine found that CRM-based training improved communication in anesthesiologists and surgeons as well as improved performance during pre-operational briefings, and the administration of antibiotics and other medical tools (Awad, Fagan, Bellows, Albo, Green-Rashad, De la Garza, & Berger, 2005). In an article written by Wakeman and Langham Jr. (2018), the two believe that surgeons will be expected to engage and take lead to bring a team approach in this new area of patient care as CRM has been shown to increase communication as well as reduce morbidity and mortality of patients in medical settings. With this information, it can be assumed that since sports are predominately team based, these team dynamics can also be applied to athletes, coaches, general managers, and athletic training staff to improve quality of overall performance of the team or organization.

In sport, team dynamics plays a huge factor in athlete experience. Dynamics such as team cohesion can be beneficial in the growth of a team as well as establishing and maintaining team or organizational culture (Filho, Tenenbaum, & Yang, 2015). Team cohesion is considered to be multidimensional and includes social and task components (Filho, Tenenbaurm, & Yang, 2015). Breaking down the social and task components, social cohesion looks at the bonding of teammates for social reasons while task cohesion looks at the degree of the bond between team members when they are working together (Filho, Tenenbaum, & Yang, 2015). However, depending on the level of cohesion and conflict between peers and teammates, this can also have adverse effects that could also be detrimental to success in team performance. One study that looked at adolescent female athletes found that sport peer relationships can result in conflict behaviors that can

stem from various reasons such as jealousy in playing time, personal characteristics such as attitude and personality, significant others' influence, and even victimization (Partridge, & Knapp, 2015). This can ultimately impact cohesion in a negative manner that is accurately stated and can acknowledged by athletes. This is best illustrated by a participant's response in this particular study: "…Say I'm the 1 guard and I'm arguing with the 2 guard and now she's not passing it to me. They now can double team the post and can force a turnover and cause more tension because she's not going to pass me the ball even if I'm open." (pg. 122). This indicates that social factors can impact perception of emotional responses and motivation as well as impacting cohesion between teammates.

When it comes to cohesion, the role of coaches can impact the performance and success of sports teams. A study done with high school baseball and soccer teams athletes showed that coaches whose athletes report higher task and social cohesion within their teams rated highest in positive feedback and training instructions (Murray, 2006). In team sports such as football, basketball, baseball, and soccer, the interdependence between athletes, coaches, and the rest of the staff affects the need of team cohesion that can contribute and enhance rates of success.

Injuries and Perception of Injuries in Athletes

Injuries are always tough on athletes during their career. Since injuries are common in sports, they can create negative psychological effects on an athlete during their career (Johnston, & Carroll, 1998; Tracey, 2003; Von Ronsen, Kottorp, Fridén, Frohm, & Heijne, 2018). These factors associated with injury can include frustration, depression, lack of motivation, fear of re-injury, low self-esteem, and anger (Johnston, &

Carroll, 1998; Tracey, 2003). In a study that looked at adolescent elite athletes in various sports, it was found that those in the focus groups of the study reported loss of identity while injured (Von Ronsen, Kottorp, Fridén, Frohm, & Heijne, 2018). While this study looks at adolescent elite athletes, these psychological factors are also present in adult elite athletes (Brewer, Selby, Linder, & Petitpas, 1999). It is important to know and understand how an athlete perceives injuries, especially their own but there is little known about the perception of others, in this case, teammate injuries. It is important to understand that when playing sports in both team and individual settings that the perception of others, being teammates or coaches, could possibly influence aspects of sports such as performance, team dynamics, team cohesion, injuries, and rehabilitation. If we can understand an athlete's perception, then it can be assumed that expressive behavior towards teammates, coaches, and others can be understood.

Expressing behavior can be influenced by the concept of Self-Monitoring (Snyder, 1974). For someone to be high self-monitoring suggests that the individual tends to monitor their surroundings and change their behaviors to fit in their environment. On the other hand, low self-monitors use their inner beliefs and values in deciding how to behave in their environment. Snyder found that high self-monitoring individuals are particularly sensitive to the expression and self-presentation of others in social situations (Snyder, 1974). Low self-monitoring individuals have little concern for presentation and expression and pay less attention to the expression of others. Elements of Self-Monitoring could possibly impact an athlete's perception of themselves regarding performance, injuries, and injury rehabilitation based off previous research done in

perception of injuries (Johnston, & Carroll, 1998; Tracey, 2003; Von Ronsen, Kottorp,

Fridén, Frohm, & Heijne, 2018).

Locus of Control and Injuries

Personality has an impact on how a person behaves and interprets what happens

to him or her (Rotter, 1996; Ng, Sorensen, & Eby, 2006) and has been shown to affect

how individuals perform in places such as the work setting (Ng, Sorensen, & Eby, 2006).

One personality factor that has shown to have an impact on work performance is Locus

of Control (LOC; Rotter, 1996; Ng, Sorensen, & Eby, 2006). Rotter (1966) defines LOC

as individual beliefs about how much control they have over the situation they are in and

what happens to them. LOC considers these beliefs as internally with themselves or

externally controlled by others or outside forces. Those with an internal LOC will

perceive that they have more control over their environmental situations while those with

an external LOC will perceive that they have little to no control of their environmental

situations. Individuals with an internal LOC are more likely to have favorable work

outcomes such as positive task and social experiences, and higher levels of job

motivation (Ng, Sorenson & Eby, 2006).

If working as an athlete would be like working in other careers, it is possible that

LOC would have an impact on athlete performance, injury, and the injury rehabilitation

process. Stressful events are likely to be perceived differently depending on the elements

of one's personality. For example, some people become ill under significant amounts of

stress, while others who experience the same or even higher stressors, do not (Kobasa,

1979). This suggests that personality may have something to do with an individual

staying healthy. While this study specifically looks at one's health, being both physically

and mentally healthy for athletics could impact performance on and off the field. This could ultimately affect the impact of injury as well as the injury rehabilitation process.

Previous work (Salas, 2015) assessed the relationship between personality dimensions, such as Locus of Control, and athlete reports of injury and recovery time. While there were no significant effects found in this study, it was found that there was a trend with locus of control in relation to an athletic injury. The trend that was found suggests that it is possible that as internal LOC increases, so does the individual's perceived readiness to return to athletic play from injury. A recent study by Doty (2017) also looked at personality traits in relation to recovery and response to injuries in athletes. He found that athletes that reported higher internal locus of control levels tend to recover faster than others from athletic injury.

Effects of Personality Traits

Another key component for athletes is the social support that they receive from family, teammates, and coaching staff. Studies have shown that individuals with high levels of social support generally are psychologically and physically healthier than those with low levels of support (Petrie, Deiters, & Harmison, 2013). A study done by Andersen and Williams (1999) showed that collegiate athletes low in levels of social support, more negative life events, and greater peripheral narrowing during stress were more likely to get injured. Peripheral narrowing regarding injuries is defined as the failure to detect peripheral cues that could potentially cause injury. An example of this would be a quarterback being "blind-sided" on a passing play. A study done by Petrie, Deiters, & Harmison (2013) looked at the effects of social support, athletic identity, and mental toughness in Division I football players. Mental toughness has been collectively

defined as innate or learned values, attitudes, cognitions, emotions, and behaviors that impact how athletes assess and manage negative and challenging situations to achieve their own goals (Coulter, Mallet, & Gucciardi, 2010; Petrie, Deiters, & Harmison, 2013). Their findings suggest that those who have low levels of mental toughness and family social support are more likely to miss practice and competition when dealing with an injury and experiencing high levels of stress. While these studies look at different personality factors, it is important to take into consideration that an athlete's motivation could possibly influence outcomes in sports.

Motivation in Sports

Motivation can be defined as the process where goal-directed activities are energized, directed and sustained (Schunk, & Usher, 2012; Schunk, Pintrich, & Meece, 2008). There are different types of motivation: external motivation, introjected motivation, identified motivation, and intrinsic motivation (Turban, Tan, Brown, & Sheldon, 2007). *External motivation* (Turban, Tan, Brown & Sheldon, 2007; Pelletier, Vallerland, Tuson, Brière, & Blais, 1995) is a type of motivation that is the most controlled, where individuals can act to obtain a specific reward or to avoid a specific punishment. An example of this could be an athlete performing well to obtain recognition, a higher salary, or avoiding a fine in professional sports settings. *Introjected motivation* (Turban, Tan, Brown, & Sheldon, 2007) can be defined as a form of motivation in which individuals can act to avoid emotions of guilt or anxiousness. Examples of this can include an athlete acting to not disappoint a coach or teammate or feeling the guilt of being responsible for losing a competition. *Identified motivation* (Turban, Tan, Brown, & Sheldon, 2007) can be defined as a form of motivation in which

individuals act in a way in which is consistent with their own unique values and ideals. Examples of this would be an athlete being motivated to show up to practice earlier or having longer film sessions due to the athlete as being a perfectionist or hard worker. *Intrinsic motivation* (Turban, Tan, Brown, & Sheldon, 2007; Pelletier, Vallerland, Tuson, Brière, & Blais, 1995) can be defined as individuals acting in a certain manner, because they find the action or activity inherently interesting or pleasurable to themselves. Examples of this can include a person participating in recreational sports at a local gym because they feel good during play.

To measure motivation of athletes, a study was done by Pelletier, Vallerland, Tuson, Brière, and Blais (1995) in which they found that the Sport Motivation Scale (SMS) had adequate levels of validity and reliability in comparison to the original French-Canadian version. The SMS looks at three different types of motivation: Intrinsic, Extrinsic, and Amotivation. As mentioned, *Intrinsic motivation* looks at an individual engaging in activities for their own pleasure or satisfaction. *Extrinsic motivation* can be defined as behaviors that are engaged as a means to an end and not for the individual's own sake (Pelletier et al., 1995; Deci, 1975). An example of this from an athlete would include playing and performing well to receive a paycheck or a contract from their organization they represent. *Amotivation* can be defined as a form of learned helplessness (Abramson, Seligman, & Teasdale, 1978). Those that have *amotivation* are individuals who often experience feelings such as incompetence or even lack of control when being asked about their own sport (Deci & Ryan, 1985). Usually these individuals that have amotivation lack both intrinsic or extrinsic motivation and do not give any good reasons why they continue to practice or compete in sport and eventually begin to question if they

should continue practicing their sport (Pelletier et al., 1995). These types of motivation are broken down into more specific dimensions of motivation: *Intrinsic motivation to Know*, *Intrinsic motivation toward Accomplishments*, *Intrinsic motivation to Experience Stimulation*, *External Regulation, Introjection, Identification* and *Amotivation*.

Intrinsic motivation to Know is defined as performing or acting in an event or activity for the pleasure and satisfaction of experiences while gaining the knowledge of something new (Pelletier et al., 1995). This subtype looks at various constructs such as curiosity, needing to know and understand concepts, and exploration. *Intrinsic motivation toward Accomplishments* can be defined as engaging in activities for the pleasure and satisfaction that is achieved when one pursues accomplishments or create something (Pelletier et al., 1995). An example of this type of motivation would be an athlete attempting to master a certain technique (ex: a basketball player mastering dribble moves combinations). *Intrinsic motivation to Experience Stimulation* can be defined as an individual engaging in activities to experience certain stimulating sensations such as fun, excitement, sensory pleasure, or aesthetic experiences (Pelletier et al., 1995). Examples of this type of motivation can include an athlete playing their respective sport for the fun or excitement that it brings or experiencing the rush feeling during practice or competitive play of a sport. *External Regulation* is defined as a type of extrinsic motivation in which a behavior is controlled by an external source (Pelletier et al., 1995). External sources could be material rewards or different constraints that are imposed by others. Examples of this can include an athlete practicing hard to receive praise from coaches and fans. With this type of motivation, the sport is not performed by an athlete necessarily for fun, but to obtain rewards or avoiding some negative consequence from

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outside sources such as coaches or family. *Introjection* is a type of extrinsic motivation

that can be defined as a former external source being internalized to where the external

resource is not needed to engage in a behavior (Pelletier et al., 1995). Behaviors are then

internalized through reinforcement. An example of this would be an athlete feeling

pressure to participate in a sport due to having to maintain a certain physique.

Amotivation is the last of the different types of motivation. As mentioned before, these

individuals that have amotivation lack both intrinsic and extrinsic motivation and do not

give any good reasons why they continue to practice or compete in sport and eventually

begin to question if they should continue practicing their sport (Pelletier et al., 1995).

Motivation and Competition

Different studies that look at motivation in sports also look at competition in

sports. Competition (Deutsch, 1969) can be defined as two or more people or groups

having opposing goals. In a sporting competition, one person or group will essentially

win while the other must lose. There is a distinct classification of competition that was

introduced by Ross and Van den Haag (1957) which competition is either indirect or

direct. Indirect competition can be defined as an individual or group performing against

interpersonal standards. For example, an individual will work hard in lifting weights to

meet a higher personal best in that lift. For direct competition, it can be defined as

individuals struggling and competing against others. An example of this would be two

different basketball teams opposing each other by hindering the other team's ability to

score points while attempting to score points for their own team.

Indirect competition is usually a freely chosen activity that individuals choose to

which helps improve their competence (Deci, & Ryan, 1985). This could ultimately

maintain or enhance intrinsic motivation. A study by Weinberg and Ragan (1979) showed that participants reported higher levels of enjoyment in the indirect competition task and found it more leisurely than non-competition subjects. In other words, if an individual was working towards an interpersonal goal, they had more enjoyment than those who did not work towards an interpersonal goal.

In direct competition, motivation can be easily influenced from other individuals that are in opposition. One study observed the effects of direct competition on intrinsic motivation by looking at direct competition using Soma puzzles between an experimental accomplice and a subject (Deci, Detley, Kahle, Abrams, & Porac, 1981). It was found that competition decreased reported levels of intrinsic motivation. Their study noted that this effect was particularly strong in female athletes.

Because of the literature of the previous studies, understanding motivation is essential when attempting to understand how it can affect an athlete and those around them. Most of the literature looks at how motivational elements affect the athlete themselves (Deci, Detley, Kahle, Abrams, & Porac, 1981; Weinberg, & Ragan, 1979), however there is little known to how motivation can influence those around the athlete such as how it can affect teammates or coaches. This study aims to better understand these motivational elements and how they can affect those around the athlete.

Self-Determination Theory

In relation to LOC, self-determination theory (SDT), an organismic-dialectical theory, suggests that humans' natural or intrinsic functioning can be either facilitated or impeded by social context (Deci, Eghariri, Patrick, & Leone, 1994). When it comes to

sports and exercise, SDT can play a big role in the flourishing or hinderance of an individual. For example, when athletes play for approval from parents or coaches, scholarships or money, and fame, this can change their views of and relationships with sports. A study undertaken by Ryan (1977) examined collegiate athletes and the impact of receiving scholarships and the participants' desires to continue playing their respective sports after college. It was found that male scholarship athletes, primarily football players, gave more extrinsic reasons to continue playing their respective sport and reported less enjoyment than non-scholarship athletes. In a follow up study, Ryan (1980) used information-control distinction of cognitive evaluation theory (CET) to predict an interaction between athletic scholarships and the scholarship receiver's gender on intrinsic motivation. He predicted that male athletes who received a scholarship would see themselves as performing the sport for the money and experience less enjoyment from the sport in comparison to non-scholarship males as the reward would be deemed controlling. CET focuses on social-contextual factors in sports. These factors consist of rewards, negative feedback, pressure from competition, and different coaching climates (Ryan, & Deci, 2017). For women, he believed that female athletes receiving scholarships would experience it as informational regarding their own competence in their respective sport or craft. He found that scholarships for women did not reduce their intrinsic motivation for sports. For males, he had different reactions between football players and wrestlers. Football players reported less intrinsic motivation while wrestlers had the same results as women. This suggests that there is a pay for play complex issue in respect to one's intrinsic motivation due to the high frequency of football scholarships vs other sports such as wrestling. These studies show how social contexts and external

resources can influence an individual's motivation (Deci, 1975; 1980; Deci, & Ryan, 2017). This adds to the interest of how motivation can influence the athlete and the perception of others around the athlete.

Personal Locus of Causality

When looking at SDT, perceived locus of causality (PLOC) is a measure of felt autonomy for certain behavior (Ryan & Connell, 1989). PLOC, an idea that was introduced by Heider (1958), was further studied by deCharms (1968) particularly to understand the explanation of behavior as opposed to outcomes. DeCharms believed that there is a further distinction within personal causation and internal behavior between an *internal PLOC* and an *external PLOC*. PLOC ranges along a continuum from internally to externally motivated behavior and can measure the reasons for one's actions (Turban, Tan, Brown, & Sheldon, 2007). This distinction between internal and external PLOC has been crucial for studies of intrinsic versus extrinsic motivation and perceived autonomy (Deci & Ryan, 1985).

DeCharms (1968) also believed there is a huge difference between interpersonal attributions and the knowledge that causes a person's unique behavior. This difference is believed to lie "…at the center of all motivation theory" (p. 319). Individuals can verify the motivational status of their own actions directly due to their actions being enacted on their own volition. However, it is much more difficult to do this with others as researchers can only refer to observations as primary data due to having to rely on either the presence or absence of environmental factors and the relationship with the action observed.

An athlete's motivation could possibly be used to predict attributions of teammate injury in relation to the individual's PLOC. As mentioned, perception of injuries is an area that has been researched thoroughly alongside motivation, PLOC, and SDT in their impact with sports and performance. However, an important aspect of the perception of teammates and their injuries is currently overlooked as it has been shown that there are high levels of interdependence in sports between players, coaches, and other athletic staff. Using an attribution model by Weiner, Frieze, Kukla, Reed, Rest and Rosenbaum (1971), this study will attempt to outline several elements, including motivation and PLOC and the potential relationship between personality and athlete perception of teammate injuries.

Weiner's Attribution Model and Theory

The basis for this study was derived from a model created by Weiner, Frieze, Kukla, Reed, Rest, and Rosenbaum (1971). This model looks at four causal elements: ability, effort, task difficulty, and luck. This model attempts to find an explanation of the outcome at hand, either a success or a failure of an event that works towards an achievement or goal (Weiner, Frieze, Kukla, Reed, Rest, & Rosenbaum, 1971; Weiner, 2010). In this model, a person assesses their own or someone else's ability or skill level, the amount of effort that was exerted, how difficult the task was, and the magnitude and direction of luck during the event.

When looking at the four components, two of the components (ability and effort) are qualities of the person undergoing the activity. The other two components (task difficulty and luck) are considered external or environmental properties (Weiner et al., 1971). By using these four elements, the model contains two basic components: Locus of

Control (internal vs external) and the degree of stability (fixed vs variable; stable vs unstable). Stability looks at the variable factors that can influence success or failure such as luck or effort (Weiner et al., 1971). The combination of locus of control and degree of stability could possibly give insight on attributions of others.

The purpose of this model was to provide insight and a framework for the prediction of perceived locus of causality (See Figure 1). Researchers attempted to use this model to determine the relationship between perceived locus of causality and motivation. Researchers hypothesized that specific types of motivation could predict perceived locus of causality of teammate injuries based off of the four different causal elements of ability, effort, task difficulty, and luck by reflecting locus of control and the stability of the situation.

Purpose of Study and Hypotheses

The purpose of the current study is to determine if there is a relationship between motivation and how that may influence an individual's PLOC as to why a teammate received an injury. My three hypotheses are as follows:

- H1: Those who are more intrinsically motivated will attribute teammate injuries to *internal* stable and unstable reasons (such as ability and mood/effort)

- H2: Those who are more extrinsically motivated will attribute teammate injuries to *external* stable and unstable reasons (such as task difficulty and luck)

- H3: Amotivated individuals will attribute teammate injuries to both *internal* and *external* unstable conditions (such as mood/effort and luck).

III. RESEARCH DESIGN & METHODS

Participants

A total of 78 subjects were recruited to participate in the study. However, at the end of the study, only 69 participants were used during analysis due to the other 9 participants not fully completing the study. Participants were asked to choose one or more races they were considered. Overall, participants identified themselves as Caucasian 50.7%, African-American 47.8%, Alaskan/Native American 1.4%, Asian 2.9% or Other (Black Caribbean, Hispanic, Mexican) 9.6%. Sports reported included football, basketball, volleyball, baseball, softball, track and field, tennis, soccer, golf, and dance (see Table 1). Participants were a mixture of scholarship and walk-on athletes and had various amounts of years of practicing their sport. Participants also stated whether they were a starter (69.6%) versus not a starter (30.4%), if they have received prior injury (68.1%) or not, and if the injury required time off if those reporting prior injury had required time off due to their injury (68.1%).

Procedure

Participants were recruited via email from various schools across Texas and via study hall at Texas State University. Participants were NCAA athletes in Division I-III across various sports. Participants were not able to receive any form of compensation as it would be difficult to adhere to NCAA policies regarding equal compensation across all athletes participating in the study since they were recruited from across Texas. Athletes were encouraged by coaching, teaching, and athletic training staff to complete the survey study.

For those that were recruited via email, a link was given to their school emails which took the participants to the online Qualtrics Survey. Participants were given a brief explanation of the study in which if participants gave consent, they were prompted to continue with the study. The survey process took anywhere between 10-15 minutes to complete. Once completed, participants were informed that their response was recorded, and they were finished with the study.

For participants that were recruited via study hall, the researcher printed out copies of the survey in which participants would fill out. The researcher briefly explained the study that participants were asked for verbal consent to participate in the survey. Once consent was given, the participants were given the survey to complete. The survey process for this method also took anywhere between 10-15 minutes to complete. Once the participants handed in their survey with completed responses, they were thanked for their time by the researcher. Once completed, the researcher recorded and input the responses to the online survey on Qualtrics to keep the data together with the online responses.

Measures

The first section of the survey consisted of demographic questions (see Appendix A; see Table 1). Demographics that were recorded included gender, sport, division of school, starter/non-starter status, years of playing, scholarship/walk-on status, and prior injury (if so, did injury require time off). Once the participant had finished this section, they continued to the next section. Division of sport was asked to determine the size of the school in which the participant was participating in athletics, ranging from Division I-III.

Motivation was assessed with the Sport Motivation Scale 28 (SMS-28; Pelletier, Fortier, Vallerand, Tuson, Brière, & Blais, 1995; see Appendix B). This is a 28-item questionnaire that is used to measure intrinsic/extrinsic motivation, and amotivation. Responses are recorded on a 7-point Likert scale from a range of 1 meaning "does not correspond at all" to 7 meaning "corresponds exactly". Items are broken down into different subscales: Intrinsic motivation, Extrinsic motivation, and Amotivation.

Intrinsic motivation was broken down into three categories: to Know, to Accomplish, and to Experience Stimulation. Items # 2, 4, 23, and 27 measure Intrinsic motivation – to Know (ex: For the pleasure it gives me to know more about the sport that I practice; For the pleasure of discovering new training techniques). Items # 8, 12, 15, and 20 measure Intrinsic motivation – to Accomplish (ex: Because I feel a lot of personal satisfaction while mastering certain difficult training techniques; For the pleasure I feel while improving some of my weak points). Items # 1, 13, 18, and 25 measure Intrinsic motivation – to Experience Stimulation (ex: For the pleasure I feel in living exciting experiences; For the excitement I feel when I am really involved in the activity).

For Extrinsic motivation, there were three different categories: Identified, Introjected, and External Regulation. Items # 7, 11, 17, and 24 measure Extrinsic motivation – Identified (ex: Because, in my opinion, it is one of the best ways to meet people; Because it is one of the best ways I have chosen to develop other aspects of myself). Items # 9, 14, 21, and 26 measure Extrinsic motivation – Introjected (ex: Because it is absolutely necessary to do sports if one wants to be in shape; Because I must do sports to feel good myself). Items # 6, 10, 16, and 22 measure Extrinsic

motivation – External Regulation (ex: Because it allows me to be well regarded by people that I know; For the prestige of being an athlete).

The last subscale is for Amotivation in which was measured by items # 3, 5, 19, and 28 (ex: I used to have good reasons for doing sport, but now I am asking myself if I should continue doing it; I don't know anymore; I have the impression of being incapable of succeeding in this sport).

The final section of the survey consisted of two basic injury scenarios that were constructed by the researcher (see Appendix C). In one scenario, it states that a teammate received an injury in practice and the other states that a teammate receives an injury during competition. It is expected that there will be a difference in results based on the context of the situations since athletes can perceive things differently in practice vs competitive play. For both scenarios, the participants are given a series of four choices that reflect their PLOC of each injury that will measure the dependent variable. Answer choices consist of:

- The teammate did not possess the required ability for the task. (internal stable, scored as 1)

- The teammate did not put in enough effort for the task. (internal unstable, scored as 2)

- The task was too difficult for the teammate. (external stable, scored as 3)

- The teammate was unlucky during the task (external unstable, scored as 4)

Once completed, the participants received a prompt thanking them for their time and informing them that the study was over.

A recoding process was done for each of the participants SMS-28 responses to categorize each participant into one of three categories: Intrinsic (coded as 0), Extrinsic (coded as 1), and Amotivation (coded as 2). Depending on which category total was highest, participants were categorized into one of these values (Ex: if highest value was an Intrinsic category, the participant was given a value of 0; if highest value was an Extrinsic category, the participant was given a value of 1; if highest value was Amotivation, the participant was given a value of 2).

Another recoding process to determine internal vs external responses and stable vs unstable responses was also done in preparation for statistical analysis for the first two hypotheses regarding Intrinsic and Extrinsic motivation. When looking at PLOC responses, if participants chose answers 1 or 2, then their responses were recoded as a 1 to show that their answer was an internal response. If the participant would choose answers 3 or 4, then their responses were recoded as a 0 to show that their answer was an external response. This process was done for both questions to look at both practice drill and competitive play scenarios.

The same process was also done with the stable vs unstable responses to test the third hypothesis regarding Amotivation. When looking at PLOC responses, if the participants chose answers 1 or 3, then their responses were recoded as a 1 to show that their answer was a stable response. If the participant would choose answers 2 or 4, then their responses were recoded as a 0 to show that their answer was an unstable response. This process was also done for both questions to look at both practice drill and competitive play scenarios.

Statistical Analysis

All data was assessed for missing values, outliers and normality. Binomial Logistic Regressions were run on both questions given in the PLOC constructed portion of the survey. The independent variable for these analyses was the participant motivational category given to each participant (Intrinsic, Extrinsic, Amotivation) while the depended variables that were looked at were the internal vs external and stable vs unstable responses for each PLOC question that regarded practice drill and competitive play scenarios. Analyses were conducted with the IBM Statistical Package for the Social Sciences (SPSS) and alpha level was set to $\alpha = .05$.

IV. RESULTS

Four different logistic regressions were used to analyze the data set. This method of analyses was chosen due to the having categorical variables for both dependent variables and independent variables. The dependent variables that were used were the internal vs external and the stable vs unstable responses for both scenarios. The independent variable used for the analyses was the motivational category that was given to each of the participants: Intrinsic, Extrinsic, or Amotivated.

A logistic regression was performed to determine the effects of motivation and the PLOC responses regarding practice drill and competition scenarios. The first binary logistic regression looked at the motivational category of each participant and the PLOC responses for practice drills regarding internal and external responses (see Table 2; see Figure 2). The logistic regression model was not statistically significant x^2 (2) = .399, $p >$ .05. The model explained 8% (Nagelkerke R^2) of the variance and correctly classified 73.9% of cases. The results show that Intrinsic and Extrinsic motivation ($p > .05$) does not predict Internal vs External PLOC responses in athletes for practice drill situations in the directions stated in the hypotheses for Internally and Externally motivated individuals.

The second binary logistic regression looked at the motivational category of each participant and the PLOC responses for competitive play regarding internal vs external responses (see Table 3; see Figure 3). The logistic regression model was not statistically significant x^2 (2) = 1.564, $p > .05$. The model explained 4.7% (Nagelkerke R^2) of the variance and correctly classified 89.9% of cases. These results show that Intrinsic and Extrinsic motivation ($p > .05$) does not predict Internal vs External PLOC responses in

athletes for competitive play situations in the directions stated in the hypotheses for Internally and Externally motivated individuals.

The third binary logistic regression looked at the motivational category of each participant and the PLOC responses for practice drills regarding stable vs unstable responses (see Table 4; see Figure 4). The logistic regression model was not statistically significant x^2 (2) = .182, p > .05. The model explained 0.4% (Nagelkerke R^2) of the variance and correctly classified 75.4% of cases. These results show that Amotivation (p > .05) does not predict Stable vs Unstable PLOC responses in athletes for practice drill situations in the directions stated in the hypothesis Amotivated individuals.

The fourth binary logistic regression looked at the motivational category of each participant and the PLOC responses for competitive play regarding stable vs unstable responses (see Table 5; see Figure 5). The logistic regression model was not statistically significant x^2 (2) = .397, p > .05. The model explained 1.6% (Nagelkerke R^2) of the variance and correctly classified 94.2% of cases. These results show that Amotivation (p > .05) does not predict Stable vs Unstable PLOC responses in athletes for competitive play situations in the directions stated in the hypothesis Amotivated individuals.

V. DISCUSSION

The purpose of this current study was to determine if there was a relationship between individual PLOC and motivation in both competitive play and practice when attributing the cause of an injury of a teammate. It was hypothesized that motivation was a predictor when an athlete attributes a cause of injury to a teammate during competitive play or during practice drills. Specifically, the first hypothesis stated that those more intrinsically motivated will attribute teammate injuries to internal stable and unstable reasons (ability and mood/effort). With the current results, it is indicated that being intrinsically motivated did not predict attribution of teammate injuries to internal stable and unstable reasons. For the second hypothesis, it was stated that those more extrinsically motivated will attribute teammate injures to external stable and unstable reasons (task difficulty and luck). It was shown that being extrinsically motivated did not predict attribution of teammate injuries to external stable and unstable reasons. For the third hypothesis, it was stated that those that are Amotivated will attribute teammate injuries to stable and unstable reasons (mood/effort and luck). It was shown that being Amotivated did not predict attribution of teammate injury to stable and unstable reasons. As a result, none of the hypotheses were supported by the current data set. While the predictions for this study were not supported by the data, it is possible that the participants were more influenced by different factors such as the sport that they play, scholarship status, or starter status.

DeCharms (1968) suggests that the attribution process can be viewed as a type of "matching procedure" during interaction. When we look at the attribution process in the work place, in this case, the locker room, practice field, or competitive field, individuals

observe interactions from others. While these observations are being done, the individual already has a storehouse of knowledge due to past experiences and personal knowledge. When comprehending what is being observed, the individual has some idea that allows him/her to come up with multiple instances which could be perceived as similar behavior from their past experiences or personal knowledge with the observation. This makes it seem like a "matching procedure" in which we often try to personalize the observations that we see from others and attempt to relate personal feelings alongside the new attributions being made about another person's actions or behavior. In an athlete's case, if a teammate of theirs gets injured and the athlete themselves have prior experience or personal knowledge of what it is like receiving and going through the injury process, then the athlete will align those prior experiences with their newly made attributions with a teammate injury that they have just observed. They are less likely to create negative attributions of what they have observed. Because these participants in the study were all collegiate level athletes, we can assume that most participants have some sort of similar prior experiences when it comes to practices, competitive play, and receiving injuries during either or both of these scenarios which could have been the reason why most of the participants attributed injuries due to external and unstable reasons (the teammate was unlucky). It should be noted that a majority of the PLOC responses that were recorded were external and unstable responses (see Figures 2-5) or due luck, in this case, being unlucky to receive injury which would support this assumption.

When looking at the demographics (see Table 1) of the participants, specifically the race(s), the study sample is generally accurate with the NCAA overall demographics across all divisions and sports. While this study had a small number of athletes participate

in the study as well as only recruiting athletes in Texas, the diversity of the races in athletes in Texas generally match the same racial demographics listed in comparison to the NCAA demographic reports across the nation in the 2016-2017 academic year (NCAA Race and Gender Demographics Database, 2018).

SDT can also possibly be a potential explanation as to why motivation did not predict PLOC of teammate injuries in practice drill and competitive play situations. When looking at previous research done with SDT in athletes (Ryan, 1997; 1980; Ryan, 2012; Deci, Eghariri, Patrick, & Leone, 1994), there are three innate needs that SDT emphasizes: autonomy, competence, and relatedness. When these needs are satisfied, they can help improve self-motivation and lead to healthy psychological development (Ryan, & Deci, 2000). Because most of the participants attributed to external and unstable reasons, athletes could believe that the primary reason why a teammate gets injured is due to being unlucky in either situation. The athlete making this attribution could also be reflective of relating their own past experiences of being previously injured from these same scenarios. For example, an athlete could likely attribute their teammate's injury to being unlucky in the situation because they themselves have been unlucky in a similar situation in the past. This could possibly be related to the claim that deCharms (1968) makes when he suggests that the attribution process is a type of matching process as previously stated.

Since the data shows that most participants attributed teammate injury to external and unstable reasons such as bad luck in the event, we must take into consideration the level of achievement motivation in these participants since all participants were athletes. Because they are athletes, we can assume that the level of achievement motivation would

be high since there were few participants who were categorized as Amotivated. Weiner and colleagues (1971) suggest that those that are high in achievement motivation persist longer at a goal or achievement-oriented task. If an individual believes that failure at such task is due to unstable reasons, lack of effort or bad luck, then the possibility of future success can be expected (Weiner et al., 1971). For an athlete, it can be assumed that if such unfortunate events were to happen, then the athlete themselves as well as teammates would believe that the person affected by the injury, in this case the teammate, would be able to bounce back during performance.

SDT can also influence an individual's motivational type depending on the external or environmental factors that are present. A supposition of this study was the importance of an individual's motivation and their PLOC when regarding others when using Weiner's Attribution Model (Weiner et al., 1971; see Figure 1). Motivation has been shown to be very important in various research. Since most of the participants were on an athletic scholarship (69.6%) and were starters (69.6%), their motivational type could have been influenced by their scholarship and starting status which could have influenced the results showing that external attributions were made in comparison to internal attributions. In relation to previous studies that look at SDT and motivation (Ryan, 1977; 1980), this could be helpful for coaching in identifying possible trends in instability in cohesion in the locker room when regarding injuries during practice. Having a scholarship could possibly influence attributions regardless of the motivational type that a participant is categorized. As previous studies have shown, the motivation of an athlete can be altered due to things such as athletic scholarships (Ryan, 1977; 1980). Because of these studies, the suppositions could prove useful in using various recruiting methods to

either help maintain or increase intrinsic motivation. This can be done in ways that are mentioned in the study done by Partridge and Knapp (2015) by utilizing better coaching strategies and approaches to conflict as well as team-building exercises after recruitment of the athlete. When coaches establish rules for social relationships on a team, the team gets along better which can play a role in improving team cohesion and other team dynamics (Partridgem & Knapp, 2015). When it comes to team building strategies, participants reported that when team-building exercises were implemented by their coach, their experiences with team conflict were positive and negative relationships with their peers were mitigated (Partridgem & Knapp, 2015). While this study focused particularly on female athletes, both female and male athletes can utilize team bonding exercises implemented by coaches or even consider doing team-bonding activities outside of sports via social hangouts driven by athletes themselves.

Limitations

One significant limitation of the study was the sample size of participants. Although recruitment was done in multiple ways via email and study halls, it became increasingly difficult to gain permission of coaches across the state of Texas as well as attracting the interest in athletes. While some coaches were willing to allow the survey to be passed on to their teams, some coaches were unwilling and unhelpful in the recruitment process. Larger numbers of participants could have also affected frequencies of the motivational types that were recorded. While there was a mixture of participants that were intrinsically or extrinsically motivated, there was a low number of participants that were considered Amotivated. The analyses could possibly have more accurate results

if there were equal numbers of individuals who were intrinsically motivated, extrinsically motivated, and Amotivated.

Another significant limitation to this study was the lack of incentives offered to potential participants. Because these participants are NCAA athletes, it is prohibited that athletes receive any sort of financial compensation, including money & gift cards. However, while it is possible for athletes to be compensated under strict conditions, it would be difficult to implement this since participants were recruited from all of Texas and not just one specific location or school as such conditions would require all athletes to receive equal compensation. While coaches and their staff may have encouraged participation, it was not guaranteed that athletes would agree participate in the study.

Another limitation that could have impacted the results of the study was the assessing any questions about the questionnaire given to participants via email. Participants could have been confused about meaning or wording of the questions in which the researcher could not be present to address them. While administering the questionnaire at the study hall, a few athletes had these very same questions in which the questions were addressed and clarified for the participants to continue with the survey. In moving forward with possible future studies, it would be beneficial in possibly simplifying the survey further for the participants in order to ensure that it is easily understood by all.

Conclusion

In conclusion, this current study did not find that overall motivation would be able to predict PLOC in practice or competitive play scenarios. Despite the limitations, this

study can be used for future research for recreation of the study in looking at more participants to accurately assess the relationship between motivation and PLOC and attributions of teammates. Future implications can benefit coaches, their staff, general managers of teams, players, and the athletic training staff within the athletic organization or university.
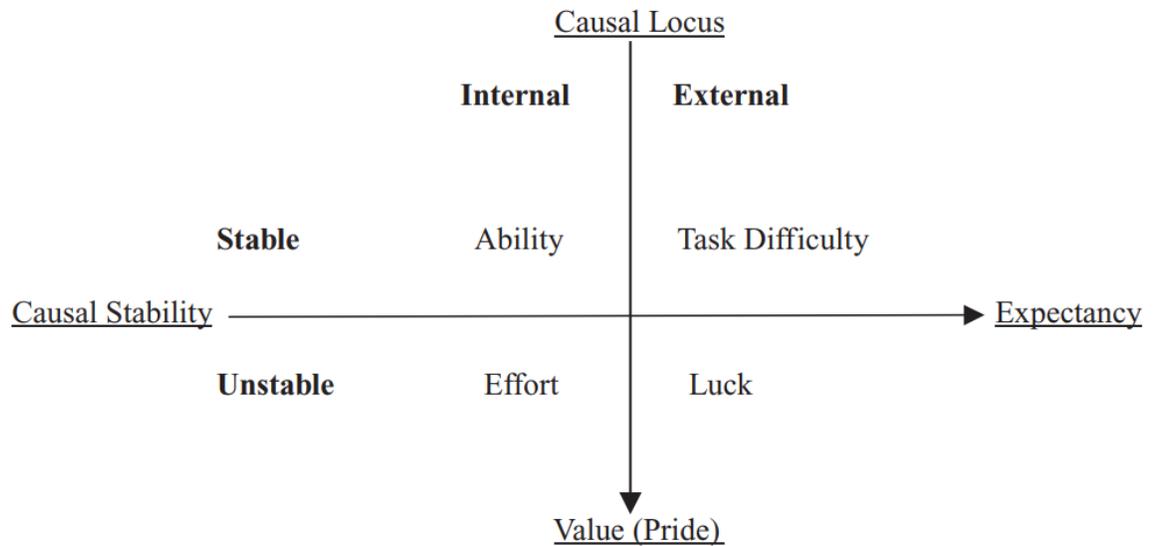
Figure 1. **Weiner's Attribution Model** – Representation of the four main causes of behavior, their dimensional properties (locus and stability), and linkages to affect and expectancy.

Table 1. Demographic Variables

Variables	
Classification (%)	
Freshman	40.6%
Sophomore	18.8%
Junior	17.4%
Senior	23.2%
Gender (%)	
Male	30.4%
Female	68.1%
Missing	1.4%
Race(s) (%)	
White	50.7%
African American	47.8%
American Indian/Alaska Native	1.4%
Asian	2.9%
Other (Black Caribbean, Hispanic, Mexican)	9.6%
Sport (%)	
Football	7.2%
Basketball	17.4%
Volleyball	4.3%
Baseball	1.4%
Softball	14.5%
Track and Field	33.3%
Tennis	8.7%
Soccer	2.9%
Golf	2.9%
Dance	4.3%
Missing	2.9%
Years of Experience in Sport in years (%)	4.3%
1-2	8.7%
3-4	13.0%
5-6	73.9%
7+	
Starter (%)	
Yes	69.6%
No	30.4%
Division of College/University (%)	
Division I	78.3%
Division II	2.9%
Division III	17.4%

Athletic Scholarship/Walk-On (%)	
Scholarship	69.6%
Walk-On	24.6%
Missing	5.8%
Prior Injury (%)	
Yes	68.1%
No	31.9%
If so, did it require time? (%)	
Yes	68.1%
No	29.0%
Missing	2.9%

Table 2. Internal vs External responses for practice drill scenario

Variables	B	Std. Error	*P value*
Motivation Type (1)*	-.360	.650	.580
Motivation Type (2)**	.268	1.267	.832

* Motivation Type Represents Extrinsic

** Motivation Type Represents Amotivation

Table 3. Internal vs External responses for competitive play scenario

Variables	B	Std. Error	*P value*
Motivation Type (1)*	-.969	1.117	.380
Motivation Type (2)**	-19.281	23205.422	.999

* Motivation Type Represents Extrinsic

** Motivation Type Represents Amotivation

Table 4. Stable vs Unstable responses for practice drill scenario

Variables	B	Std. Error	*P value*
Motivation Type (1)*	.156	.625	.803
Motivation Type (2)**	.492	1.272	.699

* Motivation Type Represents Extrinsic

** Motivation Type Represents Amotivation

Table 5. Stable vs Unstable responses for competitive play scenario

Variables	B	Std. Error	*P value*
Motivation Type (1)*	-.205	1.188	.863
Motivation Type (2)**	-18.517	23205.422	.999

* Motivation Type Represents Extrinsic
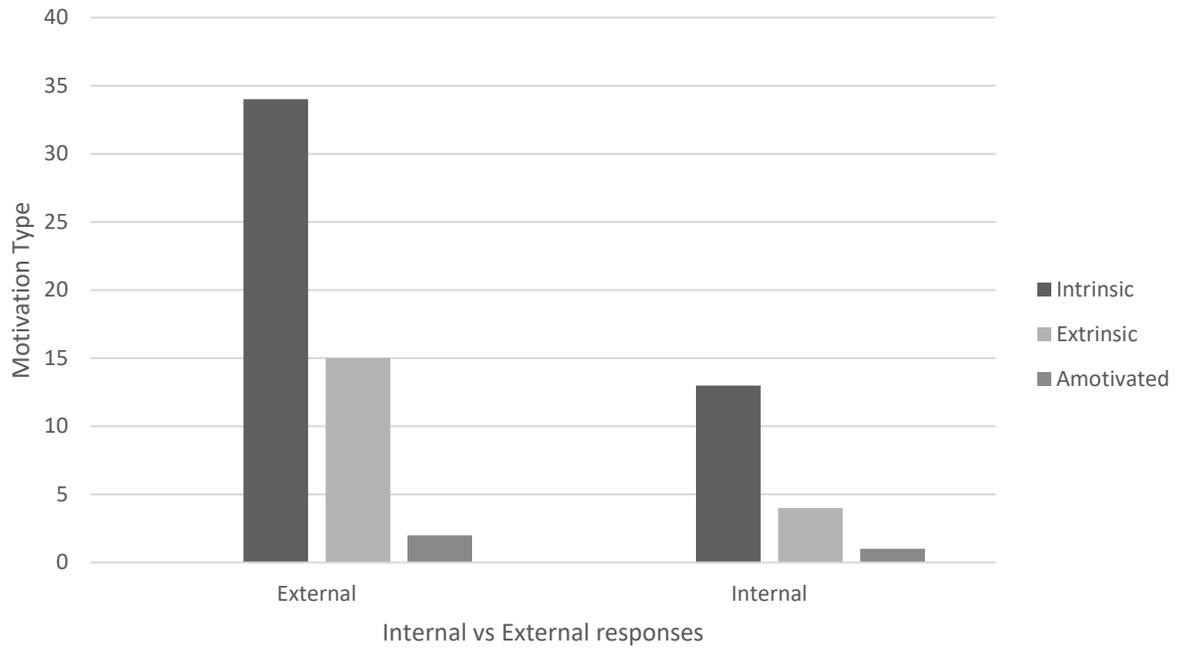
** Motivation Type Represents Amotivation

Figure 2: Internal vs External: Practice Drills

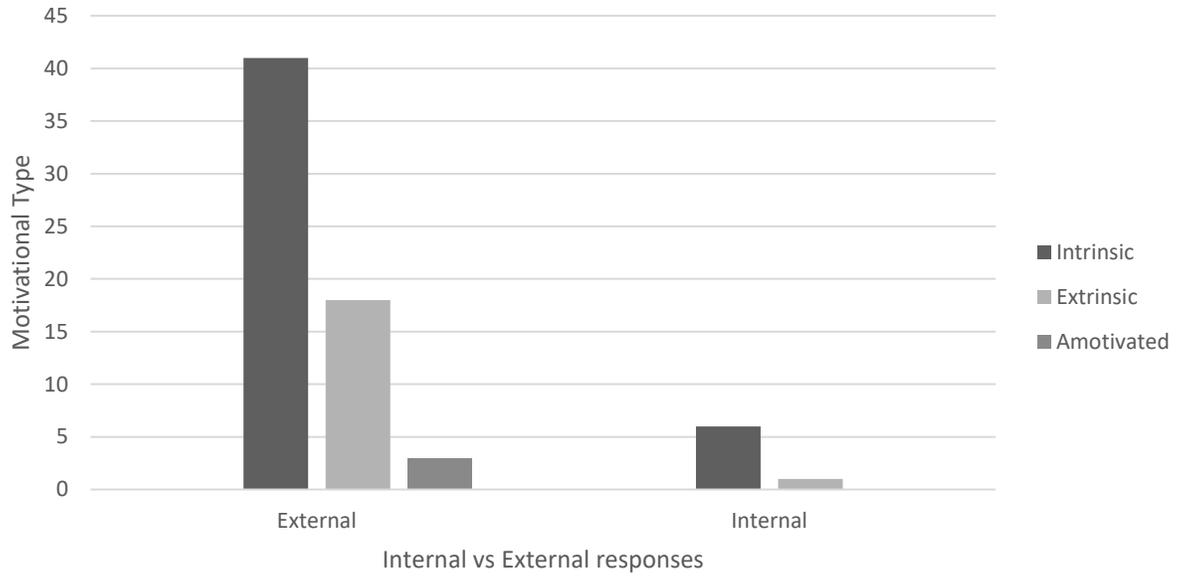# Motivation Type and Responses (Internal vs External: Competitive Play)

Figure 3: Internal vs External: Competitive Play

Motivation Type and Responses (Stable vs Unstable: Practice Drills)
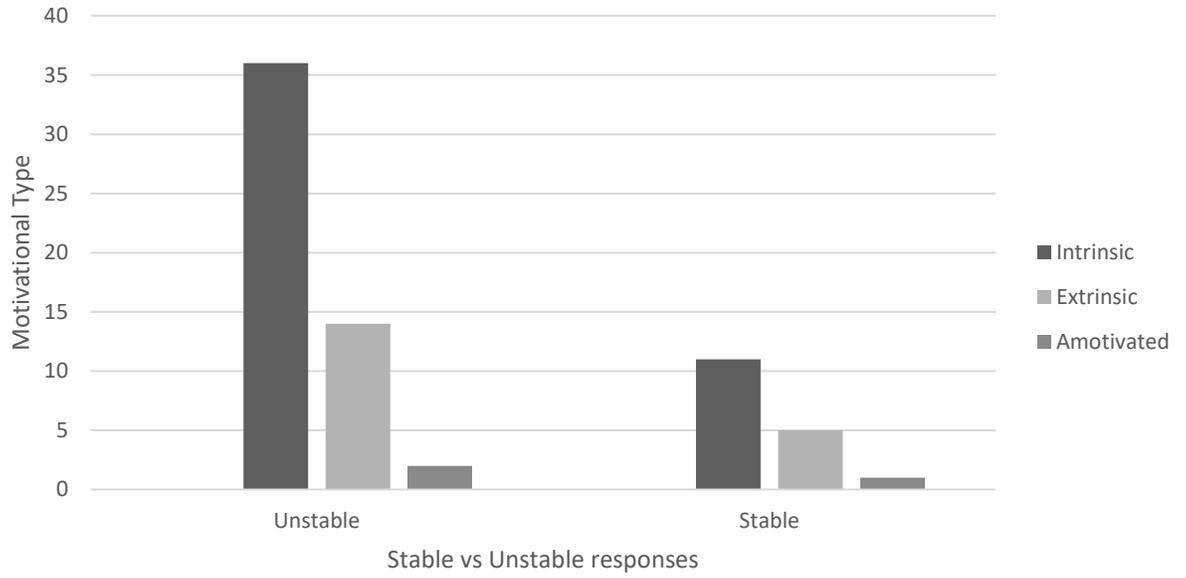

Figure 4: Stable vs Unstable: Practice Drills

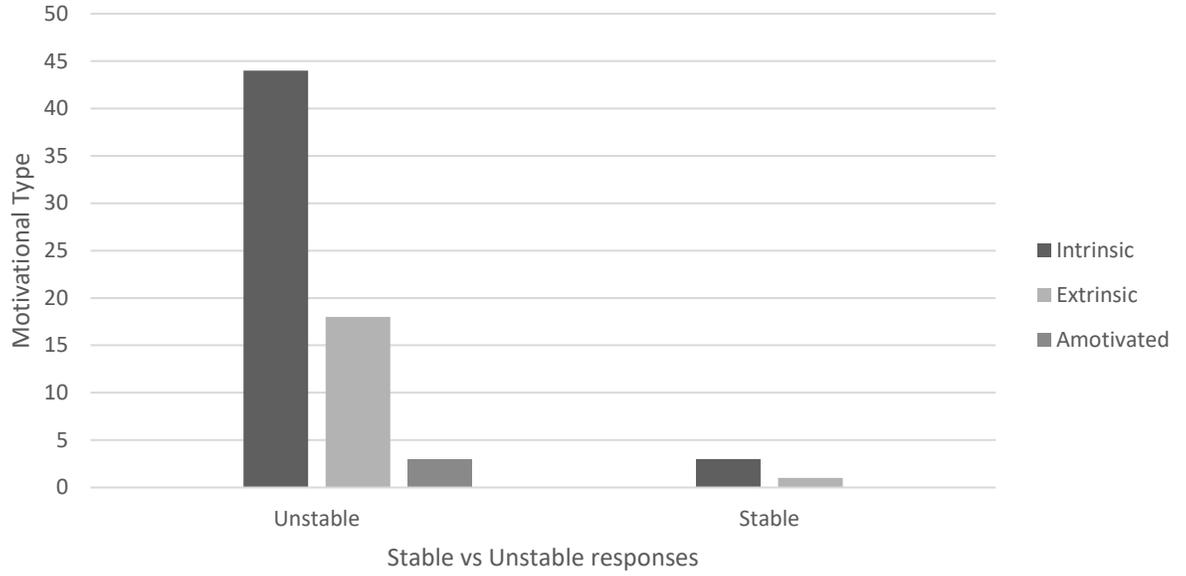# Motivation Type and Responses (Stable vs Unstable: Competitive Play)

Figure 5: Stable vs Unstable: Competitive Play

APPENDIX

Appendix A: Demographic Information

1. What is your student classification?
- ❍ Freshman (1)
- ❍ Sophomore (2)
- ❍ Junior (3)
- ❍ Senior (4)

2. What is your sex?
- ❍ Male (1)
- ❍ Female (2)

3. Choose one or more races that you consider yourself to be:
- ❑ White (1)
- ❑ Black or African American (2)
- ❑ American Indian or Alaska Native (3)
- ❑ Asian (4)
- ❑ Native Hawaiian or Pacific Islander (5)
- ❑ Other (6) _____

4. Please specify what sport you play.

5. How many years of experience do you have in your sport?
- ❍ 1-2 (1)
- ❍ 3-4 (2)
- ❍ 5-6 (3)
- ❍ 7+ (4)

6. Are you a starter?
- ❍ Yes (1)
- ❍ No (2)

7. What division is your college or university?
- ❍ Division I (1)
- ❍ Division II (2)
- ❍ Division III (3)

8. Are you on athletic scholarship or walk-on?
- ❍ Scholarship (1)
- ❍ Walk-on (2)

9. Have you had any prior injury due to the sport you play?
- ○ Yes (1)
- ○ No (2)

10. If yes, did it require rehab/time off sport?
- ○ Yes (1)
- ○ No (2)

Appendix B: Sport Motivation Scale – 28

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

	Does not correspond at all (1)	Corresponds very little (2)	Corresponds a little (3)	Corresponds moderately (4)	Corresponds a little (5)	Corresponds a lot (6)	Corresponds exactly (7)
For the pleasure I feel in living exciting experiences. (1)	❍	❍	❍	❍	❍	❍	❍
For the pleasure it gives me to know more about the sport that I practice. (2)	❍	❍	❍	❍	❍	❍	❍
I used to have good reasons for doing sport, but now I am asking myself if I should continue doing it. (3)	❍	❍	❍	❍	❍	❍	❍
For the pleasure of discovering new training techniques. (4)	❍	❍	❍	❍	❍	❍	❍
I don't know anymore; I have the impression of being incapable of succeeding in this sport. (5)	❍	❍	❍	❍	❍	❍	❍
Because it allows me to be well regarded by people that I know. (6)	❍	❍	❍	❍	❍	❍	❍

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Because, in my opinion, it is one of the best ways to meet people. (7)	❍	❍	❍	❍	❍	❍	❍
Because I feel a lot of personal satisfaction while mastering certain difficult training techniques. (8)	❍	❍	❍	❍	❍	❍	❍
Because it is absolutely necessary to do sports if one wants to be in shape. (9)	❍	❍	❍	❍	❍	❍	❍
For the prestige of being an athlete. (10)	❍	❍	❍	❍	❍	❍	❍
Because it is one of the best ways I have chosen to develop other aspects of myself. (11)	❍	❍	❍	❍	❍	❍	❍
For the pleasure I feel while improving some of my weak points. (12)	❍	❍	❍	❍	❍	❍	❍

For the excitement I feel when I am really involved in the activity. (13)	○	○	○	○	○	○	○
Because I must do sports to feel good myself. (14)	○	○	○	○	○	○	○
For the satisfaction I experience while I am perfecting my abilities. (15)	○	○	○	○	○	○	○
Because people around me think it is important to be in shape. (16)	○	○	○	○	○	○	○
Because it is a good way to learn lots of things which could be useful to me in other areas of my life. (17)	○	○	○	○	○	○	○
For the intense emotions I feel doing a sport that I like. (18)	○	○	○	○	○	○	○
It is not clear to me anymore; I don't really think my place is in sport. (19)	○	○	○	○	○	○	○

For the pleasure that I feel while executing certain difficult movements. (20)	○	○	○	○	○	○	○
Because I would feel bad if I was not taking time to do it. (21)	○	○	○	○	○	○	○
To show others how good I am good at my sport. (22)	○	○	○	○	○	○	○
For the pleasure that I feel while learning training techniques that I have never tried before. (23)	○	○	○	○	○	○	○
Because it is one of the best ways to maintain good relationships with my friends. (24)	○	○	○	○	○	○	○
Because I like the feeling of being totally immersed in the activity. (25)	○	○	○	○	○	○	○

Because I must do sports regularly. (26)	○	○	○	○	○	○	○
For the pleasure of discovering new performance strategies. (27)	○	○	○	○	○	○	○
I often ask myself; I can't seem to achieve the goals that I set formyself. (28)	○	○	○	○	○	○	○

Appendix C: PLOC Questions

Description: Below, you will be given two very brief scenarios regarding a teammate getting injured. Please chose the response that you feel is the most accurate as to why the teammate received the injury.

1. A teammate of yours receives an injury during practices while performing drills:

❍ The teammate did not possess the required ability for the task. (1)
❍ The teammate did not put in enough effort for the task. (2)
❍ The task was too difficult for the teammate. (3)
❍ The teammate was unlucky during the task. (4)

2. A teammate of yours receive an injury during competitive play:

❍ The teammate did not possess the required ability for the task. (1)
❍ The teammate did not put in enough effort for the task. (2)
❍ The task was too difficult for the teammate. (3)
❍ The teammate was unlucky during the task. (4)

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