THE SOCIAL ENVIRONMENT OF SPORT AND ATHLETES' DOPING-RELATED COGNITIONS

By

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PUBLIC ABSTRACT

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Despite the best efforts of organizations like the World Anti-Doping Agency, athletes still make the conscious decision to use illegal performance enhancing drugs or methods, a behavior referred to as doping. Researchers have examined many factors an athlete might think about when making such a decision, even in the face of punishment for athletes who are caught doping. One thought process to consider is how athletes may make justifications to themselves for their behavior, endorsing what would otherwise be against the rules. Although these are internal processes, athletes also may take into consideration their perceptions of the social environment when developing these justifications. A greater understanding of the interplay between internal justifications and perceived social norms might allow for the development of more effective anti-doping educational programs for coaches and athletes. The goal of this two-study dissertation was to contribute to this understanding.

Study 1 involved a descriptive exploration of individuals' thought processes within the social environment of athletes with physical disabilities. Disability sport athletes' thought processes were expected to show a discrete number of patterns. Our hypothesis was supported, as we found four unique groups that differed in how prevalent they thought doping was, how much they thought the people around them would support/pressure them in doping, and how well they could justify to themselves that doping was acceptable. One group, for example, saw doping as more prevalent than the other groups, felt more pressure or support to dope than the other groups, and personally justified doping more than the other groups. Therefore, this group was considered

the most at-risk for doping. Indeed, athletes in this group expected to feel less guilty if they were to use performance enhancing drugs, and reported greater doping intentions.

Study 2 explored these social-cognitive variables in high-level able-bodied athletes using a different data analysis strategy. An interesting result in this study was how athletes' personal justifications in regard to doping seemed to play a larger role in their doping decisions than their perceived prevalence or approval of doping. The level of guilt the athletes anticipated from a hypothetical doping scenario also played a role in these decisions. Even when taking into consideration the chance that athletes may respond deceptively to paint themselves in a better light, their personal thought processes seemed to be more influential to their doping decisions than perceptions of the social environment.

As a whole, these two studies suggest athletes' willingness to endorse the legitimacy of doping may be a dominant risk factor to actually engaging in the behavior, even if the social environment does not promote it. It is possible that because these were adult athletes, they had already internalized the norms of their environment, and therefore depended more on their own moral reasoning (or personal justifications, referred to as moral disengagement) to make doping decisions. Organizations such as the World Anti-Doping Agency have endorsed anti-doping educational programs and other campaigns to minimize the behavior, and may benefit from taking these thought processes into consideration.

ABSTRACT

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Research on doping moral disengagement (MD; temporary endorsement of a transgressive behavior) suggests this cognition is influential in athletes' doping-related decisions. This line of research should also include social variables such as subjective norms (perceived approval of or pressure to perform a behavior from significant others) and descriptive norms (perceived prevalence of a behavior), because these normative perceptions reflect the social context within which cognitions like doping MD take place. All of these variables have been found to independently predict outcomes such as anticipated guilt from doping (Ring & Kavussanu, 2017), doping intentions (Ntoumanis et al., 2014) and doping susceptibility/consideration (Boardley et al., 2019). Examining these variables together, especially in different populations (i.e., disability and able-bodied sport), could offer a fuller picture of doping-related cognitions. This holds long-term potential to develop more effective, theory-driven anti-doping interventions and maintain the spirit of fair play in sport. The purpose of this dissertation was to explore how morality-based cognitions and the social environment of sport (as reflected in norms-based cognitions) associate with doping-related cognitions.

Study 1 was a cross-sectional examination of how doping MD, descriptive norms, and subjective norms responses of disability sport athletes are patterned. Cluster analysis revealed four distinct groups. One-way MANOVAs determined mean differences across groups on the variables of anticipated guilt and doping intentions. One cluster, characterized by high levels of all focal variables, was one of two clusters to score significantly lower on anticipated guilt, and

the only cluster to score significantly higher on doping intentions than the other athlete groups. This at-risk pattern of cognitions, which was expressed in the smallest cluster (n = 15), warrants particular attention in future anti-doping campaigns.

Study 2 used latent variable analysis to examine athletes' doping MD, descriptive norms, and subjective norms as predictors of doping consideration, directly and indirectly via anticipated guilt. A model was tested with the expected relationships and exhibited adequate to excellent fit to the data. Doping MD had significant direct and indirect effects on doping consideration, and the direct effect persisted when controlling for social desirability. Such effects were not present for the descriptive norms and subjective norms constructs. Findings suggest the strength of the relationship between doping MD and doping-related outcomes is stronger than that tied to social norms. Such results may be applied to anti-doping educational programs, which have not often deliberately targeted doping MD.

In sum, this dissertation extends the literature supporting the role of doping MD in athletes' doping-related outcomes. This role persists across sport type and when controlling for social desirability. It also appears to be more salient than normative influences in predicting doping-related outcomes. Researchers and anti-doping interventionists may benefit from incorporating doping MD as a target of future research and education efforts, which could lead to more effective doping prevention.

To my family –
biological and beyond.

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CHAPTER ONE: GENERAL INTRODUCTION

The International Olympic Committee (IOC) includes "social responsibility and respect for universal fundamental ethical principles" in the first fundamental principle of Olympism (IOC, 2015, pg. 13). Doping, the use of prohibited substances or methods with the potential to artificially improve performance through changes in physical or mental condition (IPC, 2018; Lauré, 1997; WADA, 2021), is a direct contravention of this principle. Not only is doping against the spirit of sport (IOC, 2015), it introduces risks to physical and psychological well-being (Pope et al., 2014). As such, doping "poses serious public health hazards and calls for preventive action" (European Union, 2011; p. 6).

The most prominent method used by anti-doping organizations to prevent doping is the detection-deterrence method (i.e., sanctions for athletes who commit anti-doping rule violations; Morente-Sánchez & Zabala, 2013). The idea is that the risk of getting caught and sanctioned will deter athletes from doping. Unfortunately, this method has found minimal success in deterring doping in sport (Strelan & Boeckman, 2006; Westmattelmann, Dreiskämper, Strauß, Schewe, & Plass, 2018). Despite the risk of being caught and sanctioned, some athletes still use performance-enhancing substances or methods, meaning there must be other factors contributing to doping decisions. Among these are moral and social cognitions. Understanding these cognitions is of interest in order to develop theory-based anti-doping initiatives.

Personal moral beliefs have been argued to be a stronger influence on an individual's decision to dope than drug testing, at least in hypothetical situations (Strelan & Boeckman, 2006). According to the social-cognitive theory of moral thought and action (Bandura, 1991), people develop an understanding of morality based on the social sanctions received for acting immorally. Over time, these sanctions are internalized, and people act in line with their

individual moral beliefs to avoid self-sanctions (i.e., negative emotions such as guilt or shame). Punishments for doping (e.g., fines or suspensions for anti-doping rule violations) represent the social sanctions in the context of sport. For those athletes who internalize these sanctions, they would choose not to use performance-enhancing substances because they would feel guilty for violating the morals of their sport. However, there are certain cognitive mechanisms that can help an athlete circumvent the anticipated guilt brought on by doping behavior. One of these mechanisms is moral disengagement (MD; Bandura, 1990), which is the conditional endorsement of an otherwise transgressive or reprehensible behavior.

Of the eight mechanisms of MD originally specified by Bandura (1990), six have been shown to be used for endorsing doping behavior (Boardley, Grix, & Dewar, 2014). Moral justification involves making the behavior seem morally or socially acceptable by offering a way in which it can do some good. Euphemistic labeling uses benign language to distort the perceived reprehensibility of the behavior. Advantageous comparison is when the transgressor contrasts the behavior with a more outrageous flagrant offense. Displacement of responsibility is putting the responsibility on some other authoritative decision-maker. Diffusion of responsibility is spreading the responsibility of the decision to act to a group in order to minimize individual responsibility. Lastly, distortion of consequences involves minimizing or ignoring the negative ramifications of the behavior. The two original mechanisms of dehumanization (i.e., removing the victim's human qualities) and attribution of blame (i.e., considering the victim's actions to be a provocation of the transgressor) are relevant in other anti-social behaviors in sport, but not doping specifically. Recent research has suggested that MD, specifically in relation to doping behavior, can allow an athlete to dope while minimizing anticipated feelings of guilt (Boardley,

Smith, Mills, Grix, & Wynne, 2017; Ring & Kavussanu, 2017, Ring, Kavussanu, & Gürpinar, 2020).

Self-sanctions such as guilt materialize based on internalization of the negative consequences (i.e., social sanctions) of a behavior (Bandura, 1991). Though individuals are believed to act in accordance with their own morality once internalization of social sanctions has occurred, doping-related cognitions do not occur in isolation. The athletic environment provides context for doping-related cognitions, regardless of whether sanctions have been internalized by the athlete. Therefore, environmental social factors (i.e., normative influences) should be considered when studying the relationship between doping MD and doping-related outcomes.

There are two distinct types of normative influence: subjective norms and descriptive norms (Cialdini, Reno, & Kallgren, 1990). Subjective norms (Ajzen, 1991) are the perceived pressures significant others put on an individual to perform or not perform a behavior. The construct of descriptive norms originates in research on littering (Cialdini et al., 1990), and refers to one's perceptions about the actual behavior of others. In doping research, descriptive norms are typically measured through perceived prevalence (Barkoukis, Lazuras, & Tsorbatzoudis, 2014; Lazuras et al., 2010). Studies have supported the association of both subjective norms and descriptive norms with self-involvement in doping behavior (Petróczi, Mazanov, Nepusz, Backhouse, & Naughton, 2008; Uvacsek et al., 2011). A seminal meta-analysis supported both subjective and descriptive norms as predictors of doping behavior, both directly and indirectly through doping intentions (Ntoumanis, Ng, Barkoukis, & Backhouse, 2014). Further, a test of a more recent integrative model of doping use supported both types of norms as proximal predictors of doping intentions (Lazuras, Barkoukis, & Tsorbatzoudis, 2015).

Though doping MD, subjective norms, and descriptive norms have all been shown to be independent predictors of doping outcomes, the simultaneous influence of these variables has not typically been considered. Some studies emphasizing descriptive norms include measures of sportspersonship or personal morality rather than doping MD (Barkoukis, Lazuras, Tsorbatzoudis, & Rodafinos, 2013; Gucciardi, Jalleh, & Donovan, 2011), whereas studies emphasizing doping MD examine it alongside subjective norms exclusively (Lucidi et al., 2008). In effect, the athletic environment contains various potential influences on an athlete's cognitions and decisions regarding doping (Barkoukis, Brooke, Ntoumanis, Smith, & Gucciardi, 2019). Research on these variables in combination can capture a broader picture of the athletic environment as it relates to doping.

Yet another opportunity to broaden the understanding of doping-related cognitions is to explore it in special populations. A particularly underrepresented population in doping research is athletes with physical disabilities. In 2019, the United States Olympic Committee changed its name to the United States Olympic and Paralympic Committee (USOPC, 2019), and the board passed a vote that would increase monetary rewards for Paralympic medalists to the same amount as their Olympic counterparts. With the continued success of the Paralympic movement, researchers have voiced concern about the growth of participation, competition, and compensation of parasport athletes creating a "win-at-all-costs" attitude toward these sports (Van de Vliet, 2012). This changing perspective may increase doping behavior in disability sport. For this reason, the International Paralympic Committee has also published an Anti-Doping Code (IPC, 2018). Doping methods such as boosting (artificial induction of autonomic dysreflexia; Legg & Mason, 1998; Mazzeo, Santamaria, & Iavarone, 2015) are unique to the disability sport

environment, and research in this context may provide greater insight into doping issues as a whole.

A greater knowledge of the psychosocial factors affecting doping outcomes could have many implications for future research and practice. Beyond the detection-deterrence method, anti-doping educational programs such as ATLAS and ATHENA (Barkoukis, Kartali, Lazuras, & Tsorbatzoudis, 2016) work to decrease adolescents' positive attitudes toward prohibited performance-enhancing substances. However, there is an absence of strong support for a causal relationship between doping attitudes and doping outcomes (Backhouse, McKenna, Robinson, and Atkin, 2007). More recent interventions have targeted variables such as beliefs about supplement use (Hurst, Ring, & Kavussanu, 2020), coach communication style, and motivational climate (Ntoumanis et al., 2018; Ntoumanis et al., 2020). These are recent examples of practical outcomes following psychosocial doping research. Deeper understanding of other psychosocial contributors to doping, such as those mentioned above, can inform the curriculum of anti-doping educational programs and help to develop theory-informed interventions, thus contributing to athlete well-being and upholding the spirit of sport.

The overarching goal of this dissertation was to explore how the social environment of sport—as reflected in morality-based and norms-based cognitions, uniquely and in combination—associates with doping-related outcomes. Previous research on moral cognitions, normative influences, and other behavioral outcomes provided a foundation to design the studies herein. The two studies explored social influences of doping decisions in unique ways, varying in methodology, sample population, and focal variables. The studies in this document extend previous research by simultaneously examining social norms and doping MD in two distinct populations (e.g., disability sport and able-bodied sport) as predictors of various doping

outcomes (e.g., anticipated guilt, doping intentions, and doping susceptibility/consideration). Altogether, these studies offer insight regarding the morality- and norms-related factors tied to doping decisions in the athletic environment.

Study 1 was a cross-sectional, survey-based examination of how doping MD, subjective norms, and descriptive norms may cluster together to evince distinct groups of disability sport athletes. These variables have rarely been examined simultaneously in either disability sport athletes or their able-bodied counterparts, and Study 1 represents an initial venture into the combination of these variables. The exclusive recruitment of disability sport athletes, in contrast to their able-bodied counterparts, was a novel contribution to this line of research. Doping practices have been discovered in a number of disability sport events (Van de Vliet, 2012), and although there are differences between the social contexts of disability and able-bodied sport, research on disability sport athletes' doping-related cognitions can help to uphold the Anti-Doping Code published by the IPC. Due to the novelty of this research being conducted in a disability sport context, an exploratory statistical approach was employed to describe relationships among the variables. From this, a more descriptive foundation could be set in order to springboard future research on doping-related cognitions in disability sport athletes. Therefore, the purpose of Study 1 was two-fold: a) to examine profiles of disability sport athletes' in terms of patterns of responding to doping cognitions measures and b) to determine whether associations between these cognitions and doping outcomes of interest vary by profile membership.

In Study 2, subjective norms, descriptive norms, and doping MD were examined in a sample of able-bodied adult athletes. Additionally, an outcome measure of doping consideration (Gucciardi, Jalleh, & Donovan, 2010) was used in place of doping intentions. Doping

consideration is distinct from doping intentions in that it is based on the amount of consideration one would give to a hypothetical opportunity to use a performance-enhancing substance without detection. It is important to note here that this measure has previously been called doping susceptibility; however, its use in this study is better described as a measure of doping consideration than doping susceptibility. Therefore, the operationalization used in Study 2 was referred to as doping consideration. Examining doping MD, perceived norms, anticipated guilt, and doping consideration in an able-bodied athletic population can provide more robust support for the associations between these psychosocial variables. Furthermore, use of a more vigorous statistical analysis would have theoretical implications for the associations found. For example, the construct of doping MD stems from the social-cognitive theory of moral thought and action (Bandura, 1991), whereas the construct of subjective norms stems from the theory of planned behavior (Ajzen, 1991) and descriptive norms from research on littering (Cialdini et al., 1990). An integrated model informed by these various theoretical foundations would allow for a comparison of the theories. Therefore, the purpose of Study 2 was to test a theoretically-informed, integrated conceptual model in which doping MD, subjective norms, and descriptive norms predicted doping consideration, both directly and indirectly through anticipated guilt (Figure 3.1).

Together, this series of studies can increase the knowledge base of psychosocial correlates of an athlete's doping-related outcomes. Research involving both disability sport athletes and their able-bodied counterparts contributes to the literature by exploring the potential generalizability of previously established constructs and relationships. In addition, research on the role of normative influences broadens the literature to more agents in the athlete entourage (Barkoukis et al., 2019). With this further knowledge, organizations such as the IOC and the

World Anti-Doping Agency (WADA) can establish best practices when creating educational programs and other anti-doping campaigns. Developing a successful, theory-informed intervention to reduce the prevalence of doping in sport would be a large step forward in the fight to maintain the "spirit of friendship, solidarity and fair play" (IOC, 2015, pg. 13), and would protect the well-being of the athletes involved.

CHAPTER TWO: STUDY ONE

DISABILITY SPORT ATHLETES' DOPING COGNITIONS AND THE IMPACT ON ANTICIPATED GUILT AND INTENTIONS

Preface

The initial proposal for this study was presented in March 2019 at the Eastern Canada Sport and Exercise Psychology Symposium (ECSEPS) in York, Ontario, Canada, and results of the final study were presented in October 2019 in Vancouver, British Columbia, Canada at the Canadian Society for Psychomotor Learning and Sport Psychology (SCAPPS) conference.

Abstract

Research suggests doping moral disengagement (MD; conditional endorsement of a transgressive behavior) is associated with reduced anticipated guilt (Kavussanu & Stanger, 2017) and increased doping intentions (Ntoumanis et al., 2014). However, MD occurs within the greater social context. Subjective (perceived support from significant others) and descriptive (perceived doping prevalence) norms should be considered, as moral behavior is a product of social circumstances and moral reasoning (Bandura, 1991). The purpose of this study was to examine profiles of disability sport athletes' doping cognitions, and whether these profiles differ in anticipated guilt or intentions to dope. A survey was completed by 186 athletes (*M*age = 36.5 years, 77.4% male, 53% wheelchair basketball) assessing norms (Barkoukis et al., 2014; Lazuras et al., 2015), doping MD (Boardley et al., 2018), anticipated guilt (Boardley et al., 2017), and doping intentions (Lazuras et al., 2010). Two step-cluster analysis revealed four distinct clusters, including two mixed profiles. One-way MANOVAs revealed lower anticipated guilt in the two clusters characterized by higher doping MD. Higher doping intentions were reported in the cluster characterized by relatively higher doping MD and subjective norms. Some findings may be due to distinct characteristics of the disability sport context, but most results were in line with previous research. Future work should examine these variables and others in different populations for a more robust understanding of their role in disability and able-bodied sport doping. Regardless, this study suggests there is a group of athletes most susceptible to doping without guilt who may be a key target for anti-doping campaigns.

Introduction

In 2019, the United States Olympic Committee changed its name to the United States Olympic and Paralympic Committee (USOPC, 2019), and the board passed a vote that would increase monetary compensation for Paralympic medalists to the same amount as their Olympic counterparts. These are prominent signs of the recent success of the Paralympic Movement, which may catalyze participation opportunities for individuals with disabilities (de Jong, Vandreusel, & van Driel, 2010). Though this inclusivity is positive in many respects, the growth of participation, competition, and compensation has the potential to create a "win-at-all-costs" attitude toward disability sport (Van de Vliet, 2012). Athletes looking to gain an advantage may be persuaded to behave in ways that go against the spirit of sport; particularly, doping. Doping is the use of prohibited substances or methods by an athlete with the potential to artificially improve performance through changes in a physical and/or mental condition (Lauré, 1997). Multiple instances of anti-doping rule violations exist in past parasport events (Van de Vliet, 2012). With these concerns in mind, the International Paralympic Committee published a World Anti-Doping Code in 2004 (IPC, 2018).

Doping is not only a contravention of the spirit of sport (IOC, 2015), but also introduces risks to physical and psychological well-being (Pope et al., 2014). As such, doping "poses serious public health hazards and calls for preventive action" (European Union, 2011; p. 6). Common strategies to combat this behavior have been detection-deterrence and education programs (Morente-Sánchez & Zabala, 2013). Detection-deterrence involves sanctions as punishment for athletes who commit anti-doping rule violations, with the hopes that the cost of being caught outweighs the perceived potential benefits of doping. These strategies have found minimal success, because these sanctions have little influence on athletes' cognitions

surrounding doping (Strelan & Boeckman, 2006). For this reason, researchers have attempted to better understand psychosocial contributors to doping intentions and behavior.

Because doping is a contravention of sport ethic, athletes may use moral reasoning to make their decisions regarding doping. The social-cognitive theory of moral thought and action (Bandura, 1990; 1991) suggests that people anticipate the affective consequences of their actions and behave in a way that will bring about desirable affective outcomes. In terms of social and moral conduct, internal values set the standard for behavior. Acting in opposition to this standard can create a negative self-reaction. A person may therefore act morally in order to avoid anticipated self-reactions such as feelings of guilt or shame.

When faced with the decision to dope, an athlete may be drawn to the idea of improved performance yet anticipate the possible guilt they may feel from conducting such behavior. This tension may require certain mechanisms before deciding whether or not to dope, such as moral activation or disengagement. Moral disengagement (MD) provides an opportunity to relieve this tension, as it is the conditional endorsement of an otherwise transgressive behavior (Bandura, 1991). Research suggests athletes with spinal cord injury report less antisocial behavior in sport than their able-bodied counterparts, but these group differences are mediated by the use of MD (Kavussanu, Ring, & Kavanagh, 2015). Thus, more research is needed on MD in this population when examining a behavior such as doping.

Of the eight original MD mechanisms, six have been shown to potentially facilitate doping behavior (Boardley, Grix, & Harkin, 2014). These are moral justification (i.e., making a transgression appear acceptable due to perceived social or moral benefits), euphemistic labeling (i.e., using alternative language to reduce the reprehensibility of the transgression), advantageous comparison (i.e., contrasting against a more harmful behavior so the behavior in question appears

less damaging in comparison), displacement of responsibility (i.e., placing responsibility onto implicit or explicit social pressures), diffusion of responsibility (i.e., dispersing responsibility amongst a wider protagonist), and distortion of consequences (i.e., minimizing or ignoring the adverse effects of the behavior). Recent research has suggested that doping MD can allow an athlete to dope while minimizing anticipated feelings of guilt (Boardley, Smith, Mills, Grix, & Wynne, 2017; Ring & Kavussanu, 2017).

Though a cognition like doping MD is a positive predictor of doping outcomes, morality-based cognitions do not occur in isolation. In fact, two mechanisms of doping MD refer to the social norms surrounding doping: diffusion of responsibility and displacement of responsibility. There are two types of norms: subjective norms (sometimes referred to as injunctive) and descriptive norms (Cialdini, Reno, & Kallgren, 1990). Descriptive norms may refer to diffusion of responsibility, as they are based on the perceived behavior of others. In the doping context, these norms are measured based on the athlete's perceived prevalence of doping among their peers (Lazuras, Barkoukis, Rodafinos, & Tzorbatzoudis, 2010). Subjective norms may be relevant to displacement of responsibility, as they are perceived expectations of significant others regarding the consequences of a behavior (Ajzen, 1985). In the case of doping, subjective norms are the athlete's perceptions of the level of support/approval they would receive from significant others in their life in their decision to dope.

Support for normative influences as predictors of doping intentions and behavior has grown over the last decade. Uvacsek et al. (2011) found that users of performance enhancing drugs overestimated the prevalence of the behavior in their sport. A test of a more recent integrative model of doping use (Lazuras, Barkoukis, & Tsorbatzoudis, 2015) supported both subjective norms and descriptive norms as proximal predictors of doping intentions. In a seminal

meta-analysis, norms (both subjective and descriptive) were positive predictors of doping intentions and doping behavior (Ntoumanis, Ng, Barkoukis, & Backhouse, 2014).

Considering the similarities between mechanisms of doping MD and normative influences surrounding the behavior, athletes may use the social context in addition to their individual moral views when making decisions about doping. For instance, an athlete high in doping MD, who also perceives environmental factors to create social pressures to dope, may be particularly at risk for doping. In contrast, lower levels of any of these variables may minimize the association between the other variables and doping-related outcomes. Moral conduct is reciprocally regulated by the interaction between self-sanctions and social influences (Bandura, 1991), suggesting norms-based cognitions should be simultaneously considered when studying doping MD and anticipated guilt.

Though doping MD, descriptive norms, and subjective norms are independent predictors of doping intentions, these cognitions have not often been examined simultaneously. Some studies emphasizing descriptive norms include measures of sportspersonship or personal morality but not doping MD (Barkoukis, Lazuras, Tsorbatzoudis, & Rodafinos, 2013; Gucciardi, Jalleh, & Donovan, 2011), whereas studies emphasizing doping MD examine it alongside subjective norms exclusively (Lucidi et al., 2008). This gap in the literature should be filled, as this may help contextualize the socialization process. Socialization is the process by which social sanctions are internalized by an individual (Bandura, 1991). A study of this nature can help to understand the relationship between perceived social sanctions (in the form of subjective and descriptive norms) and self-sanctions (in the form of MD and anticipated guilt) and how combinations of these variables predict doping outcomes.

The purpose of the current study was two-fold. The first purpose was to describe the patterns of relationships between doping MD, subjective norms, and descriptive norms within a sample of disability sport athletes. The current study may be one of the first to examine these particular cognitions together within this population. It was hypothesized that there are a finite number of groups, or clusters, which can be characterized by athletes' unique responses to the variables of doping MD, subjective norms, and descriptive norms. The second purpose was to assess potential cluster differences in doping outcomes such as anticipated guilt and doping intentions. Understanding how group differences predict these doping-related outcomes may help anti-doping campaigns to tailor their messages to the most at-risk athletes. Based on the current literature, it was hypothesized that groups characterized by higher doping MD, subjective norms, and descriptive norms would report lower levels of anticipated guilt and higher levels of intentions than those characterized by lower scores on any or all of these variables.

Method

Participants

Athletes with physical disabilities (N = 186) ranging in age from 17 to 69 years (M = 37.6, SD = 12.47) were recruited at regional, national, and international events and through disability sports organizations between March and August of 2019. The sample was 78.0% male and 22.0% female, and was ethnically diverse (13.4% affirming Hispanic or Latino ethnicity; races reported were 54.5% White, 20.5% Black or African-American, 10.9% unknown/other, 6.4% more than one race, 4.5% American Indian/Alaskan Native, 3.2% Asian). Sports in which the athletes participated were wheelchair basketball (45.1%), para track and field/cycling (14.3%), wheelchair tennis (12.6%), other (11.4%), wheelchair baseball/softball (7.4%), wheelchair rugby (6.9%), shooting/air rifle (1.7%), and powerlifting/weightlifting (0.6%). The

participants' disability classifications were spinal cord injury (37.8%), amputation (13.0%), spina bifida (10.3%), cerebral palsy (7.6%), and other/multiple physical disabilities (31.3%).

Instruments

Included in the survey was the aforementioned definition of doping, explicitly stating how prohibited methods are included alongside prohibited substances used to enhance athletic performance. Following questions collecting demographic information (i.e., age, sex, ethnicity/race, sport, level of competition, years in the sport, training hours per week, training weeks per year, type of disability), the survey included a series of relevant validated instruments to measure the core study variables. Further details for each instrument follow.

Doping moral disengagement.

Doping MD was measured using the Doping Moral Disengagement Scale (DMDS; Boardley et al., 2018). The DMDS was selected because of its versatility to measure the construct of doping MD in both individual and team sports. Additionally, development of this measure evinced six dimensions relating to the six MD mechanisms, collectively representing one higher-order factor: doping MD. The measure consists of 18 items (e.g., "Compared to most lifestyles in the general public, doping isn't that bad"), with three items for each of the six dimensions of doping MD. Participants responded with their level of agreement with each statement on a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Internal consistency reliability of the scores was strong in the developmental stage of the measure, with Cronbach's alpha values of .95 in one sample and .96 in another (Boardley et al., 2018). Internal consistency reliability of the scores in the present study was also strong, with a Cronbach's alpha coefficient for the DMDS of .91.

Descriptive norms.

Descriptive norms were measured using three items (Barkoukis, Lazuras, & Tsorbatzoudis, 2014) from previous research with able-bodied athletes. All items were measured on a percentage scale, as they related to perceived prevalence (e.g., "Out of 100%, how many athletes at your competitive level do you believe engage in doping to enhance their performance?"). The first item was in relation to athletes at the competitive level of the respondent and the latter two asked for perceived prevalence in relation to elite athletes in the United States. Internal consistency reliability information on scores from this measure has not been reported in previous research (Lazuras et al., 2010; Lazuras et al., 2015); however, internal consistency reliability of scores in the current study was good, with a Cronbach's alpha value of .85.

Subjective norms.

Subjective norms were measured using three items (e.g., "Most people who are important to me would want me to use prohibited substances or methods to enhance my performance.") scored on a 1 (*strongly disagree)* to 7 (*strongly agree)* scale (Lazuras et al., 2010; Lazuras et al., 2015). The phrase "or methods" was added to the original items to reflect the provided definition of doping in the current study. Greater scores on this measure represented greater perceived social pressure to use performance enhancing substances. Previous research with these items has shown scores to possess good internal consistency reliability, with Cronbach's alpha coefficients of .84 (Lazuras et al., 2010) and .81 (Lazuras et al., 2015). Internal consistency reliability of scores in the present study was comparable, with a Cronbach's alpha coefficient of .77.

Anticipated guilt.

Anticipated guilt was measured using five items from the State Shame and Guilt Scale (Marschall, Saftner, & Tangney, 1994) adapted to a hypothetical doping situation (Boardley, Smith, Mills, Grix, & Wynne, 2017). Participants were asked to read the following scenario:

Having returned to training following a period of injury, you are feeling very out of shape. As such, you feel the need to get back in shape as soon as possible. A friend who you train with has been taking a training supplement that he/she says really helped him/her get back in shape quickly following a similar injury. He/she offers to give you some and you decide to take it. Subsequently you get back in shape much quicker than expected, but then discover the supplement you have been taking is a banned performance-enhancing substance. However, due to the improvements you have experienced, you decide to continue taking the substance.

After reading this scenario, the participant was asked to respond to five items rating the level at which they would feel particular aspects of guilt (e.g., "I would feel remorse, regret"). Responses were on a five-point scale ranging from 1 (*not at all*) to 5 (*extremely*), with greater scores reflecting greater anticipated guilt. Previous research using this measure showed scores to exhibit good internal consistency reliability, with a Cronbach's alpha coefficient of .95 (Boardley et al., 2017). Internal consistency reliability of scores in the present study was strong, with a Cronbach's alpha value of .95.

Doping intentions.

Intentions were measured using three items (e.g., "I intend to use prohibited substances or methods to enhance my performance during this season") from a study by Lazuras et al., (2010). The phrase "or methods" was added to each item to better reflect the current study's definition. Responses were on a seven-point scale ranging from 1 (*Definitely not)* to 7 (*Definitely yes*), with

greater scores reflecting higher intentions to use prohibited substances or methods. Previous research showed scores to exhibit strong internal consistency reliability, with a Cronbach's alpha coefficient of .97. Internal consistency reliability of scores in the present study was strong as well, with a Cronbach's alpha value of .92.

Procedure

After obtaining IRB approval, participants were recruited to take an in-person, pencil-and-paper survey. The primary investigator initially contacted disability sport athletes, coaches, and program coordinators by phone or email using publicly available contact information to describe the study. In addition, recruitment of participants occurred in person at regional, national, and international disability sport events in the United States and Canada. If allowed, the survey was described to athletes verbally as well as on the first page of the survey. Whenever possible, surveys were distributed to entire teams simultaneously. Participants were asked not to include their name anywhere on the survey, as completing the survey after receiving verbal and written information about the study risks and benefits constituted informed consent. Participants completed the survey individually or with assistance from either the investigator or an assistant of their choice. Examples of help offered included reading the questions to participants with visual impairments or marking answers for participants who had difficulty writing.

Data analysis

Two-step cluster analysis was conducted using the IBM Statistical Package for the Social Sciences v22.0 (SPSS Inc., Chicago, IL) to address the first purpose of this study. Variables used to create clusters were doping MD, subjective norms, and descriptive norms. First, a hierarchical cluster analysis using Ward's linkage method and squared Euclidean distance as the similarity

measure was conducted. This step provided guidance on how many clusters should be retained for the analysis. The second step involved *k*-means (non-hierarchical) cluster analysis.

Following cluster analysis, the second purpose of the study was addressed by comparing the clusters that emerged based on differences in the dependent variables of anticipated guilt and doping intentions. To test these differences, one-way multivariate analyses of variance (MANOVAs) were conducted using cluster identity as the grouped variable.

Results

Descriptive statistics

Means and standard deviations were calculated for all variables. Overall, athletes reported moderately low levels of doping MD ($M = 2.23$, $SD = 0.94$), perceived prevalence of 24.15% ($SD = 20.27$), low levels of subjective norms ($M = 1.39$, $SD = .72$), moderately high levels of anticipated guilt ($M = 3.82$, $SD = 1.20$), and low intentions ($M = 1.19$, $SD = 0.75$). Means, standard deviations, and correlations of all variables can be found in Table 1.

After scale scores were calculated using the data for each measure, standardized z-scores were used to search for outliers. Cases with scores greater than 3.29 *SD* from the mean for any variable were considered outliers. In the complete data set, seven outliers were found. However, removal of outliers should be carefully considered when conducting cluster analysis, as they might represent undersampling of a bona fide group within the population (Hair et al., 1998). For this reason, all outliers were retained for the first step of the cluster analysis to determine whether these outliers might properly represent the population sampled.

Variable	Mean	SD	1	2	3	4	5
1. Doping MD	2.23	.94	*.91*				
2. Descriptive Norms	24.15	20.27	.05	*.85*			
3. Subjective Norms	1.39	0.72	.42*	.010	*.77*		
4. Anticipated Guilt	3.82	1.20	-.37*	-.01	-.23*	*.95*	
5. Intentions	1.19	0.75	.25*	.15*	.53*	-.04	*.92*

Table 2.1. Descriptive Statistics and Correlations for Study Variables of Final Sample (n = 185)

Note: *p <.05; Cronbach's alpha coefficients along diagonal.

Cluster analysis

Standardized scores for doping MD, descriptive norms, and subjective norms were used to conduct the cluster analysis. Examination of the agglomeration coefficients resulting from the hierarchical analysis showed a notable increase when moving from five clusters to four clusters, from four clusters to three clusters, and from three clusters to two clusters. This suggested the appropriateness of a five, four, or three cluster solution. Interestingly, the five-cluster solution produced a cluster with a single outlier case. This case was removed—creating a final sample of 185—and the resulting four-cluster solution was retained.

In the *k*-means (non-hierarchical) cluster analysis, four non-redundant clusters with distinct characteristics were produced. Means, standard deviations, and standardized scores for cluster variables (doping MD, descriptive norms, and subjective norms) can be found in Table 2, with visual representation in Figure 1. A *z*-score at least 0.5 above or below the mean represented relatively high or low scores, respectively. These scores would be considered relatively high or low, regardless of whether they correspond to low or high scale scores. For example, cluster 1 was characterized by higher scores in doping MD despite its mean falling near the middle of the DMDS (M = 3.35).

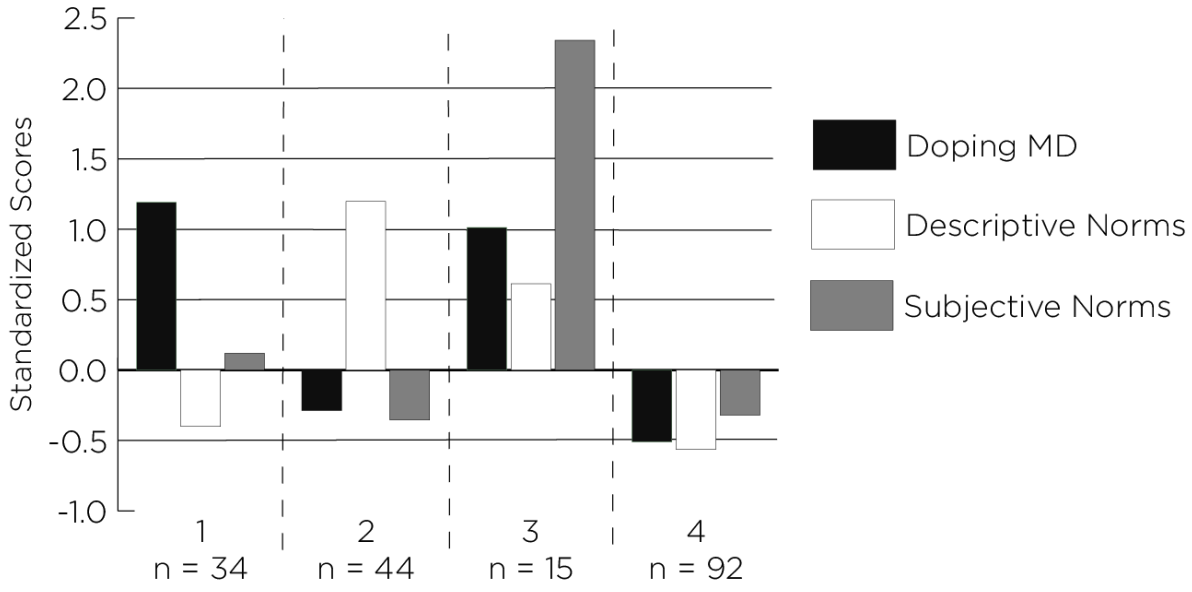

Figure 2.1. Results of k-means cluster analysis (N = 185)

Cluster 1 (*n* = 34) was characterized by relatively high scores on doping MD, with descriptive norms and subjective norms values around the mean. Individuals in this group may be described as using mechanisms of moral disengagement to a greater extent, but not perceiving a greater or lower acceptance or prevalence of doping than the other clusters. Cluster 2 (*n* = 44) was characterized by relatively high descriptive norms, with doping MD and subjective norms values around the mean. Individuals in this group may be described as perceiving doping to be more prevalent, but do not see it as accepted and do not disengage their moral reasoning any more or less than other groups. Cluster 3 (*n* = 15) was characterized by relatively high scores on all three variables. Individuals in this group may be described as perceiving doping to be accepted and prevalent, and having greater use of doping MD mechanisms. Cluster 4 (*n* = 92) was characterized by relatively low doping MD and descriptive norms, with subjective norms clustering near the mean. Individuals in this group would be described as perceiving low prevalence of doping, as well as little use of doping MD mechanisms.

Cluster	n	Doping MD		Descriptive Norms		Subjective Norms	
		M (SD)	*z*	M (SD)	*z*	M (SD)	*z*
1	34	3.41 (0.63)	1.19	16.16 (12.36)	-.40	1.51 (0.51)	0.11
2	44	1.97 (.67)	-0.29	49.66 (16.54)	1.19	1.14 (.299)	-0.35
3	15	3.24 (1.20	1.01	37.41 (20.23	0.61	3.27 (0.76)	2.34
4	92	1.75 (0.51	-0.51	12.74 (9.17)	-0.56	1.16 (0.38)	-0.32

Table 2.2. Participant Numbers, Means, Standard Deviations, and Standardized Scores for Cluster Characteristics

Group difference analyses

We conducted a one-way MANOVA to assess potential cluster differences in anticipated guilt and doping intentions. The analysis yielded a significant multivariate effect, Pillai's trace = .355, F (6, 352) = 12.662, $p < .001$, $\eta_p^2 = .178$. Follow-up ANOVAs yielded cluster differences in both guilt and doping intentions. Scheffe post hoc comparisons were conducted to assess the nature of these differences. In regard to anticipated guilt, clusters 2 (M = 4.08) and 4 (M = 4.11) scored significantly higher than clusters 1 (M = 3.10) and 3 (M = 2.80), with cluster 4 scoring the highest and cluster 3 scoring the lowest. There was no significant difference between cluster 1 and 3, nor was there a significant difference between clusters 2 and 4. Concerning doping intentions, only cluster 3 (M = 2.19) showed a significant difference from the other three clusters. This cluster showed significantly higher scores than clusters 1, 2, and 4 (M = 1.24, 1.10, and 1.02, respectively). All these differences held when using Dunnett's T3 and Dunnett's C tests, which adjusted for unequal variances and unequal sample sizes across groups.

Variable	F (3, 176)	η_p^2	Cluster 1 M (SD)	*z*	2 M (SD)	*z*	3 M (SD)	*z*	4 M (SD)	*z*
Anticipated Guilt	11.46*	.16	3.10[a] (0.19)	-0.61	4.08[b] (0.17)	0.24	2.80[a] (0.30)	-0.87	4.11[b] (0.12)	0.25
Doping Intentions	14.77*	.20	1.24[a] (.11)	0.11	1.10[a] (0.10)	-0.10	2.19[b] (0.17)	1.48	1.02[a] (0.07)	-0.22

Table 2.3. MANOVA Results for Cluster Differences

Note: *$p < .05$; Cluster differences based on pairwise comparison indicated by distinct superscripts (*a* represents lower value, *b* represents higher value).

Discussion

The first purpose of this study was to examine patterns of three cognitive antecedents of doping outcomes in disability sport athletes: doping MD, descriptive norms, and subjective norms. Though these variables have been studied in the literature, they are not often examined together, and typically only in able-bodied athletes. Thus, the current study contributes to the literature on doping in multiple ways. As hypothesized, there were a finite number (i.e., four) of distinct profiles grouped by relative scores on the variables of interest. These profiles emerged across multiple approaches to cluster analysis. One high-risk profile (i.e., Cluster 3) was observed, and was characterized by relatively high scores on doping MD, descriptive norms, and subjective norms. One low-risk profile (i.e., Cluster 4) was observed, and was characterized by relatively low scores on all these variables. Two mixed profiles (i.e., Clusters 1 and 2) were also observed that were characterized by relatively high scores on one variable (i.e., doping MD and descriptive norms, respectively), but not the others.

The second purpose of this study was to assess meaningful distinctions between clusters of cognitions on two outcomes: anticipated guilt and doping intentions. Clusters 1 and 3 showed significantly lower scores on the outcome of anticipated guilt than clusters 2 and 4. Because clusters 1 and 3 were characterized by higher levels of doping MD, results support previous research suggesting the negative association between doping MD and anticipated guilt from doping (Boardley et al., 2017; Ring & Kavussanu, 2017). Although anticipated guilt was significantly lower in the clusters characterized by higher doping MD, these clusters were not necessarily characterized by higher descriptive and subjective norms. These findings suggest anticipated guilt from doping is related to internal moral cognitions regarding the act, independent of the perceived social norms surrounding the behavior. Cluster differences in intentions could provide further context to the influence of social norms. Cluster 3 was characterized by relatively higher subjective norms than the other three clusters. This same cluster reported significantly higher intentions to dope than the other three clusters. This supports previous research suggesting the prediction of doping intentions by perceived social norms (Ntoumanis et al., 2014). Group differences in line with theory supported the predictive value of the clusters, providing robust evidence of the profiles representing actual group structures (Hair et al., 1998).

Aside from the aforementioned support for the hypotheses, this study could provide some context for the social-cognitive theory of moral thought and action (Bandura, 1991). Bandura suggested internalization of social sanctions can occur over time, and these self-sanctions are what influence behavior. Because subjective norms did not appear to be associated with anticipated guilt ($r = -.23$, $p < .05$), this suggested a lack of an internalization in these athletes. Furthermore, anticipated guilt and intentions were not related presently. This initially seemed to

refute the social-cognitive theory of moral thought and action, but qualitative research with athletes who have a history of doping suggests there is a limited group of people these athletes will be honest with about their PED use (Boardley et al., 2014). In other words, athletes may choose to avoid sharing their doping decisions with those who would stimulate the negative self-emotions brought on by the behavior. Therefore, they may surround themselves with friends or family who are supportive of the behavior, completing a self-fulfilling prophecy and increasing the perceived doping norms. Moreover, surrounding oneself with colleagues who use performance enhancing substances or methods may expose the athlete to mechanisms of doping MD. This may best explain the findings in the current study, and could describe a possible dynamic based on the combination of variables observed in cluster 3, the most at-risk group.

Cluster 3, the smallest cluster (n = 15), was characterized by relatively high scores on all three variables. Considering the association of these variables with doping-related outcomes, the small number of cases in this cluster should be viewed optimistically. According to previous research, higher doping MD is associated with lower anticipated guilt (Boardley et al., 2017) and greater doping susceptibility (Boardley, Smith, Ntoumanis, Gucciardi, & Harris, 2019), and higher perceived norms are associated with higher doping intentions and behavior (Ntoumanis et al., 2014). It may be good to know that the cluster with high levels on all three of these variables was the smallest cluster, at least in a disability sport setting. Furthermore, even if the intentions of the members of this cluster are relatively high, there is still an intention-behavior gap (Sheeran, 2002) that would need to be overcome before these athletes engage in doping behavior.

The exclusive recruitment of disability sport athletes offered a broader picture of the doping environment. Differences in antisocial behavior between athletes with spinal cord injury and able-bodied athletes have previously been explained by use of MD mechanisms, despite

similarities in empathy and negative emotion (Kavussanu et al., 2015). Emotional responses may therefore not be enough to promote or deter doping. In the current study, the most at-risk group was characterized by high doping MD as well as high perceived social norms. Among athletes with physical disabilities, social support is a significant predictor not only of physical activity levels (Martin Ginis et al., 2011) but also of competitive level of participation (Stapleton, Perrier, Campbell, Tawse, & Martin Ginis, 2016). Subjective norms are a proxy for social support of a particular behavior, and thus may help to understand its association with doping intentions in disability sport athletes. Athletes, both disabled and able-bodied, appear to be willing to put more effort into doping if they have the support of the people around them.

Although the current study exclusively recruited athletes with physical disabilities, the measures in this study were originally developed for use with able-bodied athletes. This may have led to issues with interpretation of some items—particularly, descriptive norms. Two of the three descriptive norms items ask the participant about their perceived prevalence of doping in "elite" athletes. Research by Tasiemski, Kennedy, Gardner, & Blaikly (2004) has demonstrated that individuals with an acquired physical disability (i.e., spinal cord injury) have lower levels of athletic identity than what is reported by the general population. It is difficult to decipher whether the word "elite" evoked an image of high-level disability sport athletes or their able-bodied counterparts. How the athletes interpreted these items could have confounded responses when measuring perceived prevalence of doping. Therefore, reliability across athletic contexts should be taken into consideration when interpreting results in the descriptive norms measure.

Despite the use of measures originally developed for able-bodied athletes, the athletes in this study reported scores similar to previous research. Mean doping MD in this study ($M = 2.23$) was comparable to a study conducted with Olympic-style sport athletes ($M = 2.14$; Boardley et

al., 2019). The perceived prevalence of doping in disability sport reported in this study (*M* = 24.15) fell within the range reported in studies with student-athletes (Petróczi, Mazanov, Nepusz, Backhouse, & Naughton, 2008) and Hungarian competitive athletes (Uvacsek et al., 2011). Lastly, athletes in this study reported low levels of subjective norms (*M* = 1.39), which was comparable to what was reported by elite athletes in previous research (*M*= 1.45) by Lazuras et al. (2010).

Implications

Athletes in cluster 3 reported significantly higher doping intentions than any other group, and were also in one of the two groups with the lowest reported anticipated guilt from doping. This puts these athletes in a pivotal position in anti-doping efforts. Not only are these athletes at risk for intentional doping, but they are also inclined to feel less guilty if they do end up using prohibited substances or methods to enhance performance. A multi-functional view of moral disengagement (Tillman, Gonzalez, Whitman, Crawford, & Hood, 2018) considers MD to occur at multiple stages, both before and after a behavior is performed. Whether this multi-stage, multi-functional view of MD describes the members in cluster 3, thus providing theoretical insight into the MD process, needs to be evinced through further investigation.

Regardless of the exact relationship between doping MD, perceived norms, anticipated guilt, and doping intentions, there are practical implications to take from the current study. Anti-doping education programs such as the ATLAS and ATHENA programs (Barkoukis et al., 2016) have support in that they reduce adolescents' positive attitudes toward prohibited substances, but research has failed to establish a causal relationship between doping attitudes and doping behavior (Backhouse et al., 2007). Due to the implications doping MD can have on doping related outcomes, anti-doping education programs may benefit from making the athletes aware

of possible mechanisms that could be used to endorse a transgressive behavior like doping, thus decreasing the likelihood they would use these mechanisms to justify their own future, present, and past doping behavior. Another option might be to address antecedents of doping MD, such as moral identity (Kavussanu & Ring, 2017) or basic values (Ring, Kavussanu, & Gürpinar, 2020), with an expectation this may decrease the use of doping MD in these athletes.

Identifying which cluster an athlete belongs to may also help with anti-doping messaging campaigns. Tailored health communication (Rimer & Kreuter, 2006), in which health-related messaging is specific to the characteristics or needs of the individual or group, has found moderate success in improving multiple health-related behaviors and in various populations (Lustria et al., 2013). This style of health communication may be beneficial to anti-doping interventions that implement smartphone applications rather than in-person educational programs (Nicholls et al., 2020). Using web-based or smartphone media would allow anti-doping organizations to efficiently tailor messages to those athletes who need these messages most, such as those in cluster 3 of the current study.

Limitations

There were limitations in this study, which may have stemmed from using measures developed for able-bodied athletes and applying them to a sample of athletes with physical disabilities. Besides the considerations previously discussed, our definition of "doping" may not have covered the nuanced context of disability sport. Although the definition of doping included in the survey contained the phrase "prohibited substances or methods," the perception of what constituted a "method" may have been ambiguous in our sample. Possible methods unique to the disability sport context are falsifying ability/disability level during sport classification and boosting (i.e., artificial induction of autonomic dysreflexia, which has been suggested to enhance

performance) in athletes with high-level (T6 or above) spinal cord injury (Legg & Mason, 1998; Mazzeo, Santamaria, & Iavarone, 2015). It is difficult to know whether these methods were acknowledged by athletes when completing the survey.

What is "prohibited" may also be subject to interpretation. Athletes with a high-level spinal cord injury exhibit dysautonomic disorders (e.g., low blood pressure and heart rate during physical exertion) associated with poor sport performance (Bhambhani, 2002). Boosting is therefore perceived by some athletes as necessary simply to "normalize" or remain competitively "relevant" (Sparkes & Brighton, 2019). This perception, in combination with the belief that boosting often occurs by accident, provides possible justification for the practice. At a policy level, boosting is banned by the International Paralympic Committee (IPC) but is not listed as a doping method by the World Anti-Doping Agency (WADA; Mazzeo et al., 2015). Such ambiguity may have affected how athletes in this study perceived whether a method is "prohibited." These issues are more relevant to the disability sport context than traditional definitions of doping, and future researchers may benefit from making distinctions between doping substances or methods that are exclusive to the disability sport context. In the meantime, caution should be taken when making any generalizations with the findings of the current study.

Further research should also investigate other doping-related outcome variables, such as doping behavior or susceptibility to inadvertent doping. Self-reported measurement of doping behavior comes with limitations of its own, but studying more distal outcomes can provide better understanding of the phenomenon and minimize the intention-behavior gap that is often seen in sport and exercise research (Sheeran, 2002).

Conclusion

Disability sport athletes' cognitions surrounding doping are similar to those of their able-bodied counterparts. The current study suggests there may be a small group of athletes whose normative and moral cognitions may put them at risk of doping and minimizing self-sanctions that typically follow transgressive behavior. Researchers are advised to be aware of the unique doping context in disability sport, and a deeper understanding of the distinctions between the different contexts of sport can offer insight into the best anti-doping strategies for that particular group of athletes.

CHAPTER THREE: STUDY TWO

DOPING MORAL DISENGAGEMENT PREDICTS ANTICIPATED GUILT AND DOPING CONSIDERATION WITHIN THE CONTEXT OF SOCIAL NORMS

Abstract

Doping Moral Disengagement (MD) is suggested to decrease feelings of anticipated guilt from doping (Boardley et al., 2017) and increase the consideration one would give to doping (Boardley et al., 2019). These cognitions do not occur in isolation and must be understood within the social context. Subjective norms (perceived social approval or support for doping) and descriptive norms (perceived doping prevalence) are also suggested to influence doping-related outcomes (Ntoumanis et al., 2014). The purpose of this study was to test a conceptual model that specifies these three constructs (doping MD, subjective norms, and descriptive norms) to predict doping consideration, directly and indirectly through anticipated guilt. Athletes from various sports (N = 238) responded to a survey measuring doping MD (Boardley et al., 2018), subjective norms (Lazuras et al., 2010), descriptive norms (Barkoukis et al., 2014), anticipated guilt (Boardley et al., 2017), and consideration of doping in a hypothetical situation (Gucciardi et al., 2010). Structural equation modeling supported the direct and mediated relationship from doping MD to doping consideration, but no such relationships were found for subjective or descriptive norms. The direct effects of MD were robust against socially desirable responding and removal of outliers. Results therefore suggest doping MD to be a dominant predictor of doping-related cognitions. Anti-doping educational programs, which typically do not address doping MD and are sub-optimally effective (Backhouse et al., 2007), may benefit from deliberately targeting this construct.

Introduction

Sport can be thought of as a context distinct from everyday life in both people's moral reasoning (Bredemeier & Shields, 1984) and moral behavior (Kavussanu, Boardley, Sagar, & Ring, 2013). This is evidenced by athletes being more likely to perform antisocial behavior (e.g., intimidating or injuring an opponent) in the sport context than other contexts. Antisocial behavior is defined as behavior that is intended to harm or disadvantage another (Sage, Kavussanu, & Duda, 2006). One form of such behavior is doping, defined as the use of prohibited substances or methods with the potential to artificially improve performance through changes in physical or mental condition (IPC, 2018; Lauré, 1997; WADA, 2021). Despite some authors having argued that doping is not inherently immoral (Arandjelović, 2015), it contravenes the rules of sport and athletes use morality-related cognitions when making decisions whether or not to use performance enhancing substances or methods. For example, athletes may use cognitive mechanisms to conditionally endorse their transgressive behavior, a process referred to as moral disengagement (MD; Bandura, 1991).

There are eight mechanisms used in MD. Moral justification involves making the behavior seem morally or socially acceptable by offering a way in which it can do some good. Euphemistic labeling uses benign language to distort the perceived reprehensibility of the behavior. Advantageous comparison is when the transgressor contrasts the behavior with a more outrageous flagrant offense. Displacement of responsibility is putting the responsibility on some other authoritative decision-maker. Diffusion of responsibility is spreading the responsibility of the decision to act to a group in order to minimize individual responsibility. Distortion of consequences involves minimizing or ignoring the negative ramifications of the behavior. Dehumanization removes the victim's human qualities in order to minimize empathetic feelings

toward them. Finally, attribution of blame places the fault with the victim, as if their actions provoked the transgressor. Research in the sport area suggests six of these mechanisms of MD (the exceptions being dehumanization and attribution of blame) are relevant to doping (Boardley et al., 2018).

Athletes may anticipate feeling guilty for deciding to use performance enhancing substances or methods. The social-cognitive theory of moral thought and action (Bandura, 1991) suggests individuals may have negative affective responses when behaving immorally, and therefore will act morally in order to avoid these negative emotions. MD acts as a method to circumvent the anticipation of guilt in response to the behavior. In terms of doping, an athlete may use doping MD to circumvent the anticipated feelings of guilt they expect from engaging in performance enhancing drug use. Empirical research has found doping MD to inversely associate with anticipated guilt, which itself is inversely associated with outcomes such as doping likelihood (Kavussanu & Ring, 2017). Thus, there is support in the literature that a moral cognition such as doping MD factors into athletes' doping decisions.

Individual moral cognitions occur within, and are likely to be shaped by, social environmental factors. In fact, the self-sanctions one feels after committing a transgression are suggested to be a consequence of having observed social sanctions for the transgression over time (Bandura, 1991). It is therefore important to consider the social environment, particularly normative influences, when examining cognitions such as doping MD. The two most relevant normative influences in terms of doping are subjective norms and descriptive norms. Subjective norms are the perceived pressure by significant others to perform, or to not perform, a particular behavior (Ajzen, 1991). In terms of doping, this is the athlete's perception of whether people they care about would support or approve of their doping behavior.

Descriptive norms are distinct from subjective norms in that they are the perception of the actual behavior of others. In doping terms, this is the athlete's perception of the prevalence of doping in their sport. A meta-analysis on the theory of planned behavior suggested that descriptive norms contribute additional explanation of the variance in various social and health behaviors beyond the original variables of the theory of planned behavior, which included subjective norms (Rivis & Sheeran, 2003). Furthermore, a doping-specific meta-analysis suggested that both subjective norms and descriptive norms significantly predict outcomes such as doping intentions and doping behavior (Ntoumanis, Ng, Barkoukis, & Backhouse, 2014).

Moral conduct is reciprocally regulated by the interaction of self-sanctions and social influences (Bandura, 1991), suggesting that norms-based cognitions should be simultaneously considered when studying a morality-based cognition like doping MD. Despite the need for research that considers socially-driven cognitions alongside internal cognitions, normative influences are typically not measured in combination with doping MD. Some studies emphasizing doping MD have examined it alongside subjective norms exclusively (Lucidi et al., 2008), whereas studies emphasizing descriptive norms have included measures of personal morality or sportspersonship but not doping MD (Barkoukis, Lazuras, Tsorbatzoudis, & Rodafinos, 2013; Gucciardi, Jalleh, & Donovan, 2011). A simultaneous test of doping MD, subjective norms, and descriptive norms (which have all independently been shown to predict doping outcomes) would offer a fuller picture of the extent to which internalization of social doping sanctions has occurred in athletes. This picture could provide a deeper understanding of which variables are most salient to athlete doping outcomes.

Doping outcomes of interest have plagued doping researchers, because objective and subjective measures both present setbacks. Objective measures, which more or less are the same

as drug-testing procedures to detect doping athletes, are not always successful at detecting the presence or absence of prohibited substances (Kayser, Mauron, & Miah, 2007; Strelan & Boeckmann, 2006). Furthermore, survey-based research is susceptible to false reporting of actual doping behavior. The most common solution to this problem has been to instead ask respondents to imagine a hypothetical scenario in which they have the opportunity to use a performance enhancing substance. Such hypothetical scenarios are popular because they factor in environmental variables from other theories such as availability (Donovan, Egger, Kapernick, & Mendoza, 2002; Petróczi & Aidman, 2008) or situational temptation (Lazuras, Barkoukis, Rodafinos, & Tzorbatzoudis, 2010), and because they promote honest responding by avoiding self-incrimination. Outcome variables measured with this method have included doping likelihood (Kavussanu & Ring, 2017) and doping susceptibility/consideration (Boardley, Smith, Ntoumanis, Gucciardi, & Harris, 2019). Whereas doping susceptibility was originally operationalized as any level of doping consideration (Gucciardi, Jalleh, & Donovan, 2010), later research used the same measure in a Likert-type format (Boardley et al., 2019). For the sake of clarity, the measure is referred to as doping consideration from here forward. Doping consideration is particularly important in the current study, because doping MD, descriptive norms, and subjective norms may all be integrated into the decision-making process and be associated with the amount of consideration the athlete might give to an opportunity to illegally enhance performance.

The purpose of the current study was to examine athlete doping-related cognitions within the greater context of the social environment of sport. Specifically, this study tested a conceptual model in which the three variables of doping MD, subjective norms, and descriptive norms predict doping consideration, directly and indirectly through anticipated guilt (see Figure 3.1).

Based on previous doping literature, it was hypothesized that doping MD, subjective norms, and descriptive norms would be positively associated with each other, and all have independent negative associations with anticipated guilt from doping; that doping MD, subjective norms, and descriptive norms would have independent positive associations with doping consideration; and that anticipated guilt would be negatively associated with doping consideration. Finally, the associations between the three predictor variables and doping consideration were hypothesized to be explained by significant mediation through anticipated guilt.

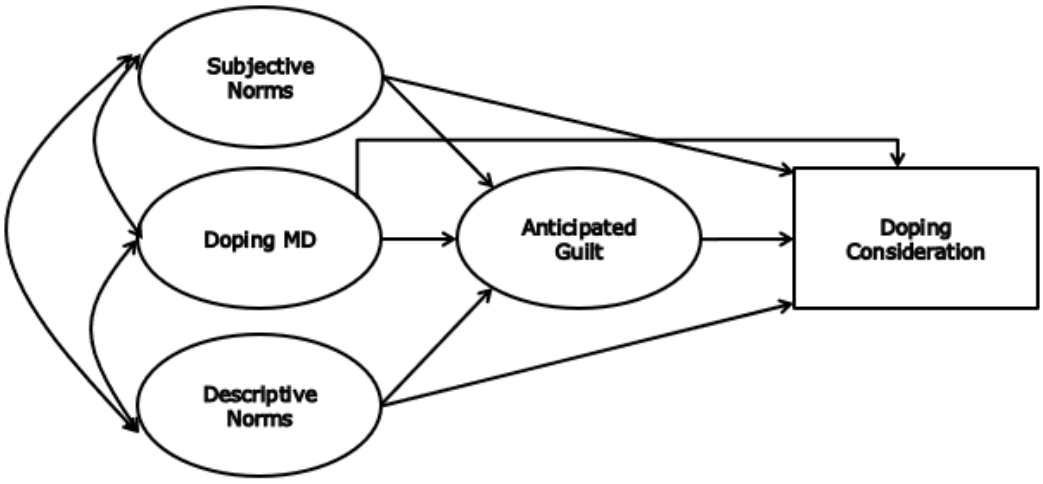

Figure 3.1. Hypothesized model for proposed Study 2

Note: MD = moral disengagement

Method

Participants

Participants included a convenience sample of high-level athletes from the USA (N = 238) who were recruited between April and October of 2020. The sample was 59.2% female and 40.8% male, with ages ranging from 17 to 82 years (M = 27.86, SD = 14.72). Ethnic makeup of

the sample included 5.0% affirming Hispanic or Latino ethnicity, with races reported as 85.7% White, 6.8% more than one race, 3.4% Black or African-American, 2.5% Asian, 1.3% unknown/other, and 0.4% American Indian/Alaskan Native. Athletes were currently competing at the regional (n = 89), national (n = 104), or international (n = 45) level in endurance (n = 144) and non-endurance (n = 94) sports. Sports in which the athletes participated were swimming (26.6%), triathlon/multisport (22.4%), lacrosse (11.4%), cross country (9.7%), volleyball (5.9%), track and field (5.5%), football (2.5%), tennis (2.5%), baseball/softball (2.1%), cycling (2.1%), diving (2.1%), bobsled/skeleton (1.7%), basketball (1.3%), golf (1.3%), other (1.3%), weightlifting (0.8%), curling (0.4%), and wrestling (0.4%). On average, athletes had been competing in their sport for 11.09 years (SD = 14.72), had been members of their current team for 3.82 years (SD = 4.87), and trained for 17.17 hours (SD = 6.55) a week for 42.99 weeks (SD = 11.25) out of the year.

Instruments

The participants completed surveys assessing demographic information (i.e., age, sex, ethnicity/race, sport, team/club/school, level of competition, years in the sport, training hours per week, training weeks per year) and the core study variables (see Appendix D). A definition of doping was provided to athletes prior to the appearance of doping-related instruments: "Doping is defined as use of prohibited substances or methods by an athlete with the potential to artificially improve performance through changes in physical and/or mental condition." Further details follow for each instrument used to assess the core study variables.

Doping moral disengagement.

Doping MD was measured by administering the Doping Moral Disengagement Scale (DMDS; Boardley et al., 2018) and retaining the items from the short version of the instrument

(DMDS-S) for analysis. The DMDS-S was selected because of its versatility to measure the construct of doping MD in both team and individual sports. Additionally, development of the full measure evinced six dimensions relating to the six MD mechanisms observed in sport doping, collectively representing one higher-order factor: doping MD. The full measure consists of 18 items (e.g., "Doping doesn't really harm anyone else."), with three items for each of the six dimensions of doping MD. The short version includes one item for each of the six dimensions, making for a six-item measure. The short version of the scale was chosen for this study based on its robustness and utility in previous research as well as to allow for a simpler model to be estimated. Participants responded with their level of agreement with each statement on a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Internal consistency reliability of scores for the DMDS-S was strong in the developmental stage of the measure, with Cronbach's alpha values of .86 in one sample and .89 in another (Boardley et al., 2018). Internal consistency reliability of scores in the present study was acceptable, with a Cronbach's alpha coefficient of .72.

Subjective norms.

Subjective norms were measured using three items (e.g., "Most people who are close to me would like me to use doping substances or methods to enhance my performance.") scored on a 1 (*strongly disagree)* to 7 (*strongly agree)* scale (Lazuras et al., 2010; Lazuras, Barkoukis, & Tsorbatzoudis, 2015). The phrase "or methods" was added to the original items to fully map to the definition of doping provided to participants in the current study. Greater scores on this measure represented greater perceived social pressure to use performance enhancing substances or methods. Previous research has shown scores on these items to exhibit good internal consistency reliability, with Chronbach's alpha coefficients of .84 (Lazuras et al., 2010) and .81

(Lazuras et al., 2015). Internal consistency reliability of scores in the present study was comparable, with a Cronbach's alpha coefficient of .85.

Descriptive norms.

Descriptive norms were measured using three items (Barkoukis, Lazuras, & Tsorbatzoudis, 2014). All items were measured on a 0-100 scale, as they relate to perceived prevalence (e.g., "Out of 100%, how many athletes at your competitive level do you believe engage in doping to enhance their performance?"). The first item was in relation to athletes at the competitive level of the respondent and the latter two asked for perceived prevalence in relation to elite athletes in the United States. Internal consistency reliability information on scores from this measure have not been reported in previous research (Lazuras et al., 2010; Lazuras et al., 2015) using these specific items. Internal consistency reliability of scores in the present study was good, with a Cronbach's alpha value of .86.

Anticipated guilt.

Anticipated guilt was measured using five items from the State Shame and Guilt Scale (Marschall, Saftner, & Tangney, 1994) adapted to a hypothetical doping situation (Boardley et al., 2017). Participants were asked to read the following scenario:

Having returned to training following a period of injury, you are feeling very out of shape. As such, you feel the need to get back in shape as soon as possible. A friend who you train with has been taking a training supplement that he/she says really helped him/her get back in shape quickly following a similar injury. Your friend offers to give you some and you decide to take it. Subsequently you get back in shape much quicker than expected, but then discover the supplement you have been taking is a banned performance-enhancing substance. However, due to the improvements you have experienced, you decide to continue taking the substance.

After reading this scenario, the participant was asked to respond to five items rating the level at which they would feel particular aspects of guilt (e.g., "I would feel bad about what I was doing."). Responses were on a five-point scale ranging from 1 (*not at all*) to 5 (*extremely*), with greater scores reflecting greater anticipated guilt. Previous research using this measure showed scores to exhibit good internal consistency reliability, with a Cronbach's alpha coefficient of .95 (Boardley et al., 2017). Internal consistency reliability of scores in the present study was good, with a Cronbach's alpha value of .89.

Doping consideration.

A single item was used to measure doping consideration. First, participants were asked to read the following scenario in which they are offered an opportunity to dope:

If you were offered a banned performance-enhancing substance under medical supervision at low or no financial cost and the banned performance-enhancing substance could make a significant difference to your performance and was currently not detectable.

Following the scenario, athletes were asked to respond to the item "How much consideration would you give to the offer?" on a seven-point scale ranging from 7 (*a lot of consideration*) to 1 (*none at all*). Higher scores indicated greater consideration of doping. Previous research has supported the validity of this measure for examining doping susceptibility (Gucciardi, Jalleh, & Donovan, 2010). No internal consistency reliability statistic was calculated for this measure because it consists of a single item.

Social desirability.

In line with previous doping research studies (Barkoukis et al., 2014; Gucciardi et al., 2010; Kavussanu et al., 2016; Lazuras et al., 2015), we included a measure of social desirability. While not essential to address the focal purpose of the current study, it was deemed something to

consider through supplemental analysis. Therefore, the seventeen-item Social Desirability Scale (SDS-17; Stöber, 2001) was administered after demographic information and prior to doping-relevant instruments. This scale presented *True*/*False* items that may elicit socially desirable responding (e.g., "In traffic I am always polite and considerate of others."). *True* is scored as 1 and *False* is scored as 0, with the exception of six reverse-coded items (items 1, 4, 6, 7, 11, 15, and 17). Scale total was used for supplemental analysis, with higher scores indicating more socially desirable responding. Previous research has shown scores on these items to exhibit acceptable internal consistency reliability, with Chronbach's alpha coefficients ranging from .61 to .84 (Stöber, 2001). Internal consistency reliability of scores in the present study was suboptimal, with a Cronbach's alpha value of .64.

Procedure

After obtaining IRB approval, participants were recruited to take an online survey using Qualtrics software. An online method was employed because of restrictions to in-person research during the COVID-19 pandemic. Coaches, directors, and administrators were contacted by phone or email using publicly available contact information or through personal contact with the primary investigator to describe the purpose of the study. If the contact was amenable to their athletes completing the survey, the investigator shared a link to the online survey for the coach, director, or administrator to distribute to their athletes (see Appendix D). When the link was followed, the first page of the site presented study information to the athletes before choosing to continue. Completing the survey after receiving this written information constituted informed consent to participate.

Data Analysis

After data screening was completed, descriptive statistics, bivariate correlations, and reliabilities were calculated for all variables. To address the purpose of the study, latent variable modeling was employed. Specifically, structural equation modeling (SEM) was conducted using M*plus* (Muthén & Muthén, 1998-2015) to assess the fit of the hypothesized model to the data and to test the specified direct and indirect relationships. The analysis used a maximum likelihood robust (MLR) estimator (Yuan & Bentler, 2000). Chi-square (χ^2), comparative fit index (CFI), Tucker-Lewis index (TLI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR) assessed model-data fit. Values greater than 0.95 and 0.90 for the CFI and TLI and less than 0.06 and 0.08 for RMSEA indicated excellent and adequate model fit, respectively (Hu & Bentler, 1999). An SRMR value less than .08 was also considered good fit. In line-with the two-step approach to SEM (Anderson & Gerbing, 1998), the measurement model was examined first, followed by testing of the structural model.

Results

Descriptive Statistics

Qualtrics software received a total of 406 recorded responses. Of these, 121 completed zero items (i.e., followed the link to the survey, but did not proceed beyond the information and consent page), and another 47 did not complete any items in the core study variables. The remaining 238 responses were retained for the analysis of this study. Initial screening examined the data for missing values, violations of assumptions, and outliers (Tabachnick & Fidell, 2013). In the missing data analysis, it was found that 1.15% of all items were missing. Furthermore, data were considered to be missing completely at random as evidenced by Little's MCAR test, $\chi^2 = 698.181$, $p = .908$. When this is the case, there are a number of viable missing data analysis

techniques. The default techniques of the statistical software were used in both the correlation (pairwise deletion in SPSS) and latent variable (full information maximum likelihood in M*plus*) analyses.

Criteria for deviations from normality were based on levels provided by Finney and DiStefano (2013), in which absolute values of skew > 2 and kurtosis > 7 may present issues with maximum likelihood (ML) analyses. Based on these criteria, only subjective norms presented deviations from normality, with a skewness of 4.025 and kurtosis of 21.489. Leptokurtic distributions (positive kurtosis) pose the risk of rejecting a correctly specified model and overestimating the significance of model parameters (Finney & DiStefano, 2013). In light of these risks, a robust analysis was used. As will be described in the results, neither of these issues arose in the analysis—the model fit the data well and subjective norms were not significant predictors of the endogenous variables.

Outliers were determined to be any score that fell outside of 3.29 standard deviations from the mean of the variable. A total of eight univariate outliers were found. However, these values may have offered a true representation of a small number of participants (as seen in Study 1). Therefore, these outliers were not removed for further analysis. For the sake of being thorough, an analysis was conducted for correlations and the hypothesized model with these outliers removed. Results of these analyses can be found in the supplemental analysis.

Means, standard deviations, and correlations were calculated for all variables (see Table 3.1). Overall, relative to response set options the athletes reported moderately low levels of doping MD ($M = 2.27$, $SD = 0.95$), low levels of subjective norms ($M = 1.33$, $SD = 0.81$), moderately high levels of anticipated guilt ($M = 4.24$, $SD = 0.80$), and low doping consideration ($M = 2.24$, $SD = 1.62$). They perceived doping on average to be 22.28% ($SD = 18.00$). Doping

MD showed significant positive correlations with subjective norms (r = .423) and doping consideration (r = .389), and a significant negative correlation with anticipated guilt (r = -.491). Additionally, Subjective norms showed a significant positive correlation with consideration (r = .223) and a significant negative correlation with anticipated guilt (r = -.263). A significant negative correlation was found between anticipated guilt and doping consideration (r = -.413). There were no significant correlations with descriptive norms.

Variable	Mean	SD	1	2	3	4	5
1. Doping MD	2.27	0.95	*.72*	.079	.558*	-.593*	.425*
2. Descriptive Norms	22.28	18.00	.004	*.86*	.004	-.064	.067
3. Subjective Norms	1.33	0.81	.423*	-.026	*.85*	-.303*	.231*
4. Anticipated Guilt	4.24	0.80	-.491*	-.081	-.263*	*.89*	-.412*
5. Consideration	2.24	1.62	.389*	.073	.223*	-.413*	-

Table 3.1. Descriptive Statistics and Correlations for Study Variables of Final Sample (n = 238)

Note: *p <.05; Cronbach's alpha coefficients along diagonal, with zero-order Pearson correlations below and measurement model latent variable correlations above.

Model Testing

The measurement model was examined first, in line with the two-step approach. In this model, covariations between the latent variables of doping MD, descriptive norms, subjective norms, anticipated guilt, and the doping consideration item were freely estimated. The number of estimated parameters was the same in the measurement model and the structural model, therefore the goodness of fit indices were equal in both models. Thus, the fit indices will be reported once. Overall, the indices of these models indicated adequate to excellent fit, χ^2 (126) = 193.055, p < .01, CFI = .946, TLI = .935, RMSEA = .047 (.033, .060), SRMR = .049. Factor loading values were generally acceptable, with a primary exception being from the DMDS-S item associated

with euphemistic labelling. In line with previous research that has supported and maintained the inclusion of this item, it was retained in later analyses. Factor loadings and error variances are shown in Table 3.2.

Factor	Item	Factor Loading	Error Variance
DMDS-S	Doping is okay if it helps an athlete advise others on how to do it right (moral justification).	.83	.31
	Using terms such as "gear" or "juice" makes doping sound less harmful (euphemistic labelling).	.28	.92
	Compared to most lifestyles in the general public, doping isn't that bad (advantageous comparison).	.65	.58
	Athletes shouldn't be blamed for doping if training partners/teammates pressure them to do it (displacement of responsibility).	.49	.76
	It's not right to condemn individuals who dope when many in their sport are doing the same (diffusion of responsibility).	.56	.68
	Risks associated with doping are exaggerated (distortion of consequences).	.68	.54
Descriptive Norms	Out of 100%, how many athletes at your competitive level do you believe engage in doping to enhance their performance?	.63	.60
	Out of 100%, how many elite athletes in the USA do you think engage in doping to enhance their performance?	.88	.23
	Out of 100%, how many elite athletes do you believe will be engaged in doping during the next 3 years to enhance their performance?	.97	.06
Subjective Norms	Most people who are important to me would want me to use doping substances or methods to enhance my performance.	.83	.31
	Most people I know would agree if I used doping substances or methods to enhance my performance.	.72	.49
	Most people who are close to me would like me to use doping substances or methods to enhance my performance.	.93	.14
Anticipated Guilt	I would feel remorse, regret.	.81	.35
	I would feel tension about what I was doing.	.82	.32
	I would not be able to stop thinking about the bad thing I was doing.	.75	.44
	I would feel like apologizing, confessing.	.74	.46
	I would feel bad about what I was doing.	.91	.17

Table 3.2. Items, Standardized Factor Loadings, and Error Variances in Study 2

Note: DMDS-S = Doping Moral Disengagement Scale-Short.

In step two, the structural model was tested with the hypothesized relationships. In line with hypotheses, doping MD showed an inverse association with anticipated guilt and a positive association with doping consideration. Anticipated guilt also had an inverse association with doping consideration. Furthermore, there was a strong positive covariance between doping MD and subjective norms. No other estimated covariances or direct effects were found to be statistically significant (see Figure 3.2). Overall, the model accounted for 35.3% of the variance in anticipated guilt and 22.1% of the variance in doping consideration.

The MODEL = INDIRECT command was used to examine the significance of mediational paths specified within the model. Doping MD indirectly predicted doping consideration via anticipated guilt (β = .151, $p < .05$, 95% CI = .018, .283). No other significant indirect effects were found in this analysis.

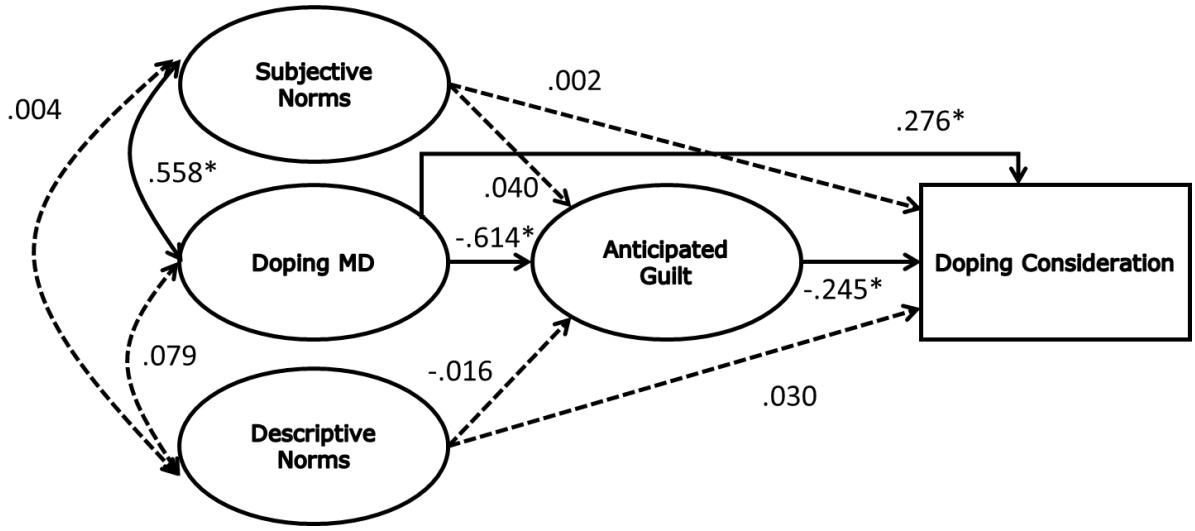

Figure 3.2. Model testing results

Note: MD = moral disengagement; significant associations denoted by asterisk and solid arrows, non-significant by dotted arrows

Supplemental Analyses

Social desirability.

Supplemental analyses were conducted to assess if social desirability was salient to our observations. Correlation analyses revealed a significant positive correlation between social desirability and anticipated guilt (r = .240), as well as a significant negative correlation between social desirability and doping consideration (r = -.279).

Accordingly, the hypothesized structural model was tested again, this time with social desirability included. The sum of the 17 items in this scale was used to create a single variable representing social desirability. A model was estimated in which social desirability was included as an exogenous variable alongside the doping MD and norms variables. In this model, social desirability was free to covary with the other exogenous variables and to have direct effects on the endogenous variables of anticipated guilt and doping consideration.

The model with social desirability showed adequate to excellent fit, χ^2 (139) = 204.053, p < .01, RMSEA = .044 (.031, .057), CFI = .950, TLI = .939, SRMR = .048. While it is difficult to directly compare this model to the focal model of this study, a model with social desirability could be estimated in which all its covariances and direct effects were fixed at zero. In this case, the simpler model exhibited adequate fit, χ^2 (144) = 230.311, p < .01, RMSEA = .050 (.038, .062), CFI = .934, TLI = .922, SRMR = .063. A Chi-square difference test was conducted to determine whether this model fit significantly worse than the model with social desirability saturated. According to this test, there was evidence to suggest the simpler model fit significantly worse than the model that included social desirability as a saturated variable, $\Delta\chi^2$ (df = 5, N = 238) = 29.642, p < .05. Based on these results, the variable of social desirability should not be ignored in the model.

In the model that included this variable, social desirability positively associated with anticipated guilt (.180) and inversely associated with doping consideration (-.200). Additionally, there was a significant negative covariance with subjective norms (-.130). Most interesting was the effect of anticipated guilt on doping consideration, which was not significant in this model. This might have suggested that the relationship between anticipated guilt and doping consideration was better explained by socially desirable responding. Similarly, the mediation analysis found an insignificant indirect effect from doping MD to doping consideration through anticipated guilt. However, the direct effects of doping MD on anticipated guilt and doping consideration remained significant.

Outliers removed.

After removing the eight outlier scores from the dataset, no significant differences were found in the correlation analysis. Additionally, the hypothesized model exhibited adequate fit to the data, χ^2 (df = 126) = 194.846, $p < .01$, RMSEA = .048 (.034, .061), CFI = .941, TLI = .929, SRMR = .049. Notably, there was an insignificant direct effect from anticipated guilt to doping consideration, which was different from the model that included the outlier cases. The mediation analysis also found an insignificant indirect effect from doping MD to doping consideration through anticipated guilt, despite doping MD having a significant direct effect on both variables.

Discussion

The purpose of this study was to examine the role of the social environment in shaping athletes' doping-related cognitions—specifically, anticipated guilt and doping consideration. The core predictor variables of doping MD, descriptive norms, and subjective norms, while often studied in the doping literature, have rarely been combined in a single model. After examining

how these relationships functioned within the model of the current study, meaningful knowledge is added to the doping literature.

Recent research has argued the existence of a relationship between doping MD and doping susceptibility (Boardley et al., 2019), which we call doping consideration in the current study. Some of these studies have also examined the role of anticipated guilt as a mediator of this relationship, showing mixed findings (Boardley et al., 2017; Kavussanu & Ring, 2017; Ring & Kavussanu, 2017). The presence of these relationships was supported in the current study. Doping MD showed a significant effect on doping consideration, directly and indirectly through anticipated guilt. This finding provided support to previous literature for the role of moral disengagement in athletes' doping decisions. In other words, an athlete may justify the behavior, despite it being a transgression, when considering whether or not to use performance enhancing drugs. An athlete who more readily uses such mechanisms of doping MD may be more likely to consider doping if presented the opportunity.

The finding of a non-significant effect from anticipated guilt to doping consideration when including social desirability in the model should not be ignored. Social desirability captures how an individual may respond differently or deceptively to meet perceived social expectations. In light of the moral connotations of doping, it is understandable that social desirability may have been salient to the relationships among the constructs examined in the present work. Higher social desirability was associated with a greater reported anticipation of guilt and lower reported doping consideration. Considering this, along with the disappearance of the direct effect from anticipated guilt to doping consideration, a spurious relationship may have existed. The relationship between anticipated guilt and doping consideration may have been better explained by socially desirable responding. Moreover, this could be the reason for some

studies finding anticipated guilt to have a significant association with doping susceptibility (Boardley et al., 2017) or doping likelihood (Kavussanu & Ring, 2017; Ring, Kavussanu, & Gürpinar, 2020) and other studies do not (Ring & Kavussanu, 2017). In the studies where anticipated guilt predicted doping outcome variables, researchers should consider the possibility that athletes may be responding in socially desirable ways on the doping measures.

Previous doping research has addressed social desirability in many ways. Many authors (Barkoukis et al., 2014; Lazuras et al., 2010; Lazuras et al., 2015) examined the construct with correlation and moderation analyses, finding small correlations between social desirability and doping-related variables but no confounding effect on the relationship between predictors and outcomes. Kavussanu et al. (2016) did not find social desirability to correlate with their MD measure, nor did they find it to influence the relationship between MD and doping likelihood. Gucciardi et al. (2010) found the relationship between doping attitudes and doping susceptibility to be partially mediated by social desirability using structural equation modeling. While these methods are preferred over the assumption that social desirability is mitigated by use of an anonymous survey (Kavussanu & Ring, 2017) or hypothetical scenarios (Ring, Kavussanu, Simms, & Mazanov, 2018), a consensus has not been reached as to the optimal way to address this variable. The inclusion of social desirability in the supplemental analysis of this study was a relatively robust strategy, and provided great insight when interpreting results. Future research should examine this variable in a similar way, considering the implications of social desirability on self-report of doping.

Despite the decreased significance of an effect from anticipated guilt to doping consideration when social desirability is included in the model, doping MD still showed significant effects on both anticipated guilt and doping consideration. It appeared that doping

MD predicted doping-related outcomes, even when controlling for social desirability. This is an interesting result, considering there have been mixed results regarding social desirability in doping research (Backhouse et al., 2007; Gucciardi et al., 2010; Kavussanu et al., 2016). In the current study, social desirability was included to provide a fuller picture of the relationship among the core variables. Specifically, doping MD turned out to be a robust predictor when considered alongside the social contextual variables of subjective norms and descriptive norms.

Subjective norms are a measure of how an individual considers social expectations in regard to a particular behavior—doping, in the case of this study. An interesting finding was that subjective norms did not have a significant association with anticipated guilt and doping consideration. The lack of association of subjective norms with these variables is contradictory to previous research (Lazuras et al., 2015; Ntoumanis et al., 2014), but might provide insight into the role of social dynamics in doping decisions. Subjective norms did exhibit a moderately strong relationship with doping MD in the hypothesized model. Such a relationship might reflect a close conceptual link between these two variables. Considering this, in addition to the correlations found between subjective norms and the outcome variables of interest, some insight might be drawn. Items from the DMDS (Boardley et al, 2018) targeting the doping MD dimension of displacement of responsibility involve the role of significant others (e.g., teammates, training groups, and coaches) in one's endorsement of doping. It is possible that doping MD better explains anticipated guilt and doping consideration because it already includes the cognitive appraisal of social support for doping. Therefore, further examination of subjective norms simultaneously with doping MD may require development of a more distinctive subjective norms measure.

Notably, the three subjective norms items used in this study ask about athlete perceptions of approval or support for doping. What is not included in these items is the level of *disapproval* for the behavior, or level of support for behaviors that *avoid* doping. These kinds of items may be more relevant in reference to doping, because use of performance enhancing drugs is a transgressive behavior. Moreover, this might allow for subjective norms measures to be more distinct from the doping MD measure, which captures the process of justifying transgressive behavior. This could affect the pattern of associations in the present structural model such that subjective norms would directly predict the doping outcomes of interest in addition to the direct effect from doping MD.

Similar to subjective norms, descriptive norms did not show any significant predictive effects in the model. This reflects the general lack of correlation between descriptive norms and the other variables, and is a finding that contrasts with previous research (Ntoumanis et al., 2014). To make sense of this contradictory finding, consideration was given to whether the three items used for measuring descriptive norms would actually be salient to athletes. Two items asked about their perception of the behavior of elite athletes, but it was difficult to know whether respondents perceived *themselves* as elite athletes. Research on social norms theory (Perkins & Berkowitz, 1986) suggests an individual's perceptions of others' behavior differs from perceptions of their own. Such self-other discrepancies have been found in the doping literature (Ring, Kavussanu, Mazanov, 2019). Furthermore, Borsari and Carey (2003) suggest a reference group that is further in proximity away from the participant will lead to more inaccurate or inflated perceptions of the reference group's behavior. An athlete's perception of elite athlete doping may be dependent on their perceived proximity to elite athletics. In addition to the elite athlete items, all three descriptive norms items were restricted to perceived doping behavior. Past

research has used hypothetical scenarios similar to the anticipated guilt and doping consideration measures in the current study (Petróczi, Mazanov, Nepusz, Backhouse, & Naughton, 2008), and asked participants what percentage of athletes would dope in these particular situations. Such scenario-based measures of descriptive norms may better capture the nuance of potential doping scenarios in future research.

Implications

Overall, the implications of this study are that the construct of doping MD may be a better indicator of downstream doping-related cognitions than normative influences. This makes sense when viewed through the lens of the social-cognitive theory of moral thought and action (Bandura, 1991), which argues that social sanctions are internalized over time. It is possible that social sanctions for doping had already been internalized by these athletes, therefore leading to greater salience of the cognitive appraisals to doping behavior than the perceived appraisals of significant others. Because athletes in this study were adults, it would make sense for this internalization to have already occurred. Future research may be able to explore this concept further by recruiting youth athletes, a population with great potential for intervention (Barkoukis Kartali, Lazuras, & Tsorbatzoudis, 2016, Hurst, Ring, & Kavussanu, 2020). Regardless of age, researchers should consider the nature of the relationship between doping MD and normative influence when examining how these predict doping outcomes.

Practical implications would be seen in the development of anti-doping campaigns, which are continuing to see modifications for use with different age groups (Hurst et al., 2020), with various members of the athletic support personnel (Ntoumanis et al., 2020), and through various forms of media (Nicholls et al., in press). The content of these interventions is in a constant state of development. Whereas early interventions targeted athletes' attitudes toward doping

(Backhouse, McKenna, Robinson, & Atkin, 2007), more recent interventions have targeted variables such as beliefs about supplement use (Hurst et al., 2020), coach communication style, and coach motivational climate (Ntoumanis et al., 2018; Ntoumanis et al., 2020). The present results suggest that doping MD may be an important consideration when developing anti-doping campaigns. Hurst et al. (2020) incorporated a measure of doping MD in their intervention study, but did not seem to describe how this construct was addressed in the clean sport educational program. Despite this, the intervention was successful in decreasing doping MD in the short-term, but the authors suggested stronger interventions or regularly-scheduled booster sessions to maintain the effects in the long-term. It is possible that deliberately impacting doping MD constructs (e.g., targeting distortion of consequences by reminding participants that doping presents risks to physical and mental health, and describing how downplaying these adverse effects would lead an athlete to falsely convince themselves that doping is okay) may be more effective in minimizing doping MD use for the short- and long-term.

Limitations

Beyond the measurement selection issues addressed above, a particularly important limitation was the timing of data collection. The entire distribution and collection period was April to October 2020, in the midst of the COVID-19 pandemic. During this time, competitions and practices were modified or canceled completely as a means of minimizing the spread of the virus. Such restrictions could have interfered with typical athlete training habits, especially with sports that require simultaneous, team-based training. Moreover, the restrictions on social gatherings and traveling could have impacted the non-training social environment. Such interactions might otherwise make social norms more salient, or reinforce the strength of doping-

based cognitions. While it cannot be fully understood how this historical period could have influenced athlete survey responses, the possibility should not be ignored.

A possible method of examining the influence of the worldwide pandemic on doping cognitions would be to consider differences between endurance and non-endurance athletes. Endurance sports such as swimming, running, or cycling provide the opportunity to continue training independently, whereas non-endurance sports (particularly team sports such as lacrosse, volleyball, and football) require a certain level of codependent training with the team. Thus, social restrictions may have had a greater influence on the social component of codependent sports than independent sports. Even in the unrestricted setting, some researchers argue that endurance and non-endurance athletes should be studied separately, not only because of the distinct nature of training, but also because endurance sports have been argued to be at higher risk for doping practices (Aubel, Lefevre, Le Goff, Taverna, 2019). For this reason, a post-hoc analysis of endurance and non-endurance athlete data was conducted, running independent t-tests to find any significant mean differences on the variables of interest. In this analysis, the only significant difference in means between endurance and non-endurance athletes was in doping consideration ($F = 4.623$, $p = .03$). Surprisingly, non-endurance athletes reported higher doping consideration ($M = 2.39$, $SD = 1.55$) than endurance athletes ($M = 2.14$, $SD = 1.72$), which was in contrast to expectations based on previous authors' speculation (Aubel et al., 2019). Whether this difference was an effect of the groups in the sample or the environmental conditions can only be discussed as speculation until further research is completed.

An interesting finding tied to endurance/non-endurance correlations was in regard to subjective norms, which had significant correlations with doping MD ($r = .346$, $p < .05$), anticipated guilt ($r = -.485$, $p < .05$) and doping consideration ($r = .360$, $p < .05$) in the non-

endurance athletes but not in the endurance athletes. These results would suggest that athletes in co-dependent sports may take social support/pressures into consideration when making doping decisions to a greater extent than their endurance/individual sport counterparts. Unfortunately, this relationship was not retained in the tested structural model for non-endurance athletes, but this may have had to do with the small sample size (n = 94) for running the statistical model with a subgroup. Regardless, it may be important to consider social factors or group dynamics in future research, even when examining individual sports (Evans, Eys, & Bruner, 2012).

Conclusion

This study tested a model in which doping MD and normative influences predicted anticipated guilt from, and consideration of, doping. Doping MD was the dominant construct in the model, predicting doping consideration directly and indirectly via anticipated guilt. Thus, doping MD may explain downstream doping cognitions better than social contextual norms, and should be strongly considered by researchers and anti-doping advocates.

CHAPTER FOUR: GENERAL DISCUSSION

Since the World Anti-Doping Agency formed in 1999, its multifaceted mission to "lead a collaborative worldwide movement for doping-free sport" (WADA, 2019) has been met with numerous obstacles. In a time when the cost of anti-doping amounts to about $69,300 for every anti-doping rule violation (Maennig, 2014), the efficiency and legitimacy of anti-doping campaigns have been brought into question. Specifically, a recent mapping review argues there is a perception of anti-doping to be "doing the right thing," but seemingly not "doing it the right way" (Woolway, Lazuras, Barkoukis, & Petróczi, 2020). In light of this perception, efforts to improve the anti-doping regime have combined the traditional detection-deterrence technique with programs targeting psychosocial predictors of doping decisions.

Possibly the most promising psychosocial predictor of doping decisions is moral disengagement (MD). Though this conditional endorsement of transgressive behavior has been considered in previous research on doping, the recent development of the Doping Moral Disengagement Scale (DMDS; Boardley et al., 2018) has presented great value for understanding the nuance of MD in the context of doping in team and individual sport. Research on this variable has supported a predictive effect of doping MD on various doping outcomes (Boardley et al., 2019; Ring & Hurst, 2019). A potential mechanism of this effect is through the level of guilt the athlete anticipates feeling if they were to use performance enhancing drugs or methods, although not every study has found support for this relationship (Ring & Kavussanu, 2017).

In addition to doping MD, two socially salient variables may similarly predict doping decisions. Specifically, the perceived prevalence of doping (i.e., descriptive norms) or the extent to which significant others support the behavior (i.e., subjective norms) may be taken into account. These normative influences provide a context within which cognitions such as doping

MD take place. Therefore, possibly the best method to examine the role of doping MD in athlete decision making is to consider the simultaneous role of subjective and descriptive norms. Simultaneous examination of these variables provides a more comprehensive picture of the factors playing a role in athletes' doping cognitions.

The purpose of this dissertation was to simultaneously examine three variables which have previously been found to independently predict such outcome variables as doping susceptibility/consideration (Boardley et al., 2019), doping intentions (Lazuras, Barkoukis, Mallia, Lucidi, & Brand, 2017), or doping likelihood (Kavussanu & Ring, 2017). While these variables have been studied separately, this dissertation combined doping MD, subjective norms, and descriptive norms in a number of different ways. The contexts of the two studies differed in population recruited, outcome measures used, and statistical method.

A novel contribution of Study 1 was the exclusive recruitment of disability sport athletes. Concerns for doping are not unique to the able-bodied sports context. Therefore, an examination of the three variables of interest in disability sport athletes was conducted. This study was expected to springboard further research with this underrepresented population. Due to the exploratory nature of the study in recruiting from this population, a descriptive statistical approach was used. Specifically, cluster analysis was used to reveal four unique groups of athletes based on the three variables of doping MD, descriptive norms, and subjective norms. Athletes in clusters 1 (n = 34) and 2 (*n* = 44) exhibited a mixture of high and low levels on the three cluster variables. Specifically, cluster 1 was characterized by relatively high scores on doping MD, with descriptive norms and subjective norms values around the mean. Cluster 2 was characterized by relatively high descriptive norms, with doping MD and subjective norms values

around the mean. Athletes in clusters 3 (n = 15) and 4 (n = 92) were characterized by relatively high and low levels on all the cluster variables, respectively.

Athletes in clusters 1 and 3 reported significantly lower levels of anticipated guilt in a hypothetical doping situation. Furthermore, athletes in cluster 3 reported significantly higher doping intentions than the other three clusters. The good news for anti-doping stakeholders was that cluster 4, characterized by low levels of all three cluster variables, was the largest group and cluster 3 (the high-risk group), characterized by high levels of all three cluster variables, represented a small number of disability sport athletes. An added benefit of finding this group of athletes was the potential to develop targeted, tailored anti-doping messages or educational programs, as these athletes may be the most at risk for doping.

Although the exclusive recruitment of disability sport athletes in Study 1 offered a novel contribution to the literature, it also presented a tradeoff in the form of study limitations. For example, the use of definitions (i.e., doping) and items (i.e., descriptive norms) that have typically been used in research with able-bodied athletes made it difficult to determine whether they covered the nuances of disability sport, and whether they were interpreted in the way expected. Actions were taken to minimize the chance of these variables being misinterpreted, but the success of these measures can only be strengthened through further research with disability sport athletes as well as their able-bodied counterparts.

To address some limitations of Study 1, and to expand on the findings therein, Study 2 was conducted with three distinctions. First, able-bodied athletes were recruited rather than athletes with physical disabilities in order to simultaneously examine the core variables from Study 1 in a different population. Second, a measure of doping consideration (previously referred to as doping susceptibility) was used in place of doping intentions. Third, structural equation

modeling was performed to further align with previous research in the able-bodied population. Whereas Study 1 used exploratory, descriptive analyses in an understudied population, Study 2 used a sample more heavily represented in the literature to test a model in which the three focal variables of doping MD, descriptive norms, and subjective norms predicted doping consideration, directly and indirectly via anticipated guilt. This method offered a more robust simultaneous examination of the variables, providing a fuller representation of the social context surrounding doping cognitions.

The tested model exhibited adequate to excellent fit with the data, explaining 35.3% and 22.1% of the variance in anticipated guilt and doping consideration, respectively. Doping MD emerged as a significant direct and indirect predictor of doping consideration, and the direct effect was maintained even when a measure for social desirability was included in the model or outliers were removed. The predictive effect of anticipated guilt on doping consideration disappeared when outliers were removed as well as when social desirability was included, which may have provided a greater picture regarding the relationship between these two variables.

The outlier analysis found three outlier cases on the variable of anticipated guilt, all of which were at the low end of the scale. Though these values were removed for the outlier analysis, it has been argued that these values could represent a true, small subset of the sample (see Study1). In the context of doping, it is particularly possible that while most athletes anticipate some guilt if they were to use performance enhancing drugs, a small group of athletes anticipate little or no guilt. Thus, it may make more sense to retain the outliers who are low on anticipated guilt, and similarly to retain outliers who are high in doping MD, perceived norms, or doping consideration. The relationship between anticipated guilt and doping outcomes may be more prominent when the small group of athletes with low anticipated guilt happen to be

included in the sample. It is possible the presence of outliers provides a more accurate picture of the relationship.

Furthermore, the contradictory findings regarding anticipated guilt may not be a complete refutation of its role in doping decisions. For instance, activation or disengagement of moral reasoning is argued to occur after an individual anticipates self-sanctions like guilt or shame for performing a behavior (Bandura, 1991). If this is the case, anticipated guilt may act as more of a genesis or catalyst for the doping decision-making process, and less so as an integral part of the decision. Future investigators may be interested in placing anticipated guilt earlier in the model, if they choose to include it at all. After all, doping MD maintained its role under various circumstances, and may therefore be more important to include than anticipated guilt in future models of doping decisions.

A surprising finding was the lack of direct or indirect effects on doping consideration coming from subjective and descriptive norms. Furthermore, whereas subjective norms showed a strong covariance with doping MD in the model, descriptive norms did not. From a theoretical standpoint, the interplay between doping MD and the norms measures may be explained by the social-cognitive theory of moral thought and action (Bandura, 1991). According to this theory, individuals internalize the social sanctions they observe over time. Both studies included adult athletes, which may indicate this internalization had already occurred. For this reason, the perceived social sanctions may not have been as salient to the athletes as their own internal sanctions or justifications for doping. Continued examination with different populations (i.e., youth athletes) may help to establish whether doping MD is salient across different stages of internalization. Regardless, a number of considerations should be taken to ensure future examination is theoretically sound. Firstly, it is possible the DMDS better predicts the outcome

variables because it includes components similar to the measure of subjective norms. Hence, it may be necessary to modify the subjective norms items in order to make a proper distinction between this variable and doping MD. Such modifications may involve items asking to what extent significant others *disapprove* of doping or approve of doping *avoidance* behaviors. Secondly, the descriptive norms items may need to be revisited for their utility in doping research. Petroczi et al. (2008) used hypothetical doping scenarios to measure athletes' estimates of doping use in others, which may fall more in line with the measures for anticipated guilt and doping consideration in this dissertation. This method may be a starting point for using alternative measures of descriptive norms.

Viewing the results of the two studies collectively, there are a number of similarities between responses from the two study populations. Athletes in disability sport and able-bodied sport scored similarly in doping MD ($M = 2.21$ and $M = 2.27$, respectively), descriptive norms ($M = 24.15$ and $M = 22.28$, respectively), subjective norms ($M = 1.39$ and $M = 1.33$, respectively), and anticipated guilt ($M = 3.82$ and $M = 4.24$, respectively). From this it can be concluded that athletes from both of these populations have similar cognitions regarding the prevalence and approval of doping, as well as similar use of MD mechanisms. It is possible, then, that the social environment surrounding doping is comparable across disability and able-bodied sport, at least as perceived and appraised by the athletes.

Beyond this, strong insight can be garnered and applied in future research and anti-doping campaigns. Most prominent across the two studies was the role of doping MD. Expected relationships were present in application to distinct populations (i.e., disability sport athletes in Study 1 and able-bodied athletes in Study 2), under varying degrees of robustness in statistical analysis (i.e., cluster analysis in Study 1 and latent variable analysis in Study 2), across different

distal dependent variables (i.e., doping intentions in Study 1 and doping consideration in Study 2), and when taking social desirability into consideration (Study 2 only). Therefore, mechanisms of doping MD are apparently dominant and robust in predicting doping-related decision-making outcomes.

Insight can also be gained on the role of anticipated guilt from this research. In Study 1, groups characterized by lower doping MD reported higher anticipated guilt. This was in line with previous research (Boardley et al., 2017; Ring et al., 2020). Additionally, anticipated guilt was a proximal predictor of doping consideration in the full sample in Study 2. However, this predictive effect became non-significant after including social desirability in the model or ignoring outliers. Study 2 was not the first to find this contradictory result (Ring & Kavussanu, 2017). It is possible that social desirability would better explain the relationship between anticipated guilt and doping consideration than anticipated guilt alone. The relationship between anticipated guilt and doping outcomes may not be as promising as previous research has suggested. With social desirability predicting scores of anticipated guilt and doping consideration better than subjective norms, it might be argued that social expectations could influence how athletes respond to questions about doping, but not necessarily influence the decision-making outcomes of such cognitions. Future research may want to take heed to the effect of social desirability when examining anticipated guilt and doping consideration. Protecting participants' anonymity can reduce likelihood of socially desirable responding, but greater measures may need to be explored beyond what was done in this dissertation. Importantly, doping MD exhibited a significant effect on doping consideration regardless of whether or not social desirability was included.

Anti-doping organizations could draw practical implications from this dissertation, specifically in regard to doping MD as a target variable. Early anti-doping interventions targeted attitudes toward doping (Backhouse et al., 2007) with the assumption that attitudes were the primary predictor of doping behavior. Other psychosocial variables have been examined as outcomes of these education programs, and these include doping MD. Hurst et al. (2020), for example, found athletes in the clean sport program to have lower doping MD immediately following the program. Unfortunately, these effects did not continue long-term. This issue may stem from the five parts of the 60-minute program (i.e., anti-doping governance, anti-doping rule violations, drug testing procedures, banned medications, and contaminated supplements) not deliberately addressing possible mechanisms of doping MD. A similar issue can be found in an intervention by Barkoukis and colleagues (2016), in which normative beliefs were measured but were not targeted other than to describe historical and modern instances of doping.

While measuring variables like doping MD as outcomes of interventions is a step in the right direction, the development of interventions to address these variables directly is necessary to continue strengthening these campaigns. For example, an intervention could address the doping MD dimension of displacement of responsibility by acknowledging how athletes tend to justify use of performance enhancing drugs via an argument that they do not have a choice if the coach tells them to do so. Following this, the program could include strategies or resources for minimizing the chances an athlete would use this mechanism (e.g., independent moral reasoning or whistleblowing hotlines). Incorporating sessions like these would potentially be more effective in reducing doping MD use by athletes, thus creating more effective anti-doping programs. However, more research on such strategies is necessary before proponents of anti-doping can know the best intervention practices.

Although the two studies in this dissertation complement one another and offer important contributions to the extant knowledge base, there are important limitations of the research to consider. First, non-experimental survey research with a single timepoint for each participant is not the gold standard for finding causal relationships among variables. Latent variable analysis, such as the structural equation modeling from Study 2, can at best imply causal relationships based on previous theory and researcher expertise. Experimental interventions can be difficult to implement, but are necessary to find robust support for a causal relationship between predictors and outcomes of interest. While intervention studies come with their own difficulties and limitations, some have been undertaken with a degree of success—including one with doping MD as an outcome variable of interest (Hurst et al., 2020).

Second, measurement of MD has evolved since its first application to doping research, but measurement of descriptive and subjective norms has remained relatively stagnant. This may help to explain why doping MD has shown considerable promise in predicting various doping-related outcomes. Many studies have examined normative variables alongside MD variables, but only a dearth of studies (if any) have examined both subjective and descriptive norms simultaneously with the DMDS. This may explain why doping MD came out as a predictor in Study 2, while the norms measures did not. At this point in the research, it may be a good idea to revisit the commonly-used measures for descriptive and subjective norms and determine whether they can maintain their predictive strength when held to the same standard of measure development as the DMDS.

Third, this dissertation fell in line with numerous studies by examining doping intentions (Lazuras., 2017; Ntoumanis et al., 2014) and doping susceptibility/consideration (Boardley et al., 2019; Gucciardi et al., 2010). Although these are common outcome variables in doping research,

the practical outcome of interest is actual doping behavior. Unfortunately, objective measures typically do not offer accurate assessment of doping, and self-reported doping is suggested to be highly susceptible to false reporting. Despite these reservations, assessment of doping behavior could offer more ecologically valid measurement of doping outcomes.

Finally, the data collection period of Study 2 occurred in the midst of the COVID-19 pandemic. This may have been a limitation, but may also provide greater insight considering the adjusted training environment for athletes during this time. Whether or not such a historical period has a positive or negative effect on doping research can only be speculated as of the publication of this dissertation. Regardless, this is important to keep in mind if future research determines that restrictions on social contact affect athletes' responses to doping-related questionnaires, perspectives on doping, or actual doping behavior.

Also relevant to the COVID-19 pandemic is the issue of collecting data in person or online. Neither of these options has been put forward as the preferred method of data collection. Most doping research studies use either online (e.g., Petroczi et al., 2008; Ring et al., 2020) or in-person (e.g., Boardley et al., 2019; Lazuras et al., 2015) surveys, but not both. The few studies implementing both online and in-person surveys provide mixed results in comparing the two methods. Bhambhani et al. (2010) used both online and in-person methods to increase sample size in a study of exclusively athletes with spinal cord injury, but did not make any comparisons across the two methods. Pitsch and Emrich (2011) argued that their online survey failed to produce reliable results, and chose to retain the in-person data. In contrast, Connor, Woolf, and Mazanov (2012) found no significant difference between their interview-based and online collection methods. In-person surveys may be beneficial for monitoring the environment in which the survey is completed, whereas online surveys may be particularly beneficial in

reinforcing perceived anonymity of responses and in research with disability sport athletes who may require accommodating technologies. Future research should determine whether one method is more reliable and valid for use in the context of doping, or if both can be considered viable options.

Future research should also aim to further explore athletes' doping decisions based on the results of this dissertation. The promising line of research on doping MD has led to a number of studies exploring possible antecedents, such as moral identity (Kavussanu & Ring, 2017), basic moral values (Ring et al., 2020), and doping confrontation efficacy (Sullivan, Feltz, LaForge-MacKenzie, & Hwang, 2015). Of these antecedents, doping confrontation efficacy is unique because it involves members of the athlete support personnel as responsible members of the fight against doping. Early research on doping considered the behavior to be an individualized decision, ignoring the role of the social environment (Erickson, Backhouse, & Carless, 2017; Whitaker, Backhouse, & Long, 2017). Such narrow focus may explain why previous interventions targeted attitudes while ignoring other, more salient constructs. An athlete's perception of their coach's, parent's, or teammate's ability to confront them about their doping behavior may be just as important as their own attitudes, normative beliefs, or moral disengagement regarding doping. Previous research on doping confrontation efficacy has focused on coaches, and has found that athlete perceptions of their coaches' doping confrontation efficacy has downstream effects on their doping attitudes (Sullivan & Razavi, 2017), doping MD, and doping susceptibility (Boardley et al., 2019). Educational programs and anti-doping campaigns can benefit from not only targeting individual psychological constructs such as attitudes, perceived norms, or doping MD, but by also considering the social, environmental agents in athletes' doping decisions. Interventions do exist that target coach knowledge and

attitudes of doping (Nicholls et al, 2020) as well as coach motivational climate (Ntoumanis et al., 2018). Considering these interventions, variables related to the process of doping MD have been largely ignored. One study includes doping MD as an outcome variable (Hurst et al., 2020), but targeting antecedents of doping MD (either in athletes or in members of their entourage) could improve the multifaceted anti-doping approach taken by such organizations as WADA and the IOC.

Generalization of the findings put forth may also be explored more in future research. Disability sport athletes in Study 1 reported levels of the focal variables similar to those of able-bodied athletes in Study 2 and previous research. However, the unique circumstances and doping methods may require a more in-depth look. Boosting (i.e., artificial induction of autonomic dysreflexia, which has been suggested to enhance performance) is an example of a behavior that can be considered doping in athletes with spinal cord injury (Legg & Mason, 1998; Mazzeo, Santamaria, & Iavarone, 2015). Knowledge regarding this practice is primarily anecdotal, so future researchers may benefit from exploring the social environment regarding this behavior. The exploration of doping in the disability sport context in this dissertation is hopefully the beginning of a long line of research that will help anti-doping efforts in disability and able-bodied sport alike.

Altogether, the current dissertation addressed how athletes in disability and able-bodied sport integrate social norms with moral cognitions when making doping-related decisions. In the short-term, this dissertation hopefully offers enough insight to guide further examination of these variables in the doping context. Long-term, this research hopefully lays the foundation for theory-driven interventions to fight doping in sport. Currently, elite athletes hold mixed perceptions about the effectiveness of anti-doping efforts (Westmattelmann, Dreiskämper,

Strauß, Schewe, & Plass, 2018), bearing the question of whether the noble goal of doping-free sport is being sought out in the right way (Woolway et al., 2020). A stronger theoretical base could improve anti-doping campaigns as well as their perceived effectiveness, which might create an adaptive, self-fulfilling anti-doping cycle.

Although doping is a popular topic of discussion among the media, scientific researchers, and the general public, it is not the only morality-based behavior of interest in the context of sport. There are numerous prosocial and antisocial behaviors to be considered in sport, with a multitude of antecedents and consequences for each given behavior (Kavussanu & Stanger, 2017). However, doping may be the preeminent behavioral threat to the sanctity of sport. Developing a successful, theory-driven intervention to reduce the prevalence of doping in sport would be a large step forward in the fight to maintain a "spirit of friendship, solidarity and fair play" (IOC, 2015, pg. 13). A small difference made on the doping front could be the harbinger of change in other prosocial and antisocial behaviors in sport. The current dissertation advances knowledge in a way that hopefully will offer some contribution to this change.

APPENDICES

APPENDIX A

Study One – Human Research Protection Program Approval Letter

MICHIGAN STATE
UNIVERSITY

EXEMPT DETERMINATION
Revised Common Rule

March 13, 2019

To: Alan Lyle Smith

Re: **MSU Study ID:** STUDY00002275
Principal Investigator: Alan Lyle Smith
Category: Exempt 2(i)
Exempt Determination Date: 3/13/2019
Limited IRB Review: Not Required.

Title: Sport Doping Perceptions Survey

This study has been determined to be exempt under 45 CFR 46.104(d) 2(i).

Principal Investigator (PI) Responsibilities: The PI assumes the responsibilities for the protection of human subjects in this study as outlined in Human Research Protection Program (HRPP) Manual Section 8-1, Exemptions.

Continuing Review: Exempt studies do not need to be renewed.

Modifications: In general, investigators are not required to submit changes to the Michigan State University (MSU) Institutional Review Board (IRB) once a research study is designated as exempt as long as those changes do not affect the exempt category or criteria for exempt determination (changing from exempt status to expedited or full review, changing exempt category) or that may substantially change the focus of the research study such as a change in hypothesis or study design. See HRPP Manual Section 8-1, Exemptions, for examples. If the study is modified to add additional sites for the research, please note that you may not begin the research at those sites until you receive the appropriate approvals/permissions from the sites.

Please contact the HRPP office if you have any questions about whether a change must be submitted for IRB review and approval.

New Funding: If new external funding is obtained for an active study that had been determined exempt, a new initial IRB submission will be required, with limited exceptions. If you are unsure if a new initial IRB submission is required, contact the HRPP office. IRB review of the new submission must be completed before new funds can be spent on human research activities, as the new funding source may have additional or different requirements.

Reportable Events: If issues should arise during the conduct of the research, such as unanticipated problems that may involve risks to subjects or others, or any

Office of Regulatory Affairs
Human Research Protection Program

4000 Collins Road
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Lansing, MI 48910

517-355-2180
Fax: 517-432-4503
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APPENDIX B

Study One – Questionnaire Packet

Please provide some information about yourself.

1. Age (years): _____ 2. Sex: Male □ Female □ Prefer not to say □
3. What is your main sport: _____
4. Years competing in this sport: _____
5. Highest level you compete at in your main sport: Regional □ National □ International □
6. Average training/competition hours per week for your main sport: _____
7. Weeks out of the year spent training/competing in your main sport: _____
The following questions are for athletes competing in adaptive (para)-sports. If these questions do not apply to you, please write "N/A"
8. Type of disability: _____ Acquired □ Congenital □
9. Classification: _____

*Below you will find a list of statements. Please **read each statement** carefully and **decide** if that statement **describes you** or not. If it describes you, **circle** the **word** "true"; if not, check the word "false."*

*Please **indicate** whether each of the following statements is **true or false** for you.*	
1. I sometimes litter	True False
2. I always admit my mistakes openly and face the potential negative consequences.	True False
3. In traffic I am always polite and considerate of others.	True False
4. I have tried illegal drugs (for example, marijuana, cocaine, etc.).	True False
5. I always accept others' opinions, even when they don't agree with my own.	True False
6. I take out my bad moods on others now and then.	True False
7. There has been an occasion when I took advantage of someone else.	True False
8. In conversations I always listen attentively and let others finish their sentences.	True False
9. I never hesitate to help someone in case of emergency.	True False
10. When I have made a promise, I keep it – no ifs, ands or buts.	True False
11. I occasionally speak badly of others behind their back.	True False
12. I would never live off other people.	True False
13. I always stay friendly and courteous with other people, even when I am stressed out.	True False
14. During arguments I always stay objective and matter-of-fact.	True False
15. There has been at least one occasion when I failed to return an item that I borrowed.	True False
16. I always eat a healthy diet.	True False
17. Sometimes I only help because I expect something in return.	True False

Doping

Doping is defined as use of prohibited substances or methods by an athlete with the potential to artificially improve performance through changes in physical and/or mental condition. Please keep this definition in mind when answering questions about doping.

*A number of statements describing **thoughts that athletes might have about doping** are listed below. Please read these statements carefully and indicate your level of agreement with each one by circling the appropriate number. Please respond **honestly**.*

*What is your **level** of **agreement** with the following **statements**?*	**Strongly Disagree**	**Disagree**	**Slightly Disagree**	**Neutral**	**Slightly Agree**	**Agree**	**Strongly Agree**
1. It is okay to dope if it helps an athlete to provide for his/her family.	1	2	3	4	5	6	7
2. Saying you "take steroids" feels worse than saying you "use some gear".	1	2	3	4	5	6	7
3. Compared to most lifestyles in the general public, doping isn't that bad.	1	2	3	4	5	6	7
4. Athletes shouldn't be blamed for doping if training partners/teammates pressure them to do it.	1	2	3	4	5	6	7
5. If most athletes in a sport dope, no one athlete should be held responsible for doing it.	1	2	3	4	5	6	7
6. Risks associated with doping are exaggerated.	1	2	3	4	5	6	7
7. Doping is okay if it helps an athlete advise others on how to do it right.	1	2	3	4	5	6	7
8. Using words like "roids", "gear" and "pinning" makes doping feel more acceptable.	1	2	3	4	5	6	7
9. Compared to smoking, doping is pretty safe.	1	2	3	4	5	6	7
10. An athlete shouldn’t be blamed for doping if a member of his/her training group has encouraged it.	1	2	3	4	5	6	7
11. It’s not right to condemn individuals who dope when many in their sport are doing the same.	1	2	3	4	5	6	7
12. Doping doesn’t really harm anyone else.	1	2	3	4	5	6	7
13. It is acceptable to dope if knowledge gained helps an athlete advise others on safe doping.	1	2	3	4	5	6	7

14. Using terms such as "gear" or "juice" makes doping sound less harmful.	1	2	3	4	5	6	7
15. Compared to physical violence, doping isn't that serious.	1	2	3	4	5	6	7
16. An athlete shouldn't be held responsible for doping if his/her coach encouraged him/her to do it.	1	2	3	4	5	6	7
17. If an athlete trains/competes in an environment in which doping is the norm, he/she shouldn't be held accountable for doing it.	1	2	3	4	5	6	7
18. The negative aspects of doping are exaggerated by the media.	1	2	3	4	5	6	7

Now, we would like to assess your perceptions about the prevalence of doping in sport.

1. Out of 100%, how many athletes at your competitive level do you believe engage in doping to enhance their performance?	_____%
2. Out of 100%, how many elite athletes in the USA do you think engage in doping to enhance their performance?	_____%
3. Out of 100%, how many elite athletes do you believe will be engaged in doping during the next 3 years to enhance their performance?	_____%

Now, we would like to assess your perceptions of others' thoughts on doping in sport.

*What is your **level** of **agreement** with the following **statements**?*	**Strongly Disagree**	**Disagree**	**Slightly Disagree**	**Neutral**	**Slightly Agree**	**Agree**	**Strongly Agree**
1. Most people who are important to me would want me to use doping substances or methods to enhance my performance.	1	2	3	4	5	6	7
2. Most people I know would agree if I used doping substances or methods to enhance my performance.	1	2	3	4	5	6	7
3. Most people who are close to me would like me to use doping substances or methods to enhance my performance.	1	2	3	4	5	6	7

*Now, please **imagine** being in the following **situation**:*

"Having returned to training following a period of injury, you are feeling very out of shape. As such, you feel the need to get back in shape as soon as possible. A friend who you train with has been taking a training supplement that he/she says really helped him/her get back in shape quickly following a similar injury. He/she offers to give you some and you decide to take it. Subsequently you get back in shape much quicker than expected, but then discover the supplement you have been taking is a banned performance-enhancing substance. However, due to the improvements you have experienced, you decide to continue taking the substance."

*Now, using the following scale, please rate the **extent** to which you anticipate **you would feel in the ways described** below if you **decided to continue taking the substance**. Please answer **honestly**.*

*I would anticipate **feeling the following about continuing to take the substance…***	**Not at all**	**A little**	**Moderately**	**Very Much**	**Extremely**
1. I would feel remorse, regret.	1	2	3	4	5
2. I would feel tension about what I was doing.	1	2	3	4	5
3. I would not be able to stop thinking about the bad thing I was doing.	1	2	3	4	5
4. I would feel like apologizing, confessing.	1	2	3	4	5
5. I would feel bad about what I was doing.	1	2	3	4	5

*Next, we would like to assess your **intentions** towards **doping** in sport. For **each of the questions** listed below, please **circle** the number that best **corresponds** to your **level of intention**. Please respond honestly.*

*Please indicate your **level of intention** for the following:*	**Definitely Not**						**Definitely Yes**
4. I intend to use prohibited substances or methods to enhance my performance during this season	1	2	3	4	5	6	7
5. At some point this season, I intend to use a prohibited substance or method to help improve my performance	1	2	3	4	5	6	7
6. I will use a prohibited substance or method this season to help improve my athletic performance	1	2	3	4	5	6	7

THANK YOU FOR PARTICIPATING IN THIS STUDY!

APPENDIX C

Study Two - Human Research Protection Program Approval Letter

MICHIGAN STATE
UNIVERSITY

Initial Study APPROVAL
Revised Common Rule

April 28, 2020

To: Alan Lyle Smith

Re: **MSU Study ID:** STUDY00004204
IRB: Biomedical and Health Institutional Review Board
Category: Full Board
Submission: Initial Study STUDY00004204
Submission Approval Date: 4/27/2020
Effective Date: 4/27/2020
Study Expiration Date: None; however modification and closure submissions are required (see below).

Title: Do Normative Perceptions and Doping Moral Disengagement Predict Anticipated Guilt and Doping Consideration?

This submission has been approved by the Michigan State University (MSU) Biomedical and Health Institutional Review Board. The submission was reviewed by the Institutional Review Board (IRB) through the **Committee Review procedure**. The IRB has found that this study protects the rights and welfare of human subjects and meets the requirements of MSU's Federal Wide Assurance (FWA00004556) and the federal regulations for the protection of human subjects in research (e.g., 2018 45 CFR 46, 21 CFR 50, 56, other applicable regulations).

Office of Regulatory Affairs
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The IRB determined that the study involves no more than minimal risk to subjects; therefore, the level of review was changed to Expedited category 7.

The State of Michigan and Michigan State University (MSU) have placed temporary restrictions on human subject research conducted by MSU employees or agents. All MSU human research activities conducted by MSU employees or agents that take place in Michigan and cannot be done at home or place of residence with no inter-personal interaction with participants and others like research staff must stop unless the project is a clinical trial activity, that if discontinued, would negatively impact the patient's care, or projects related to COVID-19, particularly if they have a timeline for deployment that could address the crisis. Ongoing clinical trial activity, which if discontinued, would negatively impact the patient's care may continue with already enrolled participants. New enrollment in clinical trials conducted in Michigan is not permitted without additional institutional approval.

For MSU human research activities that take place outside of Michigan, the university has stated that unless there is the potential for direct therapeutic benefit to the participant (drug or device), any in-person participant interaction must immediately pause. This applies to both exempt and non-exempt research studies.

APPENDIX D

Study Two – Questionnaire Packet

Please provide some information about yourself.

1. Age (years): _____ 2. Sex: Male □ Female □ Prefer not to say □

3. What is your *main sport*: _____

4. *Years* competing in *this sport*: _____

5. Highest level you compete at in your main sport:
Regional □ National □ International □

6. Highest level you have ever competed at in your main sport:
Regional □ National □ International □

7. How many years have you been a member of your current team?
_____

8. Average training/competition hours per week for your main sport:
_____

9. Weeks out of the year spent training/competing in your main sport:
_____

10. Please indicate your ethnicity: Hispanic or Latino □ Not Hispanic or Latino □

11. Please indicate your race:

American Indian/Alaskan Native □
Asian □
Black or African-American □
White □
More than one race □
Unknown/Other □

12. What is the name of your team/club/school?

_____

*Below you will find a list of statements. Please **read each statement** carefully and **decide** if that statement **describes you** or not. If it describes you, **circle** the **word** "true"; if not, check the word "false."*

*Please **indicate** whether each of the following statements is **true or false** for you.*	
1. I sometimes litter	True False
2. I always admit my mistakes openly and face the potential negative consequences.	True False
3. In traffic I am always polite and considerate of others.	True False
4. I have tried illegal drugs (for example, marijuana, cocaine, etc.).	True False
5. I always accept others' opinions, even when they don't agree with my own.	True False
6. I take out my bad moods on others now and then.	True False
7. There has been an occasion when I took advantage of someone else.	True False
8. In conversations I always listen attentively and let others finish their sentences.	True False
9. I never hesitate to help someone in case of emergency.	True False
10. When I have made a promise, I keep it – no ifs, ands or buts.	True False
11. I occasionally speak badly of others behind their back.	True False
12. I would never live off other people.	True False
13. I always stay friendly and courteous with other people, even when I am stressed out.	True False
14. During arguments I always stay objective and matter-of-fact.	True False
15. There has been at least one occasion when I failed to return an item that I borrowed.	True False
16. I always eat a healthy diet.	True False
17. Sometimes I only help because I expect something in return.	True False

Doping

Doping is defined as use of prohibited substances or methods by an athlete with the potential to artificially improve performance through changes in physical and/or mental condition. Please keep this definition in mind when answering questions about doping.

*A number of statements describing **thoughts that athletes might have about doping** are listed below. Please read these statements carefully and indicate your level of agreement with each one by circling the appropriate number. Please respond **honestly**.*

*What is your **level** of **agreement** with the following **statements**?*	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
1. It is okay to dope if it helps an athlete to provide for his/her family.	1	2	3	4	5	6	7
2. Saying you "take steroids" feels worse than saying you "use some gear".	1	2	3	4	5	6	7
3. Compared to most lifestyles in the general public, doping isn't that bad.	1	2	3	4	5	6	7
4. Athletes shouldn't be blamed for doping if training partners/teammates pressure them to do it.	1	2	3	4	5	6	7
5. If most athletes in a sport dope, no one athlete should be held responsible for doing it.	1	2	3	4	5	6	7
6. Risks associated with doping are exaggerated.	1	2	3	4	5	6	7
7. Doping is okay if it helps an athlete advise others on how to do it right.	1	2	3	4	5	6	7
8. Using words like "roids", "gear" and "pinning" makes doping feel more acceptable.	1	2	3	4	5	6	7
9. Compared to smoking, doping is pretty safe.	1	2	3	4	5	6	7
10. An athlete shouldn’t be blamed for doping if a member of his/her training group has encouraged it.	1	2	3	4	5	6	7
11. It’s not right to condemn individuals who dope when many in their sport are doing the same.	1	2	3	4	5	6	7
12. Doping doesn’t really harm anyone else.	1	2	3	4	5	6	7
13. It is acceptable to dope if knowledge gained helps an athlete advise others on safe doping.	1	2	3	4	5	6	7

14. Using terms such as "gear" or "juice" makes doping sound less harmful.	1	2	3	4	5	6	7
15. Compared to physical violence, doping isn't that serious.	1	2	3	4	5	6	7
16. An athlete shouldn't be held responsible for doping if his/her coach encouraged him/her to do it.	1	2	3	4	5	6	7
17. If an athlete trains/competes in an environment in which doping is the norm, he/she shouldn't be held accountable for doing it.	1	2	3	4	5	6	7
18. The negative aspects of doping are exaggerated by the media.	1	2	3	4	5	6	7

Now, we would like to assess your perceptions about the prevalence of doping in sport.

1. Out of 100%, how many athletes at your competitive level do you believe engage in doping to enhance their performance?	_____%
2. Out of 100%, how many elite athletes in your country do you think engage in doping to enhance their performance?	_____%
3. Out of 100%, how many elite athletes do you believe will be engaged in doping during the next 3 years to enhance their performance?	_____%

Now, we would like to assess your perceptions of others' thoughts on doping in sport.

*What is your **level** of **agreement** with the following **statements**?*	**Strongly Disagree**	**Disagree**	**Slightly Disagree**	**Neutral**	**Slightly Agree**	**Agree**	**Strongly Agree**
1. Most people who are important to me would want me to use doping substances or methods to enhance my performance.	1	2	3	4	5	6	7
2. Most people I know would agree if I used doping substances or methods to enhance my performance.	1	2	3	4	5	6	7
3. Most people who are close to me would like me to use doping substances or methods to enhance my performance.	1	2	3	4	5	6	7

*Now, please **imagine** being in the following **situation**:*

"Having returned to training following a period of injury, you are feeling very out of shape. As such, you feel the need to get back in shape as soon as possible. A friend who you train with has been taking a training supplement that really helped them get back in shape quickly following a similar injury. They offer to give you some and you decide to take it. Subsequently you get back in shape much quicker than expected, but then discover the supplement you have been taking is a banned performance-enhancing substance. However, due to the improvements you have experienced, you decide to continue taking the substance."

*Now, using the following scale, please rate the **extent** to which you anticipate **you would feel in the ways described** below if you **decided to continue taking the substance**. Please answer **honestly**.*

*I would anticipate **feeling the following about continuing to take the substance…***	**Not at all**	**A little**	**Moderately**	**Very Much**	**Extremely**
1. I would feel remorse, regret.	1	2	3	4	5
2. I would feel tension about what I was doing.	1	2	3	4	5
3. I would not be able to stop thinking about the bad thing I was doing.	1	2	3	4	5
4. I would feel like apologizing, confessing.	1	2	3	4	5
5. I would feel bad about what I was doing.	1	2	3	4	5

*i. Now, please **imagine** being in the following **situation**:*

"You have been offered a banned performance-enhancing substance under medical supervision at low or no financial cost and the banned performance-enhancing substance could make a significant difference to your performance and was currently not detectable"

Now, please indicate: **How much consideration would you give to the offer?**						
A lot of consideration						None at all
7	6	5	4	3	2	1

THANK YOU FOR PARTICIPATING IN THIS STUDY!

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