

Psychological Mechanisms Underlying Doping Attitudes in Sport: Motivation and Moral Disengagement

Ken Hodge,¹ Elaine A. Hargreaves,¹ David Gerrard,¹ and Chris Lonsdale²

¹University of Otago; ²University of Western Sydney

We examined whether constructs outlined in self-determination theory (Deci & Ryan, 2002), namely, autonomy-supportive and controlling motivational climates and autonomous and controlled motivation, were related to attitudes toward performance-enhancing drugs (PEDs) in sport and drug-taking susceptibility. We also investigated moral disengagement as a potential mediator. We surveyed a sample of 224 competitive athletes (59% female; M age = 20.3 years; M = 10.2 years of experience participating in their sport), including 81 elite athletes. Using structural equation modeling analyses, our hypothesis proposing positive relationships with controlling climates, controlled motivation, and PEDs attitudes and susceptibility was largely supported, whereas our hypothesis proposing negative relationships among autonomous climate, autonomous motivation, and PEDs attitudes and susceptibility was not supported. Moral disengagement was a strong predictor of positive attitudes toward PEDs, which, in turn, was a strong predictor of PEDs susceptibility. These findings are discussed from both motivational and moral disengagement viewpoints.

Keywords: self-determination theory, motivational climate, moral disengagement, doping

*Good people will do good things, lots of them, because they are good people.
They will do bad things because they are human.*

—Rabbi Harold Kushner

Numerous athletes cheat and use performance-enhancing drugs (Fainaru-Wada & Williams, 2007). For example, Tim Montgomery, Marion Jones (track & field), Floyd Landis (cycling), Alex Rodriguez, Jose Canseco (baseball), Shawne Merriman, and Shaun Rogers (American football) have all admitted their use of performance-enhancing drugs (Assael, 2007; Fainaru-Wada & Williams, 2007; Shermer, 2008). As this article's epigraph indicates, these athletes are not necessarily "bad people"; typically, they are "good people who do bad things" (Bandura, 2006; Kushner, 2001). So the key question is *why*—why do these drug-taking athletes engage in this unethical, cheating behavior? The answer, we believe, lies largely in the realms of motivation and morality.

Athletes' use of performance-enhancing drugs (PEDs; banned and illegal ergogenic substances for performance enhancement), commonly known as *doping*, is a form of cheating behavior that can jeopardize their

health and their careers (WADA, 2011). The use of PEDs is an unethical and antisocial act given (i) its illegal status (Donahue, Miquelon, Valois, Goulet, Buist, & Vallerand, 2006; WADA, 2011) and (ii) the underlying moral intent to take an unfair advantage over an opponent (Barkoukis, Lazuras, Tsorbatzoudis, & Rodafinos, 2011; WADA, 2011). Whether or not athletes consider using PEDs is an issue of *motivation* (Donahue et al., 2006) and *morality* (Gucciardi, Jalleh, & Donovan, 2011; Lucidi, Zelli, Mallia, Grano, Russo, & Violani, 2008). Using self-determination theory (SDT; Deci & Ryan, 2002; Ryan & Deci, 2000) as the motivational framework, the purpose of this study was to investigate the relationships among athletes' attitudes toward using PEDs, their drug-taking susceptibility, the quality of athletes' motivation, and the environmental factors influencing that motivation. Furthermore, this study investigated moral disengagement as a potential mediator of these relationships. Bandura (2002) argued that the selective use of eight psychosocial maneuvers, collectively known as *moral disengagement*, allows individuals to transgress moral standards (such as with the use of PEDs) without experiencing negative affect (e.g., guilt), thereby decreasing constraint on future immoral behavior.

Previous research exploring psychosocial issues related to PEDs use has demonstrated the important

Ken Hodge and Elaine A. Hargreaves are with the School of Physical Education, University of Otago, New Zealand. David Gerrard is with the School of Medicine, University of Otago, New Zealand. Chris Lonsdale is with the School of Science and Health, University of Western Sydney, Australia.

This study was completed with the assistance of Drug Free Sport New Zealand.

role that attitudes play in shaping pro-doping behavioral intentions and subsequent doping behavior in both elite athletes (e.g., Lazuras, Barkoukis, Rodafinos, & Tzorbatzoudis, 2010; Petroczi, Aidman, & Nepusz, 2008; Petroczi, Mazanov, & Naughton, 2011; Smith et al., 2010) and non-elite athletes (e.g., Kindlundh, Isacson, Berglund, & Nyberg, 1998). However, a number of these doping attitudes studies were limited by their use of attitude questionnaires that did not have established psychometric properties (e.g., Kindlundh et al., 1998; Lazuras et al., 2010).

In addition to a focus on attitudes toward PEDs, researchers have recently focused on PED susceptibility as an additional proximal correlate of PED use (Gucciardi, Jalleh, & Donovan, 2010, 2011). Performance-enhancing drug use susceptibility refers to any level of consideration that renders an individual susceptible to engaging in PED activities (Gucciardi et al., 2010). Attitudes toward PEDs have been shown to predict PED susceptibility, which, in turn, has been shown to predict the actual use of such drugs (Jalleh & Donovan, 2007). Performance-enhancing drug use susceptibility has been examined in concert with attitudes toward PEDs in two recent studies with elite Australian athletes (Gucciardi et al., 2010, 2011); in both studies, PED use susceptibility was strongly correlated with attitudes toward PEDs. Moreover, Jalleh and Donovan (2007) found that “PED-susceptible” athletes were three times more likely to engage in PED use than nonsusceptible athletes. Despite this recent research focusing on the relationship between PED use susceptibility and attitudes toward PEDs, only two studies have examined the motivational basis for *why* many athletes report positive attitudes toward using PEDs (Barkoukis et al., 2011; Donahue et al., 2006).

Self-Determination Theory and Performance-Enhancing Drugs

According to SDT (Ryan & Deci, 2000), motivation exists along a continuum with two broad types of motivation represented: autonomous motivation (intrinsic motivation and self-determined forms of extrinsic motivation), and controlled motivation (non-self-determined or controlled forms of extrinsic motivation). The hallmark of controlled motivation is when behavior is regulated by a desire to obtain separable outcomes with these actions emanating from self-imposed pressures (e.g., shame, pride) or from external pressures and controls (Deci & Ryan, 2002). Autonomous motivation represents behavior driven by intrinsic interest in or enjoyment of the activity itself or because of the value attached to the activity. These actions emanate from, or are congruent with, one’s sense of self (Ryan & Deci, 2000). For autonomous motivation to develop, the individual’s basic psychological needs for autonomy (having a sense of personal initiative and volition), competence (functioning effectively), and relatedness (connecting with others) need to be satisfied. In contrast, controlled motivation results when these three needs are thwarted.

Athletes with dominant controlled motivation primarily seek to gain ego enhancement, fame, and extrinsic rewards as a substitute for needs satisfaction (Deci & Ryan, 2002). Consequently, these athletes focus more on the outcome of the game and “winning” to allow them to accomplish their goals of ego enhancement, fame, and rewards, and to satisfy their contingent self-esteem (Donahue et al., 2006). We argue that athletes with this strong emphasis on the outcome and winning will be tempted to do anything to win (Lucidi et al., 2008; Romand & Pantaleon, 2007) and as a result will have positive attitudes to using PEDs, be more susceptible to using PEDs (Gucciardi et al., 2010; Shermer, 2008), and to morally disengage (Lucidi et al., 2008). In support of this argument, previous research has shown controlled motivation to be positively linked to both moral disengagement and antisocial behaviors in sport (Hodge & Lonsdale, 2011), as well as to past use of PEDs (Barkoukis et al., 2011; Donahue et al., 2006).

In contrast, for the autonomously motivated athlete, enjoyment is in “the process of trying to improve and do well through appropriate means” (Donahue et al., 2006, p. 512), choicefully acting in line with her/his goals and values, and through connecting with others in his/her sport, not by winning at all costs (e.g., the use of PEDs). Consequently, for autonomously motivated athletes to use PEDs would run counter to these psychological needs as they would be engaging in behavior that conflicts with their goals and values, be achieving competence artificially, and be disconnected from other athletes by cheating and taking an unfair advantage over opponents (Donahue et al., 2006). Therefore, we proposed that autonomously motivated athletes would be less likely to be positively disposed toward antisocial behaviors such as the use of PEDs. Previous research has shown that autonomously motivated athletes were more likely to report an avoidance of PEDs (Barkoukis et al., 2011; Donahue et al., 2006).

Contextual Factors Associated With Performance-Enhancing Drugs

Our study extended previous SDT-based research on PEDs because it examined not only the quality of athlete motivation (i.e., autonomous or controlled), but also the environmental/social forces that shape athletes’ motivation and attitudes toward such drugs (Barkoukis et al., 2011; Lazuras et al., 2010). Drug abuse research has highlighted the role of normative pressures, such as the influence of significant others, as playing a pivotal role in such illegal behavior (e.g., Lentillon-Kaestner & Carstairs, 2010; Smith et al., 2010). In sport, the coach is typically regarded as the most influential significant other in the athlete’s sport experience, along with teammates and/or training partners (Bartholomew, Ntoumanis, & Thøgersen-Ntoumani, 2010). The contextual environment or climate the coach and teammates/training partners create is especially influential with respect to athlete motivation and subsequent behavior (Gagné, Ryan, & Bargmann, 2003; Hodge & Lonsdale, 2011).

A coach can structure a motivational climate to be either autonomy supportive (resulting in support for the individual's basic psychological needs and autonomous motivation) or controlling (resulting in a lack of support for their needs and development of controlled motivation). A controlling environment is created when a coach behaves in a coercive, pressuring, and authoritarian way, and employs strategies such as manipulation, obedience, guilt induction, controlling competence feedback, and conditional regard to impose a specific and preconceived way of thinking and behaving upon their athletes (Bartholomew et al., 2010; Gagné et al., 2003). On the other hand, an autonomy-supportive climate is created when the athlete is provided with choice and a rationale for tasks, their feelings are acknowledged, opportunities to show initiative and independent work are provided, athletes are given noncontrolling competence feedback, and the use of guilt-inducing criticism and overt control is avoided (Gagné et al., 2003). Teammates and training partners can also influence the creation of an autonomy-supportive versus a controlling motivational climate through means similar to those of the coach (also see Moreau & Mageau, 2012). Our assumption in the present research was that motivation to engage in using PEDs would be enhanced by a controlling climate (such as pressure to comply via power-assertive coaching) and thwarted by autonomy-supportive factors (such as offering choice and acceptance), because these factors affect the satisfaction of basic psychological needs and the subsequent development of controlled or autonomous motivation (Gagné et al., 2003).

The social context also plays an important role in determining moral thought and action (Bandura, 2002; Long, Pantaléon, Bruant, & d'Arripe-Longueville, 2006; Romand & Pantaleon, 2007; Shu, Gino, & Bazerman, 2011; Tractlet, Romand, Moret, & Kavussanu, 2011; Zelli, Mallia, & Lucidi, 2010). Athletes who perceive a controlling team context may morally disengage by justifying the use of PEDs as a legitimate means to a desired end emphasized by the coach or teammates (e.g., to help my team win; Lazuras et al., 2010) or by displacing responsibility for their actions on to their coach or teammates (e.g., it's not my fault, my coach made me do it; Shermer, 2008). Moral disengagement may mediate the relationships among the social context (coach/team climate), athlete motivation, and athletes' attitudes toward the use of PEDs. Previous sport research by Boardley and Kavussanu (2009; 2010) has demonstrated the mediational role played by moral disengagement with respect to relationships between contextual factors (e.g., coach's character-building competency), person factors (e.g., achievement goal orientations), and antisocial behavior.

Moral Disengagement and Performance-Enhancing Drugs

One of the key propositions in Bandura's (2002, 2006) social cognitive theory of moral thought and action is that in the development of moral agency, individuals adopt

standards of right and wrong that serve as guides and deterrents for conduct. In this self-regulatory process, individuals monitor their conduct and the conditions under which it occurs, judge it in relation to their moral standards and perceived circumstances, and regulate their actions by the consequences they apply to themselves (Bandura, 2006). Moral agency is exercised through the "constraint of negative self-sanctions for conduct that transgresses one's moral standards and the support of positive self-sanctions for conduct that is faithful to one's moral standards" (2006, p. 171).

Bandura (2002) argued that the selective use of eight psychosocial maneuvers, collectively known as "mechanisms of moral disengagement," allows individuals to transgress moral standards (such as in the use of PEDs; Strelan & Boeckmann, 2006) without experiencing negative affect (e.g., guilt), thereby decreasing constraint on future immoral behavior. As Bandura (2002) observed, high moral disengagers experience low guilt over immoral behavior. The eight mechanisms of moral disengagement are as follows: moral justification, euphemistic labeling, advantageous comparison, displacement of responsibility, dehumanization, attribution of blame, distortion of consequences, and diffusion of responsibility.

Briefly, immoral behavior, such as using PEDs, could be justified as a way of maintaining the team's winning legacy (moral justification), and rationalized as just another way to "maximize one's potential" by "bending the rules" (euphemistic labeling; Boardley & Kavussanu, 2007; Shermer, 2008). Athletes may invoke their opponents' use of PEDs (i.e., "everyone else is doing it"; diffusion of responsibility; Kirkwood, 2012; Shermer, 2008), and, by displacing responsibility to an authority figure, such as the coach, or to team culture for their reason for taking PEDs, athletes can engage in antisocial behavior that they would not usually contemplate (Lentillon-Kaestner & Carstairs, 2010). Athletes may deny the seriousness of their actions (i.e., "I'm not hurting anyone else"; distortion of consequences) and dismiss the seriousness of the health threat for themselves from using PEDs (i.e., "the side effects are exaggerated"; distortion of consequences). Finally, athletes may view themselves as being driven to use PEDs by social pressure from their national governing body, their sponsors, and others and therefore view others as being responsible for their use of such drugs (displacement of responsibility; Smith et al., 2010).

Moral disengagement has been positively associated with non-sport drug abuse, as well as antisocial behavior, among adolescents and young adult offenders (e.g., Hyde, Shaw, & Moilanen, 2010; Kiriakidis, 2008). In sport, moral disengagement has been strongly associated with antisocial behaviors (e.g., Boardley & Kavussanu, 2007, 2009, 2010; Tractlet et al., 2011), including the use of PEDs (Lucidi et al., 2008). In a longitudinal study investigating nonelite adolescent athletes' ($M = 17.0$ years) use of moral disengagement and their reported use of PEDs, Lucidi et al. (2008) revealed that moral disengagement contributed to a greater reported use of PEDs. However,

they did not examine the motivational basis for these immoral and antisocial attitudes/behaviors.

Purpose and Hypotheses

The overall goal of this study was to examine elite and nonelite athletes' attitudes toward using PEDs and to understand potential psychological mechanisms underlying attitudes toward PEDs. Our focus was on attitudes toward using PEDs and PED use susceptibility, given that previous research (e.g., Petroczi & Aidman, 2009) has demonstrated the important role that attitudes play in shaping pro-doping behavioral intentions and subsequent doping behavior. The specific purpose of this study was to examine whether constructs outlined in SDT (Deci & Ryan, 2002)—namely, autonomy-supportive and controlling motivational climates and autonomous and controlled motivation—were related to attitudes toward PEDs and PED susceptibility. We also investigated moral disengagement as a potential mediator of these relationships. While previous research revealed that moral disengagement contributed to a greater reported use of PEDs (Lucidi et al., 2008), no investigation has examined the motivational basis for moral disengagement and its relationship with attitudes toward PEDs and PED susceptibility. We tested the following hypotheses (see Figure 1).

1. An autonomy-supportive climate (coach and teammate style) will be negatively associated with attitudes toward using PEDs and PED susceptibility; these relationships will be mediated by autonomous motivation and moral disengagement.
2. A controlling climate (coach and teammate style) will be positively associated with attitudes toward using PEDs and PED susceptibility; these relationships will be mediated by controlled motivation and moral disengagement.
3. Athletes with high/strong positive attitudes toward PEDs and high PED susceptibility will report high levels of controlling climate, controlled motivation, and moral disengagement.

Method

Participants and Procedures

Competitive athletes were recruited from two populations: (1) a group of athletes from a New Zealand university who completed a paper and pencil version of the questionnaire, and (2) a group of elite athletes from New Zealand. The elite athletes were recruited via e-mail; the e-mail contained a link to a secure website where the athletes completed an anonymous online version of the questionnaire. After removing recreational sport participants ($n = 28$) and athletes competing at club level ($n = 78$), the final sample ($N = 224$; 59% female, 41% male; mean age = 20.3 years, $SD = 3.1$ years) included elite athletes who had represented their province ($n = 38$) or

country ($n = 43$) at the senior level, as well as developmental athletes who had represented their province ($n = 108$) or country ($n = 35$) at the junior level. This sample comprised experienced ($M = 10.2$ years participating in their sport; $SD = 3.9$ years) athletes, the majority of whom participated in team sports (92%; e.g., basketball, field hockey), with a small percentage (8%) being individual sport athletes (e.g., cycling, swimming). Ethical approval for this study was received from the university's ethics committee and informed consent was received from all participants.

Measures

Attitudes Toward PEDs. The Performance Enhancement Attitude Scale (PEAS; Petroczi & Aidman, 2009) is a 17-item self-report instrument that includes attitude items such as "Doping is necessary to be competitive," "The risks related to doping are exaggerated," and "Doping is not cheating since everyone does it." Participants respond to each item using a 6-point Likert-type scale, with points anchored from *strongly disagree* (1), *disagree* (2), *slightly disagree* (3), *slightly agree* (4), *agree* (5), and *strongly agree* (6). No neutral response option is offered and all 17 items are scored in the same direction. The PEAS total score ranges from 17 to 102, giving a theoretical middle point of 59.5. Satisfactory psychometric properties regarding construct validity and internal reliability have been reported by Petroczi and Aidman (2009). For example, internal consistencies have ranged from .71 to .91 across various samples. In addition, theoretically expected differences in doping attitudes have been found between PED users and nonusers, with elevated PEAS scores reported by PED users (Petroczi & Aidman, 2009).

Athletes' Susceptibility to Use of PEDs. Athletes' susceptibility to banned PED use (Gucciardi et al., 2010) was determined by presenting athletes with the following scenario: "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," and asking: "How much consideration would you give to the offer?" (response categories: 1 = *none at all*, to 7 = *a lot of consideration*). Previous research has found this measure to be a useful indication of "doping susceptibility" in that susceptible athletes were three times more likely to engage in PED use than nonsusceptible athletes (Gucciardi et al., 2010).

Autonomy-Supportive Coach/Teammate Climate. We assessed athletes' perceptions of autonomy-supportive behaviors or styles exhibited by the coach in their major sport. Participants responded to the following stem: "This questionnaire contains items that are related to your experiences with your *coach*. Coaches have different styles in dealing with athletes/players, and we would like to know more about how you have felt about your encounters with

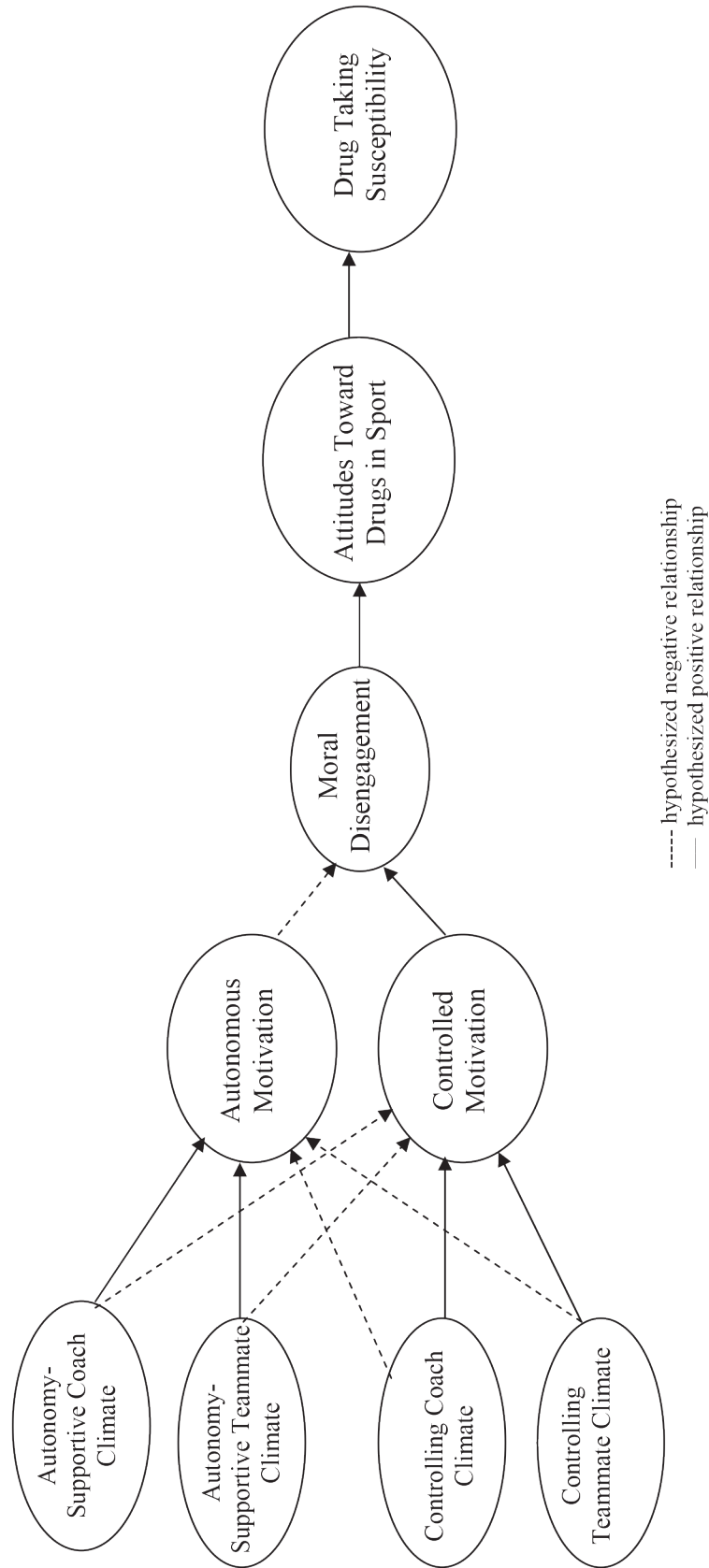


Figure 1 — Hypothesized structural model of coach / teammate climate, motivation, moral disengagement, attitudes toward drugs in sport, and drug-taking susceptibility.

your coach.” We adapted 14 items from the Health Care Climate Questionnaire (Williams, Cox, Kouides, & Deci, 1999) to assess autonomy-supportive coaching style/climate (e.g., “I feel that my coach provides me choices and options”). Satisfactory psychometric properties for this scale have been reported by Williams et al. (1999) and previous work in sport has documented support for the reliability of an adapted version of this autonomy-supportive scale (Hodge & Lonsdale, 2011). Participants responded to each item using a 7-point Likert scale (1 = *Strongly disagree*, 7 = *Strongly agree*). We also employed a modified version of this questionnaire to assess athletes’ perceptions of autonomy-supportive styles exhibited by teammates/training partners in their major sport. Participants responded to the following stem: “This questionnaire contains items that are related to your experience with your *teammates/training partners*. Teams (training squads) have different interaction styles, and we would like to know more about how you have felt about your encounters with your teammates/training partners.”

Controlling Coach/Teammate Climate. We used the Coach Controlling Behaviors Scale (CCBS; Bartholomew et al., 2010) to assess the controlling dimension of coaching style/climate. The CCBS is a 15-item questionnaire, and answers are given on a 7-point Likert scale (1 = *Strongly disagree*, 7 = *Strongly agree*). There are four subscales of controlling interpersonal styles that have been identified: controlling use of rewards (e.g., “My coach only rewards/praises me to make me train harder”), negative conditional regard (e.g., “My coach is less supportive of me when I am not training and competing well”), intimidation (e.g., “My coach shouts at me in front of others to make me do certain things”), and excessive personal control (e.g., “My coach tries to control what I do during my free time”). Initial research suggests good validity and internal consistency for the four-factor model of the CCBS, as well as an overall score for coach controlling style (see Bartholomew et al., 2010). We also used a modified version of the CCBS to assess the controlling aspects of teammate/training partner style.

Behavioral Regulation in Sport Questionnaire-6 (BRSQ-6). We measured the six types of motivational regulation as specified in SDT with the 24-item BRSQ-6 (Lonsdale, Hodge, & Rose, 2008). Participants responded to the following stem: “Below are some reasons why people participate in sport. Using the scale provided, please indicate how true each of the following statements is for you.” The BRSQ-6 includes subscales designed to measure intrinsic motivation (IM; e.g., “because I find it pleasurable”), integrated regulation (IG; e.g., “because it’s an opportunity to just be who I am”), identified regulation (ID; e.g., “because I value the benefits of my sport”), introjected regulation (IJ; e.g., “because I would feel ashamed if I quit”), external regulation (EX; e.g., “because I feel pressure from other people to play”), and amotivation (AM; e.g., “but I wonder what’s the point”). Participants responded to the items using a 7-point Likert scale (1 = *Not true at all*, 7 = *Very true*).

Evidence supporting the psychometric properties of the BRSQ-6 scores has been reported by Lonsdale et al. (2008). Scores for autonomous motivation (ID, IG, IM) were calculated using the following formula: $2 \times IM + IG + ID$. Controlled motivation was calculated using $2 \times IJ + 2 \times EX$ (see Lonsdale, Hodge, & Rose, 2009).

Moral Disengagement in Sport Scale-Short (MDSS-S).

The short form of the MDSS (Boardley & Kavussanu, 2008) was employed to measure athletes’ overall sport moral disengagement. Participants were asked to “please respond to each of the following statements by indicating how much you agree with each statement. Please keep your main competitive sport in mind as your answer each question.” Participants responded to eight items (e.g., “It is okay for players to lie to officials if it helps their team”; “Bending the rules is a way of evening things up”), with each item representing one of the eight psychological mechanisms for moral disengagement (Bandura, 2002, 2006), by indicating how much they agreed with each statement (using a 7-point Likert scale; 1 = *Strongly disagree*, 7 = *Strongly agree*). Satisfactory psychometric properties for the short form of the MDSS have been reported by Boardley and Kavussanu (2008).

Data Analysis

Preliminary Analyses. We examined the data to ensure that all values were within the plausible range and to identify any pattern of missing scores. We also examined univariate skewness and kurtosis as well as Mardia’s multivariate coefficients. We investigated the internal consistency of subscale scores and conducted confirmatory factor analyses (CFA) to examine the factorial validity of scores derived from the two teammate behavior questionnaires, the controlling coach items, and the PEAS, all of which have limited validity evidence in this population of athletes. Finally, using CFA, we tested the fit of the full measurement model to the data, with correlations between all factors estimated (Jöreskog & Sörbom, 1999). In this model, and all remaining structural equation models, we used item parceling to reduce the number of parameters estimated. We employed four observed score indicators for coach autonomy-supportive style/climate, four controlling coach indicators, four indicators for teammate autonomy-supportive style/climate, four controlling teammate indicators, four autonomous motivation indicators, four controlling motivation indicators, four moral disengagement indicators, and five attitude toward PEDs indicators. Items were parceled using techniques advocated by Little, Cunningham, Shahar, and Widaman (2002). Specifically, for unidimensional constructs we employed the “item-to-content balance” method of parceling. For multidimensional constructs (e.g., controlling behavior) we employed the “domain representative approach.” The single-item PED susceptibility score was included in the model, with error fixed at .30. We employed Hu and Bentler’s (1999) cutoff criteria (CFI and TLI $\geq .95$,

RMSEA \leq .06, SRMR \leq .08) when evaluating the fit of each model to the data.

Main Analyses. We first tested the fit of the hypothesized mediation model, as outlined in Figure 1 (plus correlations between all climate variables—not shown in the figure). We used Cohen's (1988) guidelines to interpret the strength of coefficients in the model (strong = .50, moderate = .30, and weak = .10). We then tested mediation hypotheses by examining total, direct, and indirect effects from a combined effects model. We also examined specific indirect effects (i.e., pathways). To test the significance of specific indirect effects, we employed MacKinnon, Lockwood, Hoffman, West, and Sheets's (2002) distribution of products test, which involves converting relevant parameter estimates (i.e., the effect of the predictor variable on the mediator and the mediator on the outcome variable) into z -scores and comparing the product of these estimates with normative cutoff criteria.

To test Hypothesis 3, we conducted analyses to examine motivational and moral disengagement differences between athletes with (1) low/weak and high/strong positive attitudes toward PED use (PEAS scores) and (2) low and high susceptibility to PED use. Consistent with previous research by Gucciardi et al. (2010) we created "low" and "high" groups to directly examine any differences between those athletes at either end of the doping attitudes spectrum. We employed a tertile split using PEAS scores in an effort to clearly identify those athletes with relatively low or negative attitudes toward the use of PEDs and those athletes with relatively high or positive attitudes toward the use of the drugs. We conducted a tertile split and compared those in the first (low PEAS) and third (high PEAS) tertiles. We also conducted a tertile split on the susceptibility scores and compared those in the first (low susceptibility) and third (high susceptibility) tertiles. We employed the same measure of drug-taking susceptibility as used by Gucciardi et al. (2010); however, whereas those researchers classified athletes as susceptible if they reported anything other than a "none at all" response (i.e., "1" on a 1–7 scale), we decided to employ the tertile split strategy to provide a more precise classification into relatively low (i.e., 1st tertile) and relatively high (i.e., 3rd tertile) groups for comparison purposes. In both analyses, we used MANOVA to test for overall between group differences on the following variables: coach autonomy support, coach controlling climate, teammate autonomy support, teammate controlling climate, autonomous motivation, controlled motivation, and moral disengagement.

Results

Preliminary Analyses

There were minimal missing data (0–2.6% of each variable), with no apparent pattern in these cases. Therefore, we replaced the missing data using an expectation maximization algorithm. Univariate skewness and kurtosis

were minimal (skewness $<$ 2, kurtosis $<$ 7) in all variables, apart from one PEAS indicator (skewness = 2.45). There were no multivariate outliers ($p >$.001); however, there was evidence of multivariate nonnormality (standardized skewness = 33.93, standardized kurtosis = 16.33). As a result, we employed the Satorra–Bentler correction to the χ^2 statistic and standard errors in all models. Alpha coefficients ranged from .71 to .95 (see Table 1). Fit indices from four preliminary CFAs of the scores derived from the two teammate climate questionnaires, the controlling coach items, and the PEAS generally indicated good fit to the data (CFI and TLI \geq .95, SRMR \leq .08). Elevated RMSEA (.07 to .11) values were noted in the teammate and PEAS models; however, Hu and Bentler (1999) have suggested that an acceptable SRMR ($<$.09), plus one other fit index (e.g., CFI or TLI) surpassing the criterion for good fit (.95) is usually indicative of an adequate fit between the model and the data. As a result, the elevated RMSEA values in these two models were not considered substantial enough to warrant alterations to these models. The measurement model of the full hypothesized model fit the data well: scaled χ^2 ($df = 467$) = 791.67 ($p <$.01), RMSEA = .05 (CI = .04–.05), TLI = .97, CFI = .97, SRMR = .05. All item–factor loadings were acceptable ($>$.54) and none of the 95% confidence intervals for the interfactor correlations encompassed unity, suggesting that the factors represented distinct constructs.

Overall, these athletes reported high scores on the coach and teammate autonomy-support scales, with low scores on the coach and teammate controlling climate scales. Autonomous motivation scores were high, whereas scores on controlled motivation, moral disengagement, attitudes toward PEDs, and PED susceptibility were low (see Table 1).

Main Analyses

Analyses of the mediation model indicated good fit: scaled χ^2 ($df = 510$) = 858.87 ($p <$.01), RMSEA = .05 (CI = .04–.05), TLI = .97, CFI = .97, SRMR = .08. As seen in Figure 2, hypothesized positive paths were significantly different from zero, while hypothesized negative paths were not significant. Most notably, coach and teammate controlling climates were both moderate predictors of controlled motivation, which, in turn, was a weak but significant predictor of moral disengagement. Moral disengagement was a strong predictor of positive attitudes toward PEDs, which, in turn, was a strong predictor of PED susceptibility.

See Table 2 for details of total, direct, and indirect effects. There was a significant indirect effect of moral disengagement on PED susceptibility, through PED attitudes ($p <$.05). There was also a significant indirect effect observed for coach controlling climate on PED susceptibility ($p <$.05). In both cases, the indirect effects accounted for 100% of the total effects, with the nonsignificant direct effects estimates ranging from $-.03$ to $.00$. These results suggested that complete mediation was present. No other indirect effects were significant.

Table 1 Descriptive Statistics and Factor Correlations (ϕ Matrix) Among Coach/Teammate Climate, Motivational, Moral Disengagement, Attitudes and Susceptibility Variables (N = 224)

Variable	1	2	3	4	5	6	7	8	9
1. Autonomy-Supportive Coach Climate	.95								
2. Controlling Coach Climate	-.59*	.90							
3. Autonomy-Supportive Teammate Climate	.41*	-.22*	.95						
4. Controlling Teammate Climate	-.19*	.57*	-.40*	.92					
5. Autonomous Motivation	.41*	-.24*	.48*	-.23*	.92				
6. Controlled Motivation	-.19*	.41*	-.08	.38*	-.21*	.94			
7. Moral Disengagement	-.06	.22*	.00	.20*	-.03	.15*	.84		
8. Attitudes toward PEDs	.00	.21*	.02	.09	.02	.04	.52*	.89	
9. PEDs susceptibility	-.07	.20*	.06	.10	-.06	.17*	.25*	.47*	—
Mean (SD)	5.16 (1.15)	2.62 (1.05)	5.38 (.97)	2.45 (1.00)	23.58 (3.52)	9.61 (5.52)	2.45 (1.11)	30.44 (12.26)	2.18 (1.70)

Note. PEDs = performance enhancing drugs. *Indicates that the correlation was significantly different from zero ($p < .05$). Alpha coefficients are listed in italics on the diagonal. The long dash in Column 9 indicates that a single-item measure was used, so an alpha coefficient is not provided.

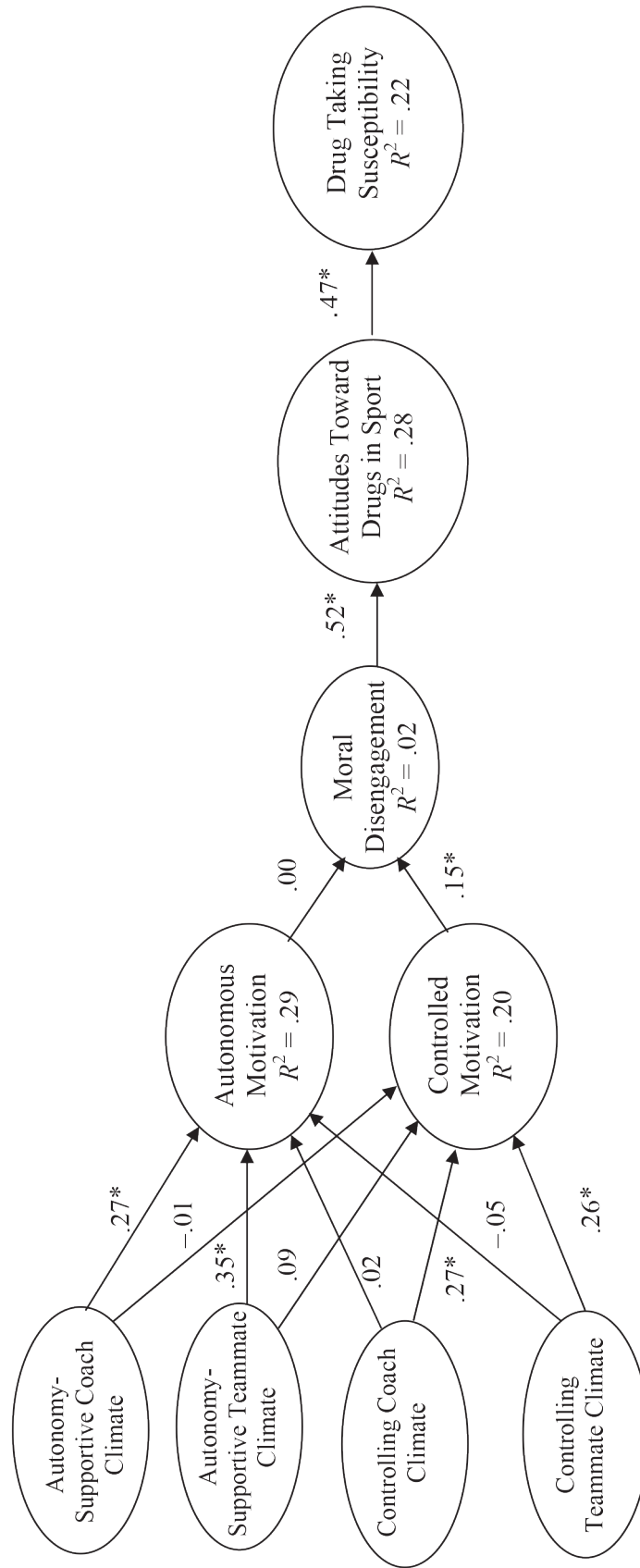


Figure 2 — Mediation model of coach / teammate climate, motivation, moral disengagement, attitudes toward drugs in sport, and drug-taking susceptibility. *Indicates that the standardized path estimate significantly different from zero ($p < .05$).

Table 2 Examining Mediation: Standardized Total, Direct, and Indirect Effects

Relationship	Total Effect	Direct Effect	Indirect Effect
Autonomy-Supportive Coach Climate → Moral Disengagement	.05	.06	<.01
Autonomy-Supportive Coach Climate → Attitudes toward PEDs	.22	.18	.03
Autonomy-Supportive Coach Climate → PEDs susceptibility	.02	-.07	.08
Controlling Coach Climate → Moral Disengagement	.19	.18	.01
Controlling Coach Climate → Attitudes toward PEDs	.38*	.31*	.08
Controlling Coach Climate → PEDs susceptibility	.22*	.01	.22*
Autonomy-Supportive Teammate Climate → Moral Disengagement	.06	.06	<.01
Autonomy-Supportive Teammate Climate → Attitudes toward PEDs	-.02	-.05	.03
Autonomy-Supportive Teammate Climate → PEDs susceptibility	.12	.15	-.03
Controlling Teammate Climate → Moral Disengagement	.13	.11	.01
Controlling Teammate Climate → Attitudes toward PEDs	-.09	-.14	.04
Controlling Teammate Climate → PEDs susceptibility	.04	.05	-.01
Autonomous Motivation → Attitudes toward PEDs	.01	.01	<.01
Autonomous Motivation → PEDs susceptibility	-.07	-.08	<.01
Controlled Motivation → Attitudes toward PEDs	-.05	-.08	.03
Controlled Motivation → PEDs susceptibility	.11	.13	-.03
Moral Disengagement → PEDs susceptibility	.22*	-.03	.25*

Note. Total effect – direct effect = indirect effect; any deviation is due to rounding from three to two decimal places.

* $p < .05$.

Examination of the specific indirect pathways associated with the indirect effect of controlling coach climate on PED susceptibility indicated that the path from controlling motivational climate → PED attitude → PED susceptibility accounted for a large proportion of this mediated effect (path estimate = .15, $p < .01$, 55.72% of indirect effect). This result suggested that coach controlling behavior was associated with PED attitudes and susceptibility, over and above its relationships with motivation and moral disengagement. Pathways from controlling coach climate to PED susceptibility involving controlled motivation (controlling coach climate → controlled motivation → PED susceptibility) and moral disengagement (controlling coach climate → moral disengagement → PED attitudes → PED susceptibility) were also significant and accounted for substantial proportions of the indirect effect (16.59% and 16.61%, respectively). However, the path involving a relationship between these two constructs (controlling coach climate → controlled motivation → moral disengagement → PED attitudes → PED susceptibility) accounted for only 1.38% of the indirect effect ($p < .05$) (contact the last author for complete details of all specific indirect effects).

The tertile split of PEAS scores identified 75 athletes with “low” scores ($M = 19.37$, $SD = 2.14$; PEAS scores range from 17 to 102) and 74 with “high” scores ($M = 44.20$, $SD = 11.00$). Not surprisingly, these groups were significantly different on these PEAS scores ($t = 19.19$,

$df = 147$, $p < .001$). MANOVA indicated a significant between-group difference across the dependent variables (Wilks’s $\Lambda = .85$, $F(7, 141) = 3.48$, $p < .001$). Follow-up analyses indicated that coach controlling climate ($p < .05$, $d = .67$) and moral disengagement ($p < .01$, $d = .78$) were significantly different between groups, with athletes in the “high” PEAS group reporting higher levels of coach controlling climate and moral disengagement. No other dependent variable was significantly different between groups.

A balanced tertile split according to susceptibility scores was not possible because more than one-third of the sample had the lowest possible score (1 on the 7-point scale). These 125 athletes formed the “low susceptibility” group. Of the remaining participants, 54 scored 2 or 3, whereas 45 scored ≥ 4 . This latter group formed the “high susceptibility” group ($M = 5.15$, $SD = 1.16$). As expected, these groups differed significantly on their susceptibility scores ($t = 23.92$, $df = 168$, $p < .001$). MANOVA results showed a significant between-group difference across the dependent variables (Wilks’s $\Lambda = .92$, $F(7, 162) = 2.10$, $p < .05$). Follow-up analyses showed that controlled motivation ($p < .05$, $d = .30$) and moral disengagement ($p < .01$, $d = .51$) were significantly different between groups, with athletes in the “high susceptibility” group reporting higher levels of controlled motivation and moral disengagement. None of the other variables showed significant between-group differences.

Discussion

We examined whether motivational constructs, namely, autonomy-supportive and controlling motivational climates and autonomous and controlled motivation, were related to attitudes toward PEDs and PED susceptibility. We also investigated moral disengagement as a potential mediator of these relationships. The athletes in our study reported high scores on coach and teammate autonomy support and autonomous motivation, with low scores on the controlling climate and controlled motivation. These motivation findings are encouraging given the evidence supporting positive psychological outcomes (e.g., subjective well-being, less stress, work/life satisfaction, enjoyment) associated with autonomous climates and autonomous motivation (Moreau & Mageau, 2012; Ryan & Deci, 2000). Levels of moral disengagement, positive attitudes toward PEDs, and PED susceptibility were low, which was also encouraging given the negative outcomes (e.g., antisocial behavior, aggressive behavior, cheating) associated with these psychological variables (Bandura, 2006; Barkoukis et al., 2011; Hodge & Lonsdale, 2011). In particular, the average score for attitudes toward PEDs was low (PEAS score = 30.4) compared with levels reported from 10 samples of US and UK sport science students; US, Canadian, and Hungarian college athletes; and elite athletes (age range 20–25 years; PEAS ranged from 31.6 to 44.7; Petroczi & Aidman, 2009). While this finding was encouraging for New Zealand sports administrators, comparisons need to be tempered by the fact that norms do not exist for the PEAS and the relative strength and importance of particular scores are yet to be determined.

With respect to our hypotheses, the proposed negative influence of autonomous climate and autonomous motivation on moral disengagement, PED attitudes, and PED susceptibility was not supported. Our second hypothesis, regarding the positive relationships among controlling climates and controlled motivation and PED attitudes and PED susceptibility, was largely supported, and moral disengagement was a strong predictor of positive attitudes toward PEDs. Hypothesis 3 was partially supported, with athletes in the “high” positive attitudes toward PEDs group ($n = 74$) reporting higher levels of controlling coach climate and moral disengagement and athletes in the “high” PED susceptibility group ($n = 45$) reporting higher levels of controlled motivation and moral disengagement.

Moral Disengagement and Doping

Our SEM results revealed that moral disengagement was a strong predictor of positive attitudes toward PEDs, which, in turn, was a strong predictor of PED susceptibility. In addition, athletes in the “high” positive attitudes toward PEDs and “high” PED susceptibility groups reported higher levels of moral disengagement than did athletes in the “low/weak” positive attitudes toward PEDs and “low” PED susceptibility groups. Collectively, these results

provided support for Gucciardi et al.’s (2011) findings that personal morality (cheating) had a strong relationship with attitudes toward PEDs among elite Australian athletes, which in turn had a moderate relationship with PED susceptibility. Our moral disengagement results also lend support to Strelan and Boeckmann’s (2006) findings that one of the strongest influences on elite athletes’ decisions to use PEDs was their personal moral beliefs (also see Kirby, Moran & Guerin, 2011). Traclet et al. (2011) revealed that young adult soccer players employed a “set” of specific moral disengagement mechanisms with respect to aggressive antisocial behaviors. These young adult soccer players primarily employed displacement and diffusion of responsibility to coaches and teammates as a means to justify their antisocial behaviors (i.e., cheating and aggression). Unfortunately, our use of the short form of the MDSS did not allow us to examine these individual moral disengagement mechanisms separately or the use of a specific “set” of moral disengagement mechanisms regarding PEDs; clearly, this would be fruitful area for future research.

With respect to the role of coach climate in athlete morality, Romand and Pantaleon (2007) revealed evidence of coaches being “very permissive about rule transgressions” (p. 73) regarding cheating and aggressive behaviors and that the rugby coaches in their study engaged in behaviors reminiscent of moral disengagement, such as displacement and diffusion of responsibility to others (e.g., referees, supporters, and professional players as role models). However, our coach climate results indicated that although there was a significant coach climate relationship with both PED variables, there was no significant relationship with moral disengagement—possibly due to the climate measure not being focused on a “morally permissive environment,” but on controlling coach behaviors in general (such as “My coach intimidates me into doing the things that he/she wants me to do”). Future PED research would likely benefit from the use of a specific moral climate measure.

Controlling Climate, Controlled Motivation, and Doping

Our hypothesis regarding positive relationships among controlling climate, controlled motivation, and attitudes toward PEDs and PED susceptibility was largely supported. Controlling climate was a moderate predictor of controlled motivation, which, in turn, was a significant, albeit weak, predictor of moral disengagement. This latter finding was somewhat surprising given that Hodge and Lonsdale (2011) found a moderate relationship (.32) between controlled motivation and moral disengagement. The total effects of controlling climate on moral disengagement and of controlled motivation on PED variables were not significant.

On the other hand, we found that controlling coach climate had a moderate direct effect on attitudes toward PEDs, and a significant indirect effect on PED susceptibility. Furthermore, athletes in the “high” positive

attitudes toward PEDs and “high” PED susceptibility groups reported higher levels of controlling coach climate than did athletes in the “low/weak” positive attitudes toward PEDs and “low” PED susceptibility groups. Taken together, these results indicated that controlling coach climate had an important relationship with PED attitudes and PED susceptibility, but these influences were not mediated by the hypothesized mechanisms (controlled motivation and moral disengagement). Instead, moral disengagement and controlling coach climate were significant independent predictors of PED attitudes. Future research may wish to examine alternative mediating variables, such as moral identity and moral self-worth (Aquino & Reed, 2002; Conway & Peetz, 2012).

Performance-enhancing drug use research has highlighted the role of normative pressures, such as the influence of significant others, as playing a pivotal role influencing positive attitudes toward such illegal behavior (e.g., Lentillon-Kaestner & Carstairs, 2010; Petroczi et al., 2011; Smith et al., 2010). We argued that athletes reporting a controlling emphasis on ego enhancement, guilt, and external pressures would be tempted to do anything to succeed (Romand & Pantaleon, 2007) and as a result would be more likely to consider using PEDs. Our results in this regard provided some support for the Lentillon-Kaestner and Carstairs (2010) findings that subjective norms within the sport and within the team (team staff and teammates) transmitted a culture of expected PED use (also see Kirby, Moran & Guerin, 2011; Lucidi et al., 2008; Smith et al. 2010). Our controlling coach climate results also lend some support to Lazuras et al.’s (2010) findings that normative beliefs and situational temptation (a measure of the normative influence of coach, teammate, and significant others on temptations to use PEDs) predicted doping intentions in a sample of adult elite athletes from both team and individual sports. Finally, our results also supported both Lucidi et al.’s (2008) and Zelli et al.’s (2010) longitudinal findings that adolescent athletes’ beliefs that significant others would approve of PED use predicted their intentions to use such drugs.

Autonomy Support, Autonomous Motivation, and Doping

The lack of support for our hypothesis regarding the importance of autonomy-supportive climates and autonomous motivation contradicted previous research by Barkoukis et al. (2011) and Donahue et al. (2006), who found that autonomously motivated athletes were more likely to report avoidance of using PEDs, although it is important to recognize that both those studies examined actual PED use, whereas we examined attitudes toward using PEDs and PED use susceptibility. The lack of agreement may be due to the different PED variables assessed, but may also be due to measurement differences with respect to autonomous motivation. Barkoukis et al. (2011) employed the Sport Motivation Scale (SMS) to assess autonomous motivation and because

this scale does not measure integrated regulation it does not capture the full spectrum of autonomous motivation. Moreover, Barkoukis et al. (2011) used a global index of self-determined motivation (rather than autonomous and controlled scores) and cluster analyses to identify motivational groupings. Donahue et al. (2006) used only the intrinsic motivation subscale from the SMS, so again the full breadth of autonomous motivation was not measured. Consequently, our use of a theoretically more complete measure of autonomous motivation differed substantially from those employed in previous SDT and PEDs research.

Our rationale for this hypothesized relationship rested on the proposition that, for autonomously motivated athletes, using PEDs would run counter to their psychological needs as they would be engaging in behavior that conflicted with their goals and values, be achieving competence artificially, and be disconnected from other athletes by cheating and taking an unfair advantage over opponents. This proposition was supported by empirical evidence from PEDs research by Barkoukis et al. (2011) and Donahue et al. (2006), although these two cited studies examined avoidance of actual PED use. In our opinion, the conceptual and empirical support for our hypothesis regarding our PEDs variables (i.e., an antisocial behavior) was compelling, but not overwhelming.

Nevertheless, there is some evidence that autonomy-supportive climate and autonomous motivation have only weak negative or nonsignificant relationships with other moral/antisocial variables (e.g., Hodge & Lonsdale, 2011). In a sample of young adult athletes, Hodge and Lonsdale (2011) found that autonomy-supportive coaching climate had a weak negative relationship with antisocial behavior, whereas autonomous motivation was not significantly related to antisocial behavior. On the other hand, these antisocial behavior results contradicted findings from Ntoumanis and Standage’s (2009) study of young adult athletes, where they found that autonomous motivation had a significant negative relationship with antisocial attitudes. Unfortunately, direct comparisons among the above findings, the PEDs behavior findings (Barkoukis et al., 2011; Donahue et al., 2006), and our findings are problematic given the diverse measures of antisocial variables employed (i.e., PED use, PED attitudes, antisocial behavior, antisocial attitudes).

The lack of support for the relationship between autonomy support, autonomous motivation, and PED attitudes/susceptibility raises some intriguing questions. From a motivational perspective, it could be argued that having a negative attitude toward the use of PEDs represents an attitude to *not* use those drugs and therefore indicates a lack/absence of action toward using them (i.e., a proscriptive/inhibitive moral behavior; Conway & Peetz, 2012; Janoff-Bulman, Sheikh, & Hepp, 2009; Sachdeva, Iliev, & Medin, 2009). Perhaps the “motivation” for the proscriptive moral behavior of not doing something (i.e., prevention of immoral behavior, not using PEDs) is more complex than the logically more linear motivational process for prescriptive moral behavior (promotion of moral behavior) such as choosing to act prosocially

(e.g., help others). Is there a degree of positive/negative asymmetry in the evaluation of PED attitudes by athletes high in autonomous motivation (Conway & Peetz, 2012; Janoff-Bulman et al., 2009; Sachdeva et al., 2009)? Is there an inherent “negative bias” toward a controversial behavior such as using PEDs? If so, does an absence of action (i.e., the proscriptive behavior of not using PEDs) invoke a more complex set of motivational cognitions? Such questions await further research.

Limitations and Future Research

These are cross-sectional, self-report data; therefore, no causal relationships can be inferred. In addition, the sample was exclusively from a young adult ($M = 20.3$ years; $SD = 3.1$ years) sporting population, which limits the generalizability to other age groups. Our research focus was on attitudes toward PEDs, not on actual PED use; therefore, we did not examine relationships between attitudes and actual behavior. As a consequence of this limitation, our results can only help explain attitudes toward PEDs, not their use. Future research should attempt to examine actual PED use/behavior, although gaining access and recruiting athletes to report illegal actions such as PED use will continue to be a substantial challenge for researchers. In addition, we did not collect information regarding the length of time athletes had participated in their teams/squads and their associated motivational climates. Finally, the issue of social desirability is one that needs to be considered when investigating a sensitive, controversial issue such as PEDs (see Gucciardi et al., 2010, for detail). Despite these limitations, our findings offer important insights into the motivational underpinnings of moral disengagement and attitudes toward using PEDs and PED susceptibility. Given these findings and the importance of better understanding the predictors of PED use in sport, further work on the links between coaching climate, athlete motivation, moral disengagement, and attitudes toward using these drugs is warranted.

Although controlling coaching coach climate had a significant, moderate association with attitudes toward using PEDs, future research is needed to understand the psychological mechanism that explains this relationship. One possibility is that controlling coaching has a negative influence on psychological needs satisfaction, which in turn has a direct impact on attitudes toward PEDs. There is some evidence in the sport domain (e.g., McDonough & Crocker, 2007) that needs satisfaction may directly influence affect and cognition (i.e., not mediated by motivation) and studies investigating this hypothesis with respect to PED attitudes and PED susceptibility appear warranted. These studies could employ multilevel analyses to examine within-team climate influences and could also attempt to identify the relative importance of coach-driven versus teammate-driven climates (see also Moreau & Mageau, 2012). Prospective designs (e.g., assessing variables over multiple time points), as advocated by Gucciardi et al. (2011), and experimental studies (e.g.,

examining the influence of a doping prevention program designed to minimize controlling climates) also represent important avenues of future research.

With respect to moral disengagement, future studies should examine the role of moral identity (Aquino & Reed, 2002) and the possibility of athletes susceptible to PED use employing a specific “set” of moral disengagement mechanisms. Are the specific moral disengagement mechanisms used with respect to PEDs different or similar to those mechanisms used with respect to other antisocial behaviors? If a pattern of specific moral disengagement mechanisms regarding PEDs was identified, then drug prevention/intervention programs could be targeted to challenge those particular mechanisms. There is some experimental evidence in non-sport settings that the use of moral codes and social contracts can effectively counter antisocial behaviors (Shu et al., 2011)—future research should examine the efficacy of similar interventions with respect to PED use/attitudes.

Conclusion

To our knowledge, no previous investigations have examined the motivational basis for moral disengagement with respect to PED attitudes and susceptibility. Our finding that controlling coach climate and moral disengagement had significant positive associations with PED attitudes and susceptibility has important implications for doping prevention strategies. However, the role of autonomy-supportive climates and autonomous motivation with respect to PEDs attitudes and susceptibility is less clear, and awaits further research.

References

- Aquino, K., & Reed, A. (2002). The self-importance of moral identity. *Journal of Personality and Social Psychology*, 83, 1423–1440. [PubMed doi:10.1037/0022-3514.83.6.1423](#)
- Assael, S. (2007). *Steroid nation: Juiced home run totals, anti-aging miracles, and a Hercules in every high school*. ESPN Books.
- Bandura, A. (2002). Selective moral disengagement in the exercise of moral agency. *Journal of Moral Education*, 31, 101–119. [doi:10.1080/0305724022014322](#)
- Bandura, A. (2006). Toward a psychology of human agency. *Perspectives on Psychological Science*, 1, 164–180. [doi:10.1111/j.1745-6916.2006.00011.x](#)
- Barkoukis, V., Lazuras, L., Tsoarbatzoudis, H., & Rodafinos, A. (2011). Motivational and sportspersonship profiles of elite athletes in relation to doping behavior. *Psychology of Sport and Exercise*, 12, 205–212. [doi:10.1016/j.psychsport.2010.10.003](#)
- Bartholomew, K.J., Ntoumanis, N., & Thøgersen-Ntoumani, C. (2010). The controlling interpersonal style in a coaching context: Development and initial validation of a psychometric scale. *Journal of Sport & Exercise Psychology*, 32, 193–216. [PubMed](#)

- Boardley, I., & Kavussanu, M. (2007). Development and validation of the Moral Disengagement in Sport Scale. *Journal of Sport & Exercise Psychology, 29*, 608–628. [PubMed](#)
- Boardley, I., & Kavussanu, M. (2008). The Moral Disengagement in Sport Scale - Short. *Journal of Sports Sciences, 26*, 1507–1517. [PubMed doi:10.1080/02640410802315054](#)
- Boardley, I., & Kavussanu, M. (2009). The influence of social variables and moral disengagement on prosocial and antisocial behaviors in field hockey and netball. *Journal of Sports Sciences, 27*, 843–854. [PubMed doi:10.1080/02640410902887283](#)
- Boardley, I., & Kavussanu, M. (2010). Effects of goal orientation and perceived value of toughness on antisocial behavior: The mediating role of moral disengagement. *Journal of Sport & Exercise Psychology, 32*, 176–192. [PubMed](#)
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum.
- Conway, P., & Peetz, J. (2012). When does feeling moral actually make you a better person? Conceptual abstraction moderates whether past moral deeds motivate consistency or compensatory behavior. *Personality and Social Psychology Bulletin, 38*, 907–919. [PubMed doi:10.1177/0146167212442394](#)
- Deci, E.L., & Ryan, R.M. (Eds.). (2002). *Handbook of self-determination research*. Rochester, NY: University of Rochester Press.
- Donahue, E.G., Miquelon, P., Valois, P., Goulet, C., Buist, A., & Vallerand, R.J. (2006). A motivational model of performance-enhancing substance use in elite athletes. *Journal of Sport & Exercise Psychology, 28*, 511–520.
- Fainaru-Wada, M., & Williams, L. (2007). *Game of shadows: Barry Bonds, BALCO, and the steroids scandal that rocked professional sports*. New York, NY: Gotham.
- Gagné, M., Ryan, R., & Bargmann, K. (2003). Autonomy support and need satisfaction in the motivation and well-being of gymnasts. *Journal of Applied Sport Psychology, 15*, 372–390. [doi:10.1080/714044203](#)
- Gucciardi, D., Jalleh, G., & Donovan, R. (2010). Does social desirability influence the relationship between doping attitudes and doping susceptibility in athletes? *Psychology of Sport and Exercise, 11*, 479–486. [doi:10.1016/j.psychsport.2010.06.002](#)
- Gucciardi, D., Jalleh, G., & Donovan, R. (2011). An examination of the Sport Drug Control Model with elite Australian athletes. *Journal of Science and Medicine in Sport, 14*, 469–476. [PubMed doi:10.1016/j.jsams.2011.03.009](#)
- Hodge, K., & Lonsdale, C. (2011). Prosocial and antisocial behavior in sport: The role of coaching style, autonomous vs. controlled motivation, and moral disengagement. *Journal of Sport & Exercise Psychology, 33*, 527–547. [PubMed](#)
- Holmbeck, G.N. (1997). Toward terminological, conceptual, and statistical clarity in the study of mediators and moderators: Examples from the child-clinical and pediatric psychology literatures. *Journal of Consulting and Clinical Psychology, 65*, 599–610. [PubMed doi:10.1037/0022-006X.65.4.599](#)
- Hu, L., & Bentler, P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1–55. [doi:10.1080/10705519909540118](#)
- Hyde, L.W., Shaw, D.S., & Moilanen, K.L. (2010). Developmental precursors of moral disengagement and the role of moral disengagement in the development of antisocial behaviour. *Journal of Abnormal Child Psychology, 38*, 197–209. [PubMed doi:10.1007/s10802-009-9358-5](#)
- Jalleh, G., & Donovan, R.J. (2007). *Survey of Australian elite athletes' attitudes towards sport issues*. Perth, Australia: Social Marketing Unit, School of Marketing, Curtin University.
- Janoff-Bulman, R., Sheikh, S., & Hepp, S. (2009). Proscriptive versus prescriptive morality: Two faces of moral regulation. *Journal of Personality and Social Psychology, 96*, 521–537. [PubMed doi:10.1037/a0013779](#)
- Jöreskog, K., & Sörbom, D. (1999). *LISREL (Version 8.5)*. Lincolnwood, IL: Scientific Software.
- Kindlundh, A.M.S., Isacson, D.G.L., Berglund, L., & Nyberg, F. (1998). Doping among high school students in Uppsala, Sweden: A presentation of the attitudes, distribution, side effects, and extent of use. *Scandinavian Journal of Social Medicine, 26*, 71–74. [PubMed](#)
- Kirby, K., Moran, A., & Guerin, S. (2011). A qualitative analysis of the experiences of elite athletes who have admitted to doping for performance enhancement. *International Journal of Sport Policy and Politics, 3*, 205–224. [doi:10.1080/19406940.2011.577081](#)
- Kirkwood, K. (2012). Defensive doping: Is there a moral justification for “If you can’t beat ’em—join ’em”? *Journal of Sport and Social Issues, 36*, 223–228. [doi:10.1177/0193723512437350](#)
- Kiriakidis, S.P. (2008). Moral disengagement: Relation to delinquency and independence from indices of social dysfunction. *International Journal of Offender Criminology Therapy and Comparative Criminology, 52*, 571–583. [PubMed doi:10.1177/0306624X07309063](#)
- Kushner, H.S. (2001). *Living a life that matters: Resolving the conflict between conscience and success*. New York, NY: Knopf.
- Lazarus, L., Barkoukis, V., Rodafinos, A., & Tzorbatzoudis, H. (2010). Predictors of doping intentions in elite-level athletes: A social cognition approach. *Journal of Sport & Exercise Psychology, 32*, 694–710. [PubMed](#)
- Lentillon-Kaestner, V., & Carstairs, C. (2010). Doping use among young elite cyclists: A qualitative psychosociological approach. *Scandinavian Journal of Medicine & Science in Sports, 20*, 336–345. [PubMed](#)
- Little, T.D., Cunningham, W.A., Shahar, G., & Widaman, K.F. (2002). To parcel or not to parcel: Exploring the question, weighing the merits. *Structural Equation Modeling, 9*, 151–173. [doi:10.1207/S15328007SEM0902_1](#)
- Long, T., Pantaléon, N., Bruant, G., & d’Arripe-Longueville, F. (2006). A qualitative study of moral reasoning of young elite athletes. *The Sport Psychologist, 20*, 330–347.
- Lonsdale, C., Hodge, K., & Rose, E.A. (2008). The Behavioral Regulation in Sport Questionnaire (BRSQ): Instrument development and initial validity evidence. *Journal of Sport & Exercise Psychology, 30*, 323–355. [PubMed](#)
- Lonsdale, C., Hodge, K., & Rose, E. (2009). Athlete burn-out in elite sport: A self-determination perspective. *Journal of Sports Sciences, 27*, 785–795. [PubMed doi:10.1080/02640410902929366](#)

- Lucidi, F., Zelli, A., Mallia, L., Grano, C., Russo, P.M., & Violani, C. (2008). The social-cognitive mechanisms regulating adolescents' use of doping substances. *Journal of Sports Sciences, 26*, 447–456. [PubMed doi:10.1080/02640410701579370](#)
- McDonough, M.H., & Crocker, P.R.E. (2007). Testing self-determined motivation as a mediator of the relationship between psychological needs and affective and behavioral outcomes. *Journal of Sport & Exercise Psychology, 29*, 645–663. [PubMed](#)
- MacKinnon, D.P., Lockwood, C.M., Hoffman, J.M., West, S.G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods, 7*, 83–104. [PubMed doi:10.1037/1082-989X.7.1.83](#)
- Moreau, E., & Mageau, G. (2012). The importance of perceived autonomy support for the psychological health and work satisfaction of health professionals: Not only supervisors count, colleagues too! *Motivation and Emotion, 36*, 268–286. [doi:10.1007/s11031-011-9250-9](#)
- Ntoumanis, N., & Standage, M. (2009). Morality in sport: A self-determination theory perspective. *Journal of Applied Sport Psychology, 21*, 365–380.
- Petroczi, A., & Aidman, E. (2009). Measuring explicit attitude toward doping: Review of the psychometric properties of the Performance Enhancement Attitude Scale. *Psychology of Sport and Exercise, 10*, 390–396. [doi:10.1016/j.psychsport.2008.11.001](#)
- Petroczi, A., Mazanov, J., & Naughton, D. (2011). Inside athletes' minds: Preliminary results from a pilot study on mental representation of doping and potential implications for anti-doping. *Substance Abuse Treatment, Prevention, and Policy, 6*, 10. [PubMed doi:10.1186/1747-597X-6-10](#)
- Petroczi, A., Aidman, E., & Nepusz, T. (2008). Capturing doping attitudes by self-report declarations and implicit assessment: A methodology study. *Substance Abuse Treatment, Prevention, and Policy, 3*, 9. [PubMed doi:10.1186/1747-597X-3-9](#)
- Romand, P., & Pantaleon, N. (2007). A qualitative study of rugby coaches' opinions about the display of moral character. *The Sport Psychologist, 21*, 58–77.
- Ryan, R.M., & Deci, E.L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *The American Psychologist, 55*, 68–78. [PubMed doi:10.1037/0003-066X.55.1.68](#)
- Sachdeva, S., Iliev, R., & Medin, D. (2009). Sinning saints and saintly sinners: The paradox of moral self-regulation. *Psychological Science, 20*, 523–528. [PubMed doi:10.1111/j.1467-9280.2009.02326.x](#)
- Shermer, M. (2008). The doping dilemma: Game theory helps to explain the pervasive abuse of drugs in cycling, baseball and other sports. *Scientific American, 298*, 4.
- Shu, L., Gino, F., & Bazerman, M. (2011). Dishonest deed, clear conscience: When cheating leads to moral disengagement and motivated forgetting. *Personality and Social Psychology Bulletin, 37*, 330–349. [PubMed doi:10.1177/0146167211398138](#)
- Smith, A., Stewart, B., Oliver-Bennetts, S., McDonald, S., Ingerson, L., Anderson, A., . . . Graetz, F. (2010). Contextual influences and athlete attitudes to drugs in sport. *Sport Management Review, 13*, 181–197. [doi:10.1016/j.smr.2010.01.008](#)
- Strelan, P., & Boeckmann, R.J. (2006). Why drug testing in elite sport does not work: Perceptual deterrence theory and the role of personal moral beliefs. *Journal of Applied Social Psychology, 36*, 2909–2934. [doi:10.1111/j.0021-9029.2006.00135.x](#)
- Tractlet, A., Romand, P., Moret, M., & Kavussanu, M. (2011). Antisocial behavior in soccer: A qualitative study of moral disengagement. *International Journal of Sport and Exercise Psychology, 9*, 143–155. [doi:10.1080/1612197X.2011.567105](#)
- WADA. (2011). World Anti-Doping Code. Retrieved January 10th, 2011. <http://www.wada-ama.org/en/World-Anti-Doping-Program/Sports-and-Anti-Doping-Organizations/The-Code/>
- Williams, G.C., Cox, E.M., Kouides, R., & Deci, E.L. (1999). Presenting the facts about smoking to adolescents: The effects of an autonomy-supportive style. *Archives of Pediatrics & Adolescent Medicine, 153*, 959–964. [PubMed doi:10.1001/archpedi.153.9.959](#)
- Zelli, A., Mallia, L., & Lucidi, F. (2010). The contribution of interpersonal appraisals to a social-cognitive analysis of adolescents' doping use. *Psychology of Sport and Exercise, 11*, 304–311. [doi:10.1016/j.psychsport.2010.02.008](#)

Manuscript submitted: March 12, 2012

Revision accepted: May 17, 2013