

Self-other judgments of doping likelihood and anticipated guilt in hypothetical situations

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ABSTRACT

Objectives: Self-other correspondence refers to people judging themselves to be similar to others. We were interested in determining whether athletes' judgments of other athletes' doping likelihood in hypothetical situations differed from judgments of their own doping likelihood in the same situations. Our aim was to examine self-other correspondence in doping likelihood, doping-related anticipated guilt, and the relationship between doping likelihood and moral traits.

Design: Using a within-participants design, doping likelihood and anticipated guilt were measured in hypothetical situations as a function of perspective (self, other). A questionnaire assessed moral traits.

Method: Athletes ($N = 156$) rated their own and another athlete's likelihood of doping and feelings of anticipated guilt in hypothetical situations. They also completed a questionnaire measuring moral agency, moral identity, moral perfectionism, moral values, moral disengagement and self-regulatory efficacy, collectively referred to here as moral traits.

Results: Doping likelihood was higher and anticipated guilt was lower for other compared to self ratings. Self-other differences in doping likelihood were mediated by self-other differences in anticipated guilt. Moral traits correlated more strongly with self than other doping likelihood.

Conclusions: The current study revealed self-other differences in doping likelihood, affective self-sanction of doping, and moral self-regulation of doping. These manifestations of self-other divergence reveal that the other-referenced method yields an overestimate of doping likelihood that is relatively disconnected from moral self-regulation.

1. Introduction

The use of banned substances and methods expected to improve athletes' performance, also known as doping, breaches the *spirit of sport* under the world anti-doping code (WADA, 2015). Athletes who intentionally dope engage in a deceptive behavior intended to break the rules of sport and make illegitimate gains; that is, doping in sport constitutes a form of cheating (Reddiford, 1998). Although the argument that doping is cheating is debated by philosophers (e.g., Atry, Hansson, & Kihlbom, 2013; Corlett, 2013), the proposition that doping is a moral transgression against the values of sport defined by the code's *spirit of sport* statement is widely accepted across sporting communities (e.g., Backhouse, Whitaker, Patterson, Erickson, & McKenna, 2016). Psychologists contend that doping is a moral issue (e.g., Donovan, Egger, Kapernick, & Mendoza, 2002) because it contravenes core moral foundations (Graham et al., 2012), including fairness, purity, and respect. They also theorize about how the social situation elicits and the person self-regulates behavior in the moral domain, such as doping (e.g., Bandura, 1986, 1991, 2016).

1.1. Doping in hypothetical situations

Assessing the factors responsible for doping by direct questioning of athletes is not practicable. In part, this is because an individual athlete is unlikely to have encountered all possible situations collectively faced by athletes in their sporting careers. Furthermore, this direct approach is deemed unreliable because of putative self-presentation biases and concerns about sanctions following self-confessed doping rule violations (Petroczi, 2016). Accordingly, researchers have looked to indirect approaches to measure doping. The use of scenarios describing hypothetical situations, an established procedure for assessing ethical decision making in moral psychology (e.g., Colby & Kohlberg, 1987; Rest, 1986), affords one such solution to the abovementioned methodological concerns. In sport, researchers have either asked athletes to imagine how they themselves might act in hypothetical situations (e.g., Gucciardi, Jalleh, & Donovan, 2010; Moston, Engelberg, & Skinner, 2015; Petroczi, Naughton, Nepusz, Backhouse, & Mazanov, 2008; Ring, Kavussanu, Lucidi, & Hurst, 2019; Strelan & Boeckmann, 2006; Zelli, Mallia, & Lucidi, 2010) or take the perspective of another athlete and indicate how they think that athlete might act (e.g., Huybers & Mazanov, 2012; Petroczi et al., 2008; Ring, Kavussanu, Simms, &

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Mazanov, 2018). These two methodological approaches assess *self* doping and *other* doping, respectively.

When researchers investigate the factors associated with doping, with the ultimate goal of identifying the most influential ones for targeting in anti-doping education, it is important that they appreciate the influence of the method of assessing doping in their endeavors (Petroczi, 2016). In the context of the indirect assessment of doping, it is not known whether other-referenced doping yields the same or different likelihood estimates and has the same or different antecedents, moderators and mediators as self-referenced doping. Therefore, it is vital to evaluate the extent of self-other correspondence in the measurement of doping intentions because discrepancies between the two methods might lead to inaccurate estimates of the incidence of the behavior as well as misunderstanding and misinterpretation of the direct and indirect causes of the behavior.

1.2. Self-other correspondence

Grounded on *social comparison theory* (Festinger, 1954), self-other research has demonstrated both self-other correspondence and self-other divergence (e.g., Hoorens & Desrichard, 2002). It might be assumed that the self and other approaches to the indirect assessment of doping intentions yield equivalent, or at least similar, estimates (cf., Petroczi et al., 2008; Uvascek et al., 2011). This assumption resides on the *false-consensus effect* (Ross, Greene, & House, 1977), which describes our tendency to overestimate the degree of similarity between others and ourselves. There is evidence that this effect holds for judgments about attitudes, beliefs, feelings, and intentions (for review see Marks & Miller, 1987), including cheating (Katz & Alport, 1931). Self-other correspondence is explained by *social projection* – we project our thoughts, feelings and actions onto others, and *self-stereotyping* – we assume that we think, feel and act like others (Cho & Knowles, 2013).

Self-other correspondence is never without error (e.g., Cho & Knowles, 2013; Perloff & Fetzer, 1986), and, therefore, researchers need to be cautious about assuming that self-referenced and other-referenced doping estimates are equivalent (Petroczi et al., 2008; cf., Rascle, Tractlet, Souchon, Cabagno, & Petrucci, 2010). Indeed, the available evidence raises doubts about the veracity of this assumption and suggests that self-other divergence should be expected. In the assessment of doping prevalence, Petroczi and colleagues have found that athletes, who report doping themselves, estimate doping prevalence to be greater than those who do not report doping themselves (Petroczi et al., 2008; Uvascek et al., 2011).

It is important to assess the degree of self-other correspondence since estimates of doping likelihood may depend on the perspective. However, to our knowledge, no study has directly compared self and other estimates of doping likelihood in hypothetical scenarios (cf. Petroczi et al., 2008). Indeed, few studies have assessed other-referenced doping likelihood in hypothetical scenarios (e.g., Huybers & Mazanov, 2012; Petroczi et al., 2008; Ring et al., 2018). Typically, these studies ask participants to decide how another athlete – with a similar profile to themselves – might act in hypothetical situations, including ones which could facilitate (e.g., rewards, pressure) or deter (e.g., penalties, health consequences) the decision to dope (Donovan et al., 2002; Strelan & Boeckmann, 2003; Woolf & Mazanov, 2017). We use the terms benefits and costs to refer to situations that encourage and discourage the likelihood of doping, respectively. Ring et al (2018) found that other doping likelihood ratings, assessed with a 7-point scale, averaged 2.8 across a number of hypothetical situations, whereas Ring et al (2019) found that self doping likelihood ratings averaged 1.6 across the same situations. Other studies have found that self doping likelihood ratings averaged 1.8 in scenarios that described use of banned substances to aid fitness and rehabilitation (Kavussanu, Hatzigeorgiadis, Elbe, & Ring, 2016; Kavussanu & Ring, 2017; Ring & Kavussanu, 2018a, 2018b). Overall, doping likelihood is lower for the self compared to the other perspective. In the current study, we sought to verify this self-other divergence by directly comparing the two estimates of doping likelihood in the same individuals, when the protagonist in the hypothetical situations is the athlete himself (self perspective) and when the protagonist is someone else with a similar

profile (other perspective).

1.3. Mechanisms underlying self-other divergence

A number of mechanisms could reduce the degree of self-other correspondence and lead to self-other divergence in doping likelihood. For instance, lower self doping likelihood may reflect a defensive *self-validation* function, whereby athletes wish to portray themselves in the most optimistic light. In other words, athletes might be susceptible to *social desirability bias* and want to avoid admitting personally that they are willing to engage in unethical behavior (Gucciardi et al., 2010). Alternatively, an athlete's perception may be distorted by the spectacular media coverage of the relatively few athletes who are found guilty of anti-doping rule violations, whereas information about the vast majority of clean tests is not widely reported. In other words, their judgment of other doping may be biased by the *availability heuristic* (Tversky & Kahneman, 1974). It is possible that these mechanisms influence self and other estimates of doping likelihood.

Emotion is another mechanism that may contribute to self-other divergence in doping likelihood (Coleman, 2018). It is well established that anticipated guilt can thwart unethical conduct (Bandura, 1991, 2016). Studies of self doping have established guilt as a strong predictor of doping intentions (e.g., Barkoukis, Lazuras, & Harris, 2015; Kavussanu & Ring, 2017; Lazuras, Barkoukis, & Tsorbatzoudis, 2015; Strelan & Boeckmann, 2006), whereas none of the previous other-referenced doping studies have reported on the association between guilt and doping intention. It is plausible that affective self-sanction plays a greater role in the regulation of doping in self-referenced compared to other-referenced situations, which might explain lower doping likelihood estimates yielded by self-referenced compared to other-referenced assessments. In the current study, we tested this hypothesis by comparing feelings of anticipated guilt about doping in self-referenced versus other-referenced situations. We also explored the extent to which self-other differences in anticipated guilt mediated self-other differences in doping likelihood (cf., Ring & Hurst, 2019).

1.4. Moral traits and self-other doping likelihood

Self doping likelihood has been associated negatively with moral identity (the degree to which people consider being moral is a central part of their self concept), negatively with self-regulatory efficacy (the perceived capability to resist situational pressures), and positively with moral disengagement (the cognitive self-exonerative operations used to disengage affective self-sanction from moral standards and allow unethical conduct) (e.g., Kavussanu & Ring, 2017; Ntoumanis, Ng, Barkoukis, & Backhouse, 2014). Only one study (Ring et al., 2018) has examined the relationship between other doping likelihood and moral traits and found that doping likelihood was negatively associated with moral identity and self-regulatory efficacy and positively associated with moral disengagement. However, the relationships were weaker for other (Ring et al., 2018) than self (Ring et al., 2019) doping likelihood. In the current study, we investigated self-other divergence in the abovementioned relationships in the same group of athletes. Based on the literature, we expected that the relationships with moral traits would be stronger for self than other doping likelihood.

We measured additional moral traits to extend our examination of self-other divergence in the doping-morality relationship. Specifically, we examined the relationship between doping likelihood and moral agency – the capacity to act according to personal standards and take responsibility for one's actions (Bandura, 1986; Black, 2016), moral perfectionism – our personal moral standards and concerns over moral mistakes and evaluations by others (Stoeber & Yang, 2016; Yang, Stoeber, & Wang, 2015), and moral values – the importance of personal standards (Chen, 2008; Yang et al., 2015). We discuss each of these variables below. We use the term moral traits when we refer to them collectively.

Table 1
Descriptions of the hypothetical situations and associated doping likelihood ratings for self and other perspectives.

Situation	Perspective			
	Self		Other	
	M	95% CI	M	95% CI
£75,000 financial gain ^B	2.88	2.60, 3.16	4.64	4.36, 4.91
Encouraged by a coach ^B	2.71	2.43, 2.98	4.44	4.18, 4.71
Low chance of detection ^B	2.47	2.19, 2.75	4.37	4.09, 4.65
Accelerated career advancement ^B	2.64	2.36, 2.81	4.13	3.86, 4.40
No fine if prosecuted ^B	2.40	2.13, 2.68	4.32	4.04, 4.60
Low chance of being banned ^B	2.47	2.19, 2.75	4.13	3.85, 4.41
No negative health side effects ^B	2.43	2.15, 2.71	3.99	3.69, 4.30
Helps faster recovery from an injury ^B	2.46	2.19, 2.73	3.83	3.58, 4.09
Helps overcome bad form ^B	2.31	2.04, 2.58	3.77	3.49, 4.05
Discouraged by a coach ^C	1.32	1.19, 1.46	1.63	1.46, 1.79
No chance of speeding recovery from injury ^C	1.32	1.19, 1.45	1.60	1.43, 1.77
No financial gain ^C	1.30	1.18, 1.41	1.56	1.42, 1.71
Increased risk of major long-lasting illness, injury or disease ^C	1.26	1.10, 1.42	1.36	1.23, 1.49
High chance of detection ^C	1.23	1.09, 1.37	1.39	1.25, 1.53
No improvement in form ^C	1.22	1.11, 1.34	1.36	1.24, 1.48
£75,000 fine ^C	1.22	1.08, 1.37	1.35	1.22, 1.49
High chance of being banned ^C	1.24	1.10, 1.38	1.32	1.18, 1.46
No career benefit ^C	1.24	1.13, 1.35	1.31	1.20, 1.43

Note: ^B = benefit situation, ^C = cost situation. Benefit situations include financial, legal and social incentives for doping as well as situations that imply a benefit for performance without negative consequences, whereas cost situations include deterrents against doping as well as the absence of explicit career, financial and performance benefits.

Human agency describes the exertion of intentional influence over one's functioning and over events by one's actions (Bandura, 2001, 2006). According to Bandura (1991, 2016) we are self-regulating moral agents, who have the capacity to determine our actions via forethought, self-reaction, and self-reflection. In the moral domain, these agentic functions are reflected in our regulatory self-efficacy and are undermined by our use of moral disengagement. Moral agency has been positively associated with moral identity and moral judgment but negatively associated with moral disengagement (Black, 2016). In line with recent research (Ring & Hurst, 2019), we expected that moral agency would be negatively related to doping likelihood.

Moral perfectionism, which reflects one's own high moral standards coupled with concerns about what others make of one's moral mistakes, should be related to judgments about moral behavior and moral values (Stoeber & Yang, 2016; Yang et al., 2015). Indeed, both personal moral standards and concern over moral mistakes have been found to be inversely related to doping likelihood (Ring & Hurst, 2019). It may be worth noting that studies have reported mixed findings for the relationship between general perfectionism and doping attitudes (Bae, Yoon, Kang, & Kim, 2017; Madigan, Stoeber, & Passfield, 2016; Zucchetti, Candela, & Villosio, 2015). We expected that moral perfectionism would be inversely related to doping likelihood.

Values are desirable motivational goals that vary in importance for the self. The importance someone attaches to a value contributes to its manifestation as attitudes, emotions and behaviors (Rokeach, 1973; Schwartz, 1992). Moral values, such as fairness and respect, are negatively associated with antisocial attitudes, such as attitudes towards cheating in sport (e.g., Lee, 1996; Lee, Whitehead, Ntoumanis, & Hatzigeorgiadis, 2008). In the context of doping, only one study has reported on the values-doping relationship: moral values were inversely related to doping likelihood (Ring & Hurst, 2019). Similarly, we expected to replicate this relationship in our study.

1.5. Present study

We assessed self-other ratings of doping likelihood and guilt in hypothetical situations and measured some moral traits. We had three study purposes. First, we examined self-other differences in doping likelihood in hypothetical situations; we expected that self doping likelihood would be

lower than other doping likelihood. Second, we examined self-other differences in anticipated guilt about doping; we hypothesized that self guilt would be higher than other guilt, and that anticipated guilt would thwart self doping likelihood more than other doping likelihood. Third, we examined self-other differences in the relationship between doping likelihood and moral traits. We hypothesized that self-regulatory efficacy, moral disengagement, moral identity, moral agency, moral perfectionism and moral values would be more strongly linked with self doping likelihood than other doping likelihood.

2. Method

2.1. Participants

Participants were 156 (83 males) university athletes competing in individual ($n = 46$, 29%) and team ($n = 110$, 71%) sports in the UK. At the time of data collection, they ranged in age from 18 to 30 years and had competed in their respective sport for an average of 8.73 ($SD = 3.73$) years. Their highest ever competitive standard was club (24%), county/regional (46%), national (17%), and international (13%).

2.2. Measures

Self doping likelihood and anticipated guilt. These two variables were measured using a hypothetical scenario, which was adapted from previous doping research (Huybers & Mazanov, 2012; Ring et al., 2018, 2019). Participants were presented with the following description: "Imagine that you are an athlete who is due to compete in an important sporting event. You are seriously considering using a banned performance enhancing substance, but have not made a final decision. We have listed a number of situations you may find yourself in. We are asking you to tell us what you think you might decide to do in each situation. For each of the situations listed below, how likely is it that you would use the banned substance when ...".

Participants were presented with nine benefit situations and nine cost situations (see Table 1; see also Huybers & Mazanov, 2012; Ring et al., 2018, 2019). The order of the situations was randomized, and this fixed order was presented to participants, who indicated how likely it is that they would use the banned substance in each situation, on a scale,

Table 2
Descriptive statistics and zero-order correlations.

Variable	M	SD	1	2	3	4	5	6	7	8	9	10
1. Self doping likelihood	1.89	0.98										
2. Other doping likelihood	2.81	0.82	.51***									
3. Self anticipated guilt	6.03	1.24	-.47***	-.11								
4. Other anticipated guilt	5.14	1.23	-.25***	-.24**	.49***							
5. Moral agency	5.52	0.73	-.37***	-.20* ¹	.24**	.11						
6. Moral identity	6.17	0.87	-.40***	-.16* ¹	.51***	.23**	.34***					
7. Personal moral standards	5.01	0.87	-.40***	-.18 ¹	.40***	.21**	.41***	.46***				
8. Concern over moral mistakes	3.66	1.11	-.11	-.16*	.22**	.27***	.12	.30***	.38***			
9. Moral values	5.87	0.76	-.40***	-.13 ¹	.48***	.18*	.47***	.60***	.51***	.22**		
10. Self-regulatory efficacy	5.64	1.32	-.60***	-.25** ¹	.34***	.23**	.44***	.21**	.40***	.11	.34***	
11. Moral disengagement	2.25	0.92	.65***	.30*** ¹	-.41***	-.21**	-.41***	-.36***	-.34***	-.04	-.36***	-.55***

Note. Possible range of scores: 1–7. * $p < .05$, ** $p < .01$, *** $p < .001$.

The superscript ¹ indicates a significant self-other difference between the coefficients for correlations between doping likelihood and moral variables based on a Z test (Steiger, 1980)

anchored by 1 (*not at all likely*) and 7 (*very likely*). We computed the mean of the 18 ratings as measure of self doping likelihood ($\alpha = 0.95$).

After completing all doping likelihood ratings, participants completed five guilt ratings. They were told “Now imagine that you used the banned substance. How would you feel?” and were presented with the stem “I would ...” followed by five items (e.g., “feel remorse, regret”) from the state shame and guilt scale (Marschall, Safner, & Tangney, 1994), which they rated on a scale, anchored by 1 (*not at all*) and 7 (*very strongly*). We computed the mean of the five item ratings as a measure of self anticipated guilt ($\alpha = 0.92$).

Other doping likelihood and anticipated guilt. These variables were measured with a hypothetical scenario adapted from past research (Huybers & Mazanov, 2012; Ring et al., 2018, 2019). Participants were presented with the following description: “Sam, a hypothetical athlete, who plays your sport at your level and is at your stage of career, has never used a banned performance enhancing substance before, and is due to compete in an important sporting event. Sam is seriously considering using a banned substance, but has not made a final decision. We have listed a number of situations that Sam may encounter. We are asking you to tell us what you think Sam might decide to do in each situation. Sam is a hypothetical athlete; any resemblance to a real athlete is purely coincidental. For each of the situations listed below, how likely is it that Sam would use the banned substance when ...”.

Participants were randomly presented with the nine cost and nine benefit situations (Table 1) and indicated how likely it is that Sam would use the banned substance in each situation on a scale anchored by 1 (*not at all likely*) and 7 (*very likely*). We computed the mean of the 18 ratings as measure of other doping likelihood ($\alpha = 0.89$).

After completing all doping likelihood ratings, participants were told “Now imagine that Sam used the banned substance. How would Sam feel?” and were presented with the stem “Sam would ...” followed by five guilt items (Marschall et al., 1994) which they rated. We computed the mean of the five ratings as a measure of other anticipated guilt ($\alpha = 0.89$).

Moral agency. The moral agency scale was used to measure moral agency (Black, 2016). Athletes rated their level of agreement with 15 statements (e.g., “I am the one responsible for my own behavior, good and bad”) using a scale anchored by 1 (*strongly disagree*) and 7 (*strongly agree*). We computed the mean of the 15 ratings as a measure of moral agency ($\alpha = 0.85$).

Moral identity. The internalization subscale of the moral identity scale (Aquino & Reed, 2002) was used to measure moral identity. Participants were shown nine moral traits (e.g., fair, honest) and responded to statements about them (e.g., “It would make me feel good to be a person who has these characteristics”) on a scale anchored by 1 (*strongly disagree*) and 7 (*strongly agree*). We computed the mean of the five ratings as a measure of moral identity ($\alpha = 0.79$).

Moral perfectionism. The personal moral standards and concern over moral mistakes subscales of the moral perfectionism scale (Yang, et al.,

2015) were used to measure moral perfectionism. Participants were presented with statements, told they reflected moral standards and expectations, and rated their level of agreement with seven items about personal moral standards (e.g., “I set higher moral standards than most people”) and nine items about concern over moral mistakes (e.g., “I hate not adhering to the highest moral standard”), on a 7-point scale anchored by 1 (*strongly disagree*) and 7 (*strongly agree*). We computed the mean of the seven ratings as a measure of personal moral standards ($\alpha = 0.86$) and the mean of the nine ratings as a measure of concern over moral mistakes ($\alpha = 0.89$).

Moral values. The moral values subscale of the adolescents' values scale (Chen, 2008; Yang et al., 2015) was used to measure moral values. Participants were presented with a list of 15 values (e.g., honesty, respect) and asked to rate how important each value was to them on a 7-point scale, anchored by 1 (*very unimportant*) and 7 (*very important*). We computed the mean of the 15 ratings as a measure of moral values ($\alpha = 0.90$).

Self-regulatory efficacy. A sport-specific version (Ring & Kavussanu, 2018a) of the doping self-regulatory efficacy scale (Lucidi et al., 2008) was used to measure perceived ability to resist doping. Athletes rated confidence in their ability to avoid using banned substances to improve sport performance in seven situations (e.g., “When pressured to do so by others”) using a scale anchored by 1 (*not at all confident*) and 7 (*completely confident*). We computed the mean of the seven ratings as a measure of doping self-regulatory efficacy ($\alpha = 0.95$).

Moral disengagement. The moral disengagement in doping scale (Kavussanu et al., 2016) was used to measure doping moral disengagement. Athletes rated their level of agreement with six statements (e.g., “Doping does not really hurt anyone”) using a scale anchored by 1 (*strongly disagree*) and 7 (*strongly agree*). We computed the mean of the six ratings as a measure of moral disengagement in doping ($\alpha = 0.77$).

2.3. Procedure

After obtaining approval from the local research ethics committee, participants were recruited from university classes and clubs. The athletes were told about the study's aims, that participation was voluntary, honesty in responses was vital, and data would be anonymous. After consenting, they completed the measures described above via a web-based questionnaire. The order of completing the self and other scenarios was randomized.

3. Results

3.1. Self-other doping likelihood

Our first study purpose was to examine self-other differences in doping likelihood. The descriptive statistics show that self doping likelihood was low whereas other doping likelihood was medium (Table 2). Doping

likelihood was greater for other-referenced than self-referenced ratings, with the difference corresponding to a large effect, $t(155) = 12.64, p < .001, M_{\text{difference}} = 0.92, d = 1.01$. The effect size metric, d , represents the standardized difference between means, with values of 0.20, 0.50, and 0.80 corresponding to small, medium, and large effects, respectively (Cohen, 1992). Pearson correlations confirmed that doping likelihood was positively associated across the self and other perspectives, with a large effect size characterizing their relationship (Table 2). For the effect size metric, r , values of 0.10, 0.30, and 0.50 correspond to small, medium, and large effects, respectively (Cohen, 1992).

3.2. Self-other anticipated guilt

Our second study purpose was to examine self-other differences in anticipated guilt about doping. The descriptive statistics show that athletes expected that the person – themselves or a stranger – who used a banned substance would feel moderately guilty (Table 2). Self-anticipated guilt was greater than other anticipated guilt, with the difference corresponding to a medium-to-large effect size, $t(155) = 8.93, p < .001, M_{\text{difference}} = -0.89, d = 0.72$. Anticipated guilt about doping was positively associated across the self and other perspectives, with a large effect size (Table 2).

Anticipated guilt about doping was negatively correlated with doping likelihood. The guilt-doping relationship was large for self-referenced and medium for other-referenced assessments. To examine self-other divergence in the association between guilt and doping likelihood, we conducted a Z test to compare the difference between the two non-overlapping dependent correlations from a single sample (Raghunathan, Rosenthal, & Rubin, 1996). This test indicated that the relationship between guilt and doping was stronger for self-referenced doping than other-referenced doping, $Z = 2.67, p = .007$.

To determine if self-other differences in doping likelihood were mediated by self-other differences in anticipated guilt, we used the MEMORE (Montoya, 2018; Montoya & Hayes, 2017) SPSS macro (model 1), which conducts within-participant mediation using regression analysis. We entered the two doping likelihood ratings (self doping likelihood, other doping likelihood) as the paired outcome variable and the corresponding guilt ratings (self anticipated guilt, other anticipated guilt) as the paired mediator variable. Bootstrapping was set at 10,000 samples. Bias-corrected 95% confidence intervals were estimated for all effects. An effect was significant when the confidence interval did not contain zero.

Figure 1 shows that perspective (self versus other; coded 0 and 1, respectively) had a direct effect on doping likelihood, $b = 0.91, 95\% CI = 0.77, 1.05$, and an indirect effect on doping likelihood via guilt, $b = 0.23, 95\% CI = 0.11, 0.38, PSIE = 0.25$. The Partially Standardized Indirect Effect (PSIE) represents the size of the indirect effect in terms of standard deviation units of the outcome variable (MacKinnon, 2008). In sum, guilt mediated the effect of perspective on doping likelihood.

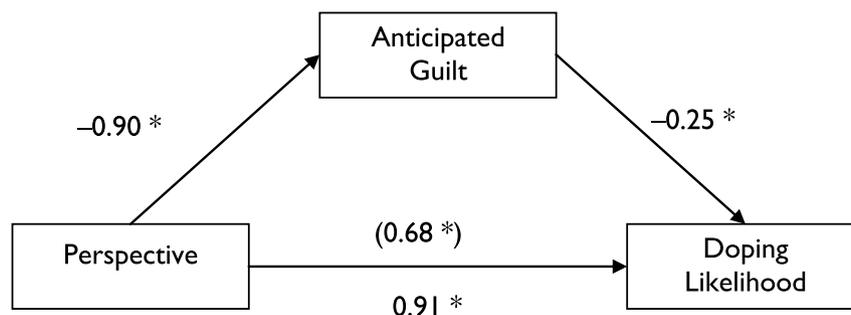


Figure 1. The direct and indirect (via anticipated guilt) effects of perspective (self versus other; coded 0 and 1, respectively) on doping likelihood. The unstandardized coefficients for each effect are reported. The residual effect is shown in brackets. Note: $*p < .05$.

3.3. Self-other doping and moral traits

Our third study purpose was to examine self-other differences in the relationship between doping likelihood and moral traits. Pearson correlations between doping likelihood and moral traits are shown in Table 2. Self doping likelihood was correlated with six out of seven moral traits: with medium-to-large effect sizes for moral agency, moral identity, personal moral standards and moral values; and large effect sizes for self-regulatory efficacy and moral disengagement. Other doping likelihood was also correlated with six moral traits: with small-to-medium effect sizes for moral agency, moral identity, personal moral standards, concern over moral mistakes and self-regulatory efficacy; and a medium effect size for moral disengagement. To examine self-other differences in the degree of association between doping likelihood and moral traits we conducted a series of Z tests (Steiger, 1980). These tests, the outcomes of which are marked by superscripts in Table 2, showed that the correlations were stronger for self compared to other doping likelihood for six out of the seven traits. The seventh trait, concern over moral mistakes, was similar for the two perspectives.

4. Discussion

We evaluated the comparative utility of two indirect scenario-based methods for assessing doping likelihood. We determined self and other doping likelihood and anticipated guilt in hypothetical situations, investigated whether self-other guilt mediated self-other differences in doping likelihood, and examined whether moral traits were related to self and other estimates of doping likelihood.

4.1. Self-other doping likelihood and anticipated guilt

In support of our hypothesis, other doping likelihood was higher than self doping likelihood. This finding is compatible with indirect evidence from previous studies suggesting that other doping likelihood (Ring et al., 2018) is greater than self doping likelihood (Ring et al., 2019). Our findings provide limited evidence for a *false-consensus effect* (Marks & Miller, 1987; Ross et al., 1977) for doping likelihood, and indicate that athletes perceive clear differences between themselves and others. The current findings suggest that there is only partial *social projection* and *self-stereotyping* (Cho & Knowles, 2013) about decisions to use banned performance enhancing substances, resulting in a relatively weak *false consensus effect*.

Notwithstanding the self-other divergence in the magnitude of the doping likelihood ratings, our study provided two pieces of evidence for self-other correspondence. First, self and other doping likelihood estimates were positively correlated, with a large effect size. Second, the relative patterning of doping likelihood across the cost and benefit situations was broadly similar for self and other doping (Table 1). Accordingly, the other-referenced method provided doping likelihood

estimates that were different in absolute terms but similar in relative terms to those provided by the typical self-referenced method.

We also found that anticipated guilt was stronger when doping concerned the athletes themselves compared to other athletes, and the relationship between guilt and doping likelihood was stronger for self-referenced compared to other-referenced doping. Our findings add to the body of evidence (e.g., Barkoukis et al., 2015; Kavussanu & Ring, 2017; Lazuras et al., 2015; Strelan & Boeckmann, 2006) supporting the prediction, based on the theory of moral thought and action (Bandura, 1991, 2016), that affective self-sanction, namely feelings of anticipated guilt, can thwart doping. The self-other divergence in guilt highlights relatively weak *social projection* and *self-stereotyping* (Cho & Knowles, 2013) about negative self-conscious emotions that play a role in thwarting unethical conduct.

In line with previous research showing that anticipated guilt mediates the effects of moral disengagement on doping likelihood (e.g., Kavussanu & Ring, 2017; Ring & Hurst, 2019), we found that the self-other difference in guilt mediated the self-other difference in doping likelihood. This suggests one reason that doping likelihood estimates are lower for self-referenced compared to other-referenced assessments is because athletes imagine they would personally feel more guilt than they imagine other athletes would feel. However, mediation was partial, with some residual effect not explained by self-other divergence in anticipated guilt. Research that directly assesses other candidates (e.g., Moston et al., 2015) is needed to fully establish the mechanisms underlying the observed differences in self- and other-based measures of doping likelihood. The current findings underscore the key role played by anticipated guilt in regulating behavior in the moral domain.

4.2. Self-other doping likelihood and moral traits

Our third study purpose was to examine self-other differences in the relationships between doping likelihood and moral traits. In support of our hypothesis, we found that moral agency, moral identity, personal moral standards, moral values, self-regulatory efficacy, and moral disengagement were more strongly linked with self doping than other doping. In line with the results of previous studies (Ring et al., 2018, 2019), the current evidence indicates that the other-referenced method does not uncover the same relationships between moral thought and action as the self-referenced method. Our findings provide further empirical support for the theory of moral thought and action (Bandura, 1991, 2016) and add to the burgeoning literature suggesting that doping by athletes may be facilitated by moral disengagement (e.g., Corrion, Scoffier-Mériaux, & d'Arripe-Longueville, 2017; Hodge, Hargreaves, Gerrard, & Lonsdale, 2013; Kavussanu et al., 2016; Kavussanu & Ring, 2017) and thwarted by self-regulatory efficacy (e.g., Barkoukis, Lazuras, Tsorbatzoudis, & Rodafinos, 2013; Corrion et al., 2017; Ring et al., 2018). Importantly, moral disengagement and self-regulatory efficacy were most strongly linked with self doping likelihood.

Moral identity was negatively related to both self and other doping. This replicates the findings of previous studies that assessed the likelihood of self (Kavussanu & Ring, 2017; Ring & Hurst, 2019) and other (Ring et al., 2018) doping. Our findings provide further evidence to support the argument that moral identity serves to avert unethical conduct (Blasi, 1984; Hardy & Carlo, 2011; Hertz & Krettenauer, 2016). Moral identity was more strongly coupled with self doping than other doping. We explain this divergence in terms of the nature of moral identity. Moral identity reflects the importance of being a moral person to one's self concept (Aquino & Reed, 2002), and, therefore, we should not expect this moral trait to strongly predict the likelihood of doping by another individual.

The two dimensions of moral perfectionism, namely personal moral standards and concern over moral mistakes, were negatively associated with doping likelihood, with small-to-medium effect sizes. We found evidence for self-other divergence in the perfectionism-doping

relationship for personal moral standards (self stronger than other) and self-other convergence for concern over moral mistakes. Similarly, the only previous study in this context found that both dimensions of moral perfectionism were inversely related to doping likelihood, again with small-to-medium effect sizes, and a stronger relationship for personal moral standards than concern over moral mistakes (Ring & Hurst, 2019). Evidence gathered on the relationship between general perfectionism and doping attitudes is mixed (e.g., Bae, et al., 2017; Madigan, et al., 2016; Zucchetti, et al., 2015). This heterogeneity of findings suggests that further research on this topic is required to resolve any discrepancies between the different dimensions of perfectionism.

Moral values were negatively associated with doping likelihood. This evidence supports the prediction made by the *sport drug control model* (Donovan et al., 2002) that moral values inhibit the translation of attitudes and intentions into doping behavior (cf., Chan et al., 2015). Our finding is also in line with previous studies showing that moral values are negatively associated with doping likelihood (Ring & Hurst, 2019) as well as antisocial attitudes about sport (e.g., Lee, 1996; Lee et al., 2008).

The literature is sparse regarding the relationship between doping and moral traits (Ntoumanis et al., 2014). We found evidence to suggest that self-regulatory efficacy, moral identity, moral agency, perfectionistic personal moral standards, and moral values should help thwart the use of banned performance enhancing substances, particularly for self doping compared to other doping. Our results provide important evidence that moral traits, which were moderately-to-strongly associated with self doping likelihood, might be key targets for anti-doping education programs.

4.3. Study limitations and future directions

Our study yielded some important findings about self-other divergence in doping. However, some issues could be considered when interpreting them. First, we did not control for social desirability. We would argue that anonymous online data collection helps militate against responses being affected by this source of potential bias (Dodou & de Winter 2014; Ward, Clark, Zabriskie, & Morris, 2012). Nonetheless, future studies could determine the influence of this potential source of bias, and, if required, control for it. Second, participants completed the online survey at a time and place of their choosing. We presume each participant completed it on their own, however, they may have done so in the presence of another person. A study has reported that context – individual versus group – can influence responses (Tractlet, Moret, Ohl, & Clémence, 2015). However, the utility of online surveys is well established, and, therefore it is unlikely that this means of data collection influenced findings (Bartneck, Duenser, Moltchanova, & Zawieska, 2015; Weigold, Weigold, & Natera, 2018). Nonetheless, future studies could compare online and face-to-face surveys.

4.4. Conclusion

Our study provided several pieces of original evidence to improve our understanding of the psychology of doping in sport. First, we established that athletes perceive that other athletes are more likely to dope than they are themselves. Second, we demonstrated that athletes expect they would experience more guilt about doping compared to other athletes. Importantly, we revealed that guilt acts as a mechanism underlying self-other differences in doping likelihood. Finally, we discovered differences in the size of the relationships between moral traits and doping likelihood for self- and other-referenced scenario-based assessments. In conclusion, we identified a series of self-other divergences in the context of doping that argue in favor of adopting the self-referenced approach to the study of doping.

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