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Effects of personal and situational factors on self-referenced doping likelihood

Christopher Ring, Maria Kavussanu, Sarah Lucidi, Philip Hurst

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Effects of Personal and Situational Factors on Self-Referenced Doping Likelihood

Christopher Ring, Maria Kavussanu, Sarah Lucidi & Philip Hurst
University of Birmingham

School of Sport, Exercise & Rehabilitation Sciences, University of Birmingham, UK

Address correspondence to:

Christopher Ring

School of Sport, Exercise & Rehabilitation Sciences

University of Birmingham

Edgbaston, Birmingham, B15 2TT, UK

E: c.m.ring@bham.ac.uk

T: +44 121 414 4115

Running Head: PERSONAL AND SITUATIONAL FACTORS

THIRD REVISION

Effects of Personal and Situational Factors
on Self-Referenced Doping Likelihood

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3 November 2018

Abstract

1
2 *Objectives:* The present study examined the role of moral identity, self-regulatory
3 efficacy and moral disengagement on athletes' doping likelihood in situations
4 representing potential benefits and costs for themselves.

5 *Design:* Using a cross-sectional design, doping likelihood was assessed indirectly via
6 hypothetical scenarios.

7 *Method:* Athletes ($N = 262$) indicated their likelihood of doping in hypothetical
8 situations and completed measures of moral identity, doping self-regulatory efficacy,
9 and doping moral disengagement.

10 *Results:* Doping was more likely in benefit situations than in cost situations. Doping
11 likelihood was negatively correlated moral identity, negatively correlated with self-
12 regulatory efficacy, and positively correlated with moral disengagement in both
13 situations. The coefficients were higher for moral identity in cost situations, self-
14 regulatory efficacy in benefit situations, and moral disengagement in benefit
15 situations. Process analyses indicated that moral identity was directly related to
16 doping likelihood only in cost situations and indirectly related to doping likelihood
17 via increased self-regulatory efficacy only in benefit situations. Moral identity was
18 indirectly related to doping likelihood via decreased moral disengagement and via
19 increased self-regulatory efficacy and decreased moral disengagement in both
20 situations.

21 *Conclusions:* By showing that doping likelihood is associated with personal and
22 situational factors our findings provide support for a social cognitive model of

- 1 doping based on Bandura's theory of moral thought and action and Aquino's theory
- 2 of moral identity.
- 3

ACCEPTED MANUSCRIPT

Effects of Personal and Situational Factors on Self-Referenced Doping***Likelihood***

1 The use of banned performance-enhancing substances by athletes poses a
2 problem for the world of sport. Guided by social cognitive theory, researchers have
3 attempted to understand the phenomenon of doping (WADA, 2015) by investigating
4 the influence of the social environment on behavior. Studies have shown that
5 situational benefits and costs may influence athletes' behavioral intentions regarding
6 the use of banned substances (e.g., Huybers & Mazanov, 2012; Ring, Kavussanu,
7 Simms, & Mazanov, 2018; Strelan & Boeckmann, 2006). Studies have also
8 documented the role of cognitive factors on the use of banned substances (e.g.,
9 Erickson, McKenna, & Backhouse, 2015; Ntoumanis, Ng, Barkoukis, & Backhouse,
10 2014). In his social cognitive theory of moral thought and action, Bandura (1991,
11 2016) proposes that morally-relevant actions are influenced by situational (e.g., other
12 people, pressure) and personal (e.g., thoughts, feelings) factors. In the present study,
13 we considered the role of moral factors in doping likelihood when faced with
14 hypothetical situations describing benefits and costs for athletes.

Doping and Social Cognitive Theory

16 Evidence from qualitative (e.g., Engelberg, Moston, & Skinner, 2015; Erickson et
17 al., 2015; Kirby, Moran, & Guerin, 2011) and quantitative (e.g., Ntoumanis et al., 2014)
18 research has implicated morality as an important predictor of doping by athletes.
19 Bandura's (1991) theory of moral thought and action provides a theoretical
20 framework to understand the psychology of doping (e.g., Corrion, Scoffier-Mériaux,

1 & d'Arripe-Longueville, 2017; Kavussanu 2016, 2017; Lucidi et al., 2008; Zelli et al.,
2 2016). According to this theory, our actions are guided by our moral standards and
3 we are personally responsible for our actions: we are self-regulating moral agents
4 (Bandura, 2018). Nonetheless, our actions sometimes fall short of what would be
5 expected based on our moral standards (Bandura, 1991). The difference between
6 what we do and what we ought to do can be expected to cause cognitive dissonance
7 (Festinger, 1957); we are motivated to minimize any internal tension caused by our
8 misdeeds. Bandura (2002) proposes that we use moral disengagement to attenuate
9 any affective self-sanctions associated with unethical acts and thereby behave in a
10 manner that disregards our moral standards.

11 According to Bandura (1991) individuals are able to violate their personal moral
12 standards without self-sanction through the selective use of psychosocial maneuvers,
13 collectively known as mechanisms of moral disengagement. Six moral
14 disengagement mechanisms have been confirmed in the context of doping: diffusion
15 of responsibility, displacement of responsibility, moral justification, distortion of
16 consequences, advantageous comparison, and euphemistic labeling (for review see
17 Kavussanu, 2016). Moral disengagement has been implicated as an important
18 facilitator of doping in qualitative studies (e.g., Engelberg et al., 2015), cross-sectional
19 studies (e.g., Kavussanu, Hatzigeorgiadis, Elbe, & Ring, 2016; Kavussanu & Ring, 2017;
20 Lucidi et al., 2004; Mallia et al., 2016), and experiments (e.g., Ring & Hurst, 2019).

21 Bandura's (1991, 2016) theory of moral thought and action also describes how
22 self-regulatory efficacy, which is the perceived capability to control one's thoughts,

1 feelings and actions (Bandura, 1997), can influence how a person acts when
2 confronted with situational temptations. Accordingly, doping self-regulatory efficacy,
3 which reflects confidence in the ability to resist doping when faced with tempting
4 situations, such as financial rewards (e.g., Huybers & Mazanov, 2012; Ring et al.,
5 2018), can be expected to prevent doping. In line with theoretical predictions, doping
6 self-regulatory efficacy has been identified as a deterrent of doping intention (i.e.,
7 ratings of doping intention, likelihood, and temptation) in previous research (e.g.,
8 Barkoukis et al., 2013; Corrion et al., 2017; Lazuras et al., 2010; 2015; Lucidi et al.,
9 2008; Mallia et al., 2016; Ring & Kavussanu, 2018a).

10 Grounded on Bandura's (1991, 2016) theory of moral thought and action, we
11 expected that higher self-regulatory efficacy would be associated with lower doping
12 likelihood, whereas higher moral disengagement would be associated with higher
13 doping likelihood. Bandura and colleagues proposed that self-regulatory efficacy
14 influences transgressive behavior both directly and indirectly via moral
15 disengagement, and found evidence for both pathways (Bandura, Caprara,
16 Barbaranelli, Pastorelli, & Regalia, 2001). This indirect pathway suggests that the
17 greater the perceived capacity to resist temptation the less mechanisms of moral
18 disengagement are used to justify unethical conduct. Recent research has provided
19 evidence to support this indirect pathway in the context of doping (e.g., Boardley et
20 al., 2017; Corrion et al., 2017; Kavussanu & Ring, 2017; Ring & Kavussanu, 2018a). The
21 current study evaluated this pathway in situations associated with potential benefits
22 and costs for the athlete.

1 **Doping and Moral Identity**

2 Aquino and Reed (2002) developed a model of moral identity to explain moral
3 behavior based on social cognitive theory. Moral identity, which describes the degree
4 to which being a moral person is central to one's self concept (Aquino & Reed, 2002;
5 Blasi, 1984), is an important regulator of moral behavior (e.g., Hardy & Carlo, 2011;
6 Hertz & Krettenauer, 2016). In the context of doping, moral identity has been
7 inversely associated with doping likelihood (Kavussanu & Ring, 2017; Ring & Hurst,
8 2019; Ring, Kavussanu, Simms, & Mazanov, 2018). In addition, moral identity was
9 found to be indirectly related to doping likelihood via moral disengagement
10 (Kavussanu & Ring, 2017) and via self-regulatory efficacy and moral disengagement
11 (Ring et al., 2018). This evidence suggests that athletes who feel that being a moral
12 person is a central part of who they are (i.e., their self concept), are less likely to dope
13 due to their greater confidence in their ability to resist when tempted and lower
14 tendency to morally disengage. Accordingly, there is evidence for direct and indirect
15 relationships between moral identity and doping that would be expected based on
16 Aquino and Reed's (2002) model of moral identity and Bandura's (1991) theory of
17 moral thought and action. Building on previous research, we sought to evaluate a
18 model of doping involving both a direct route between moral identity and doping
19 likelihood as well as an indirect route via self-regulatory efficacy and/or moral
20 disengagement when deciding whether to use banned substances in benefit and cost
21 situations.

22 **Assessing Doping**

1 Asking athletes direct questions about use of banned performance enhancing
2 substances can be unreliable for a number of reasons, including self-presentation
3 and self-preservation biases (Petroczi, 2016). Instead, researchers can use scenarios
4 describing hypothetical situations to assess doping intention. For instance, athletes
5 have been asked to indicate how they themselves (e.g., Corrion et al., 2017;
6 Kavussanu et al., 2016; Kavussanu & Ring, 2017; Ring & Kavussanu, 2018a, 2018b;
7 Strelan & Boeckmann, 2006) or other athletes (Huybers & Mazanov, 2012; Petroczi et
8 al., 2008; Ring et al., 2018) might act in hypothetical situations. These two methods
9 assess self-referenced and other-referenced doping, respectively.

10 Research using the inferred behavior approach to assess other-referenced
11 doping, which assumes that athletes project their own opinions onto other athletes,
12 has established a number of situational factors that encourage doping (e.g., recovery
13 from injury, financial remuneration, entourage advice) and discourage doping (e.g.,
14 risk of ill health, fines, and shame) (Huybers & Mazanov, 2012; Ring et al., 2018).
15 These two classes of situations may be considered the "benefits" and "costs"
16 associated with doping, respectively. In other words, benefit and cost situations,
17 which may be financial, legal or social in nature, can be seen to represent incentives
18 or threats for athletes (Donovan, Egger, Kapernick, & Mendoza, 2002; Strelan &
19 Boeckmann, 2006). For example, Ring et al. (2018) reported that other-referenced
20 doping was higher when the situations conferred a benefit to the other athlete (e.g.,
21 financial gain, career advancement) than when they incurred a cost for the other

1 athlete (e.g., financial loss, health risk). In sum, the available evidence establishes the
2 importance of situational factors in other-referenced doping likelihood.

3 **The Current Study**

4 Based on theorizing about the psychology of moral action (Aquino & Reed,
5 2002; Bandura, 1991, 2016), we evaluated a social cognitive model of doping that
6 considers the role of situational (benefits and costs) and personal (moral identity,
7 self-regulatory efficacy, moral disengagement) factors on doping likelihood. We had
8 two study purposes. First, we examined whether doping likelihood differs between
9 benefit and cost situations. We hypothesized that doping likelihood would be higher
10 in benefit than in cost situations (Huybers & Mazanov, 2012; Ring et al., 2018).
11 Second, we examined the extent to which personal factors, identified by Bandura's
12 (1991) theory of moral thought and action and Aquino and Reed's (2002) model of
13 moral identity, are associated with doping likelihood in benefit situations and cost
14 situations. Based on past research (Kavussanu & Ring, 2017), we hypothesized that
15 moral identity would be inversely associated with doping likelihood both directly and
16 indirectly via increased self-regulatory efficacy and reduced moral disengagement.
17 Based on a previous study (Ring et al., 2018), we expected that the moral identity-
18 doping likelihood relationship would be weaker whereas the self-regulatory efficacy-
19 doping likelihood and moral disengagement-doping likelihood relationships would
20 be stronger in benefit situations compared to cost situations.

21 **Method**

22 **Participants**

1 Participants were 262 (133 males) college athletes competing in individual ($n =$
2 91, 35%) and team ($n = 171$, 65%) sports in the UK. The individual sports included
3 athletics, golf, martial arts, swimming and tennis, whereas the team sports included
4 cricket, football, hockey, netball and rugby. At the time of data collection, the
5 athletes ranged in age from 18 to 25 years and had competed in their respective
6 sport for an average of 8.95 ($SD = 3.68$) years. The highest ever standard at which
7 they had competed in their sport was club (26%), county / regional (48%), national
8 (18%), and international (8%).

9 **Measures**

10 **Doping likelihood.** Doping likelihood was measured using materials adapted
11 from previous research (Huybers & Mazanov, 2012; Ring et al., 2018). Participants
12 were first presented with the following description:

13 "Imagine that you are an athlete who is due to compete in an event of critical
14 importance to your sporting career. You are seriously considering using a
15 banned performance enhancing substance, but have not made a final decision.
16 To help you make that decision, we have listed a number of situations you may
17 find yourself in. We are asking you to tell us what you think you might decide to
18 do in each situation."

19 Participants were then presented with a list of hypothetical situations (Table 1),
20 and indicated how likely it is that they would personally use the banned substance in
21 each situation on a 7-point scale, anchored by 1 (*not at all likely*) and 7 (*very likely*).

22 In line with past research (Ring et al., 2018), we employed both benefit and cost

1 situations. The mean of the ratings in each group of situations was computed as a
2 measure of doping likelihood in benefit ($\alpha = .96$) and cost ($\alpha = .97$) situations.

3 **Moral identity.** The internalization dimension of the moral identity scale
4 (Aquino & Reed, 2002) was used to measure moral identity. Athletes were presented
5 with nine moral traits (e.g., fair, hardworking, honest) and responded to statements
6 concerning these traits (e.g., "It would make me feel good to be a person who has
7 these characteristics") on a 7-point scale anchored by 1 (*strongly disagree*) and 7
8 (*strongly agree*). This scale has shown very good internal consistency ($\alpha = .83$; Aquino
9 & Reed, 2002). The mean of the five ratings was computed and used as a measure of
10 moral identity ($\alpha = .81$).

11 **Self-regulatory efficacy.** A sport-specific version of the doping self-regulatory
12 efficacy scale (Lucidi et al., 2008) was used to measure perceived ability to resist
13 doping. This version has been used in previous research (Ring & Kavussanu, 2018a;
14 Ring et al., 2018) Athletes indicated their confidence in their ability to avoid using
15 banned substances to improve performance in sport in seven situations (e.g., "When
16 pressured to do so by others") using a 7-point scale anchored by 1 (*not at all*
17 *confident*) and 7 (*completely confident*). The scale has shown excellent internal
18 consistency ($\alpha = .96 - .97$; Ring & Kavussanu, 2018a; Ring et al., 2018). The mean of
19 the seven item ratings was computed and used as a measure of doping self-
20 regulatory efficacy ($\alpha = .96$).

21 **Moral disengagement.** The moral disengagement in doping scale (Kavussanu
22 et al., 2016) was used to measure doping moral disengagement. Athletes indicated

1 their level of agreement with six statements (e.g., "Doping does not really hurt
2 anyone") using a 7-point scale anchored by 1 (*strongly disagree*) and 7 (*strongly*
3 *agree*). The scale has shown good internal consistency (α 's = .78 - .86), test-retest
4 reliability ($r = .78$), and construct validity (Kavussanu et al., 2016). The mean of the six
5 item ratings was computed and used as a measure of moral disengagement in
6 doping ($\alpha = .85$).

7 **Procedure**

8 After obtaining approval from the local research ethics committee, participants
9 were recruited from university clubs and classes. The athletes were informed about
10 the study's aims, that participation was voluntary, honesty in responses was vital,
11 data would be anonymous, and information would only be used for research
12 purposes. After consenting, they completed the measures described above via a
13 web-based questionnaire.

14 **Results**

15 **Doping Likelihood in Benefit and Cost Situations**

16 The first study purpose was to determine whether likelihood of using a banned
17 performance enhancing substance in sport differs between benefit and cost
18 situations. The means and confidence intervals for doping likelihood in each situation
19 are presented in Table 1; a mean for one situation that lies outside of the confidence
20 interval of another situation can be considered different from the mean for that
21 situation. Doping likelihood, which was relatively low in the benefit situations and
22 very low in the cost situations (Table 2), was positively correlated across the two sets

1 of situations, $r(261) = .59, p < .001$, and was greater in benefit than in cost situations,
2 $t(261) = 14.27, p < .001, d = 0.91$ (Cohen, 1992).

3 **Personal Factors and Doping Likelihood**

4 Our second study purpose was to examine the extent to which personal factors
5 are associated with doping likelihood in benefit situations and cost situations. First,
6 we computed Pearson correlations between personal variables (moral identity, self-
7 regulatory efficacy, moral disengagement) and doping likelihood in benefit and cost
8 situations. In each set of situations doping likelihood was negatively related to moral
9 identity, negatively related to self-regulatory efficacy, and positively related to moral
10 disengagement (Table 2). To examine situational differences in the degree of
11 association between personal moral variables and doping likelihood (Table 2), we
12 computed a Z test to determine whether the two respective correlations were
13 significantly different from each other (Steiger, 1980). Doping likelihood was more
14 strongly related to moral identity ($Z = 2.08, p = .02$) in cost situations compared to
15 benefit situations. In contrast, doping likelihood was more strongly related to self-
16 regulatory efficacy ($Z = 3.46, p = .0006$) and moral disengagement ($Z = 3.39, p =$
17 $.0008$) in benefit situations compared to cost situations.

18 Next, we examined whether moral identity was associated with doping
19 likelihood directly and indirectly via self-regulatory efficacy and/or moral
20 disengagement separately for the two sets of situations. This purpose was addressed
21 using the PROCESS 3.0 (Hayes, 2017) SPSS macro, which simultaneously tests direct
22 and indirect effects using regression analyses. Bootstrapping was set at 10,000

1 samples. Bias-corrected 95% confidence intervals were estimated for all effects. An
2 effect was considered significant when the confidence interval did not contain zero.
3 The completely standardized indirect effect (CSIE) was reported as the effect size
4 metric (Preacher & Kelley, 2011) for the indirect effects, with values of .01, .09, and
5 .25 denoting small, medium, and large effect sizes, respectively (Cohen, 1992).

6 The results are presented in Figure 1 and Tables 3 and 4. In benefit situations
7 (Figure 1A, Table 3), moral identity had no direct effect on doping likelihood, $b = -$
8 $.03$, 95% CI = $-.14, .08$, $t = 0.54$, $p = .59$. However, it had significant indirect effects
9 on doping likelihood via self-regulatory efficacy alone, moral disengagement alone,
10 and the serial combination of self-regulatory efficacy and moral disengagement. The
11 total indirect effect of moral identity on doping likelihood in benefit situations was
12 significant and large, $b = -.26$, 95% CI = $-.40, -.12$, CSIE = $-.195$, 95% CI = $-.30, -.09$.
13 In cost situations (Figure 1B, Table 4), moral identity had a direct effect on doping
14 likelihood, $b = -.15$, 95% CI = $-.22, -.07$, $t = 3.83$, $p = .001$. In addition, it had an
15 indirect effect via moral disengagement alone and via the serial combination of self-
16 regulatory efficacy and moral disengagement. The path via self-regulatory efficacy
17 alone was not significant. The total indirect effect of moral identity on doping
18 likelihood in cost situations was significant and medium sized, $b = -.10$, 95% CI =
19 $-.19, -.04$, CSIE = $-.13$, 95% CI = $-.22, -.06$. In sum, moral identity was indirectly
20 linked to doping in benefit situations whereas moral identity was directly and, to a
21 lesser extent, indirectly linked to doping in cost situations

22

Discussion

1 Grounded in social cognitive theorizing, including Bandura's (1991, 2016) theory
2 of morality and Aquino and Reed's (2002) conceptualization of moral identity, as well
3 as previous research on doping (Kavussanu & Ring, 2017; Ring et al., 2018), our study
4 evaluated a model of doping that considered the role of situational and personal
5 factors in relation to the likely use of banned performance-enhancing substances.
6 First, we examined whether doping likelihood differed between benefit and cost
7 situations, and, second, we examined whether moral identity, self-regulatory efficacy,
8 and moral disengagement were related to athletes' doping likelihood, and
9 determined if these relationships differed between benefit and cost situations.

10 **Doping Likelihood in Benefit and Cost Situations**

11 Bandura's (1986, 1989) social cognitive theory of thought and action argues
12 that our social environment regulates our behavior. In the context of sport, there is
13 evidence showing that athletes take account of the expected benefits (incentives)
14 and costs (threats) of their actions when deciding whether or not to use banned
15 performance-enhancing substances (e.g., Donovan et al., 2002; Huybers & Mazanov,
16 2012; Mazanov & Huybers, 2010; Ring et al., 2018; Strelan & Boeckmann, 2006). We
17 found evidence that athletes consider the seriousness of the threats (e.g., ill-health,
18 discovery, fines, bans, public scrutiny) and magnitude of the incentives (e.g.,
19 remuneration, career, health) when deciding whether to use a banned substance
20 themselves. This shows that the likelihood of using banned substances depends on
21 the expected benefits and costs associated with doping. The current findings broadly
22 replicate research using hypothetical scenarios on the relative effects of situational

1 benefits and costs on other-referenced doping likelihood (Huybers & Mazanov, 2012;
2 Ring et al., 2018) and the effects of health, legal, moral, and social costs on self-
3 referenced doping likelihood (Strelan & Boeckman, 2006).

4 It is worth noting that decisions about one's own doping (current study) and
5 decisions about doping by other athletes (Ring et al., 2018) appear to yield similar
6 estimates of absolute doping likelihood in cost situations but different estimates of
7 absolute doping likelihood in benefit situations. This difference suggests that doping
8 likelihood may be underestimated by the self-referenced method and/or
9 overestimated by the other-referenced method. This self-other divergence should be
10 explored in future research that assesses doping likelihood in hypothetical scenarios
11 using both methods (cf., Petroczi et al., 2008; Uvascek et al., 2011).

12 **Personal Factors and Doping Likelihood**

13 Bandura's (1991) social cognitive theory of moral thought and action coupled
14 with Aquino and Reed's (2002) social cognitive model of moral identity (e.g., Aquino,
15 Freeman, Reed, Lim, & Felps, 2009) recognize moral identity, self-regulatory efficacy,
16 and moral disengagement as core components of personal morality that regulate
17 ethical behavior. In the current study, correlation analyses showed that doping
18 likelihood in benefit and cost situations was negatively correlated with moral identity
19 and doping self-regulatory efficacy but positively correlated with doping moral
20 disengagement.

21 The strength of the personal morality-doping likelihood relationships depended
22 on the nature of the doping situation. The bivariate relationship was strongest for

1 moral identity when doping imposed costs on the athletes whereas the relationship
2 was strongest moral disengagement and self-regulatory efficacy when doping
3 conferred benefits for the athletes (Table 2). The multivariate models (Table 3, Table
4 4, Figure 1) confirmed a direct path between moral identity and doping likelihood
5 only in cost situations and an indirect path between moral identity and doping
6 likelihood via self-regulatory efficacy only in benefit situations. The indirect path via
7 moral disengagement alone was stronger (i.e., larger effect size) in benefit situations
8 compared to cost situations. Finally, the indirect serial path via self-regulatory
9 efficacy and moral disengagement was present in both situations.

10 A previous study of other-referenced doping also noted that the direct effect of
11 moral identity on doping likelihood was confined to benefit situations (Ring et al.,
12 2018). In contrast to the present models, the same study found only one indirect
13 effect in benefit situations (via the serial combination of self-regulatory efficacy and
14 moral disengagement) and no indirect effects in cost situations. This latter
15 discrepancy suggests that one's moral constructs (e.g., moral identity, self-regulatory
16 efficacy, moral disengagement) are more closely related to one's own compare to
17 someone else's behavioral intentions. We await for future studies to confirm and
18 explain this self-other divergence using research designs that concurrently compare
19 self-referenced and other-referenced doping likelihood in benefit and cost situations
20 in the same sample of athletes.

21 In support of Bandura's (1991) theory of moral thought and action and in line
22 with past research that has investigated the relationship between self-regulatory

1 efficacy and doping intentions (e.g., Corrion et al., 2017; Barkoukis, et al., 2015; Mallia,
2 et al., 2016; Ring et al., 2018) we found that athletes who were confident that they
3 can resist temptations and refuse to use banned substances when put under
4 pressure to perform were less likely to consider using a banned substance.
5 Importantly, the statistical models (Figure 1) showed that the relationship between
6 self-regulatory efficacy and doping likelihood depended on the situational context,
7 with a negative relationship for benefit situations and a non-significant relationship
8 for cost situations. A similar contextual difference for the relationship between self-
9 regulatory efficacy and doping likelihood was evident in the correlation analyses. This
10 evidence for a contextual difference indicates that the perceived ability to resist
11 doping is more important when the situational pressures make doping more likely.

12 In support of the theory of moral thought and action (Bandura, 1991) and in
13 line with previous studies (e.g., Corrion et al., 2017; Engelberg et al., 2015; Kavussanu
14 & Ring, 2017; Mallia et al., 2016; Zelli et al., 2016), we found that moral
15 disengagement was associated with a more permissive view of doping. In other
16 words, athletes who were more likely to concur with the use of mechanisms of moral
17 disengagement were also the ones who were more likely to agree with the use of
18 banned performance enhancing substances. Interestingly, the moral disengagement-
19 doping relationship was moderated by the situational context, with a larger effect for
20 benefit situations than cost situations. This finding confirms the operation of a
21 conditional effect or situation by person interaction (Ring et al., 2018) whereby the
22 decision to use moral disengagement to justify use of banned substances plays a

1 stronger role when such doping is associated with a pressurized social environment
2 created by athlete support personnel and reinforcement in the form of career
3 advancement and financial rewards.

4 **Study Limitations, Future Directions and Practical Implications**

5 Our findings should be interpreted after considering potential study limitations.
6 First, we assessed doping likelihood in hypothetical scenarios and found that many
7 athletes were unlikely to use a banned substance in many of the situations. Future
8 studies could evaluate our social cognitive model of doping in athletes with and
9 without convictions for anti-doping rule violations concerning use of banned
10 substances. Second, we did not measure negative emotions to evaluate the role of
11 affective self sanction. To paint a fuller picture of the morality-doping relationship,
12 future studies could include measures of guilt and shame associated with doping.

13 In terms of practical implications, anti-doping training programs, particularly
14 those underpinned by moral theory, would be better served if they assessed their
15 effectiveness in terms of self-referenced doping likelihood rather than other-
16 referenced doping likelihood. This is because the associations between moral
17 variables and doping intentions appeared to be stronger in the current study
18 compared to a previous study that examined other-referenced doping (Ring et al.,
19 2018). In these programs, activities could be developed that make the moral self
20 concept more salient for the athletes, enhance their self-regulatory efficacy to resist
21 doping, and challenge their use of moral disengagement mechanisms.

22 **Conclusion**

1 The present study confirmed that doping behavior by athletes is more likely
2 when the situation affords them benefits compared to when the situation imposes
3 costs on them. We also documented how doping likelihood depended on personal
4 morality, with intended doping behavior discouraged by moral identity and self-
5 regulatory efficacy but encouraged by moral disengagement. Moreover, the extent
6 to which moral thoughts influenced intended doping behavior depended on the
7 situational context. In the cost situations, moral identity acted directly and, to a lesser
8 extent, indirectly via self-regulatory efficacy and moral disengagement, whereas in
9 the benefit situations, moral identity acted only indirectly via self-regulatory efficacy
10 and/or moral disengagement.

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18

Table 1

Likelihood of doping in each benefit and cost situation

Situation	<i>M</i>	<i>95% CI</i>
Benefits		
Financial gain of £75,000	2.64	2.44, 2.84
Help overcome an injury on day of event	2.32	2.15, 2.50
Accelerated career advancement	2.32	2.14, 2.50
No negative health side effects	2.27	2.07, 2.47
Encouraged by a coach or manager	2.03	1.87, 2.18
Financial gain of £2,500	1.92	1.77, 2.07
Encouraged by a sports administrator	1.85	1.69, 2.00
Low chance of detection on the day of the event	1.84	1.69, 1.99
Low chance of detection in future from tests on stored samples	1.81	1.66, 1.96
Help overcome bad form and stay at current competition level	1.80	1.65, 1.94
Encouraged by a senior athlete or team/club mate	1.79	1.65, 1.93
No fine if prosecuted	1.74	1.60, 1.87
Low chance of being banned as a result of a positive drug test	1.69	1.56, 1.83
Costs		
No financial gain	1.43	1.31, 1.54
Increased risk of being investigated by a journalist	1.30	1.19, 1.40
Fine of £2,500	1.28	1.19, 1.37
Increased risk of minor temporary illness, injury or disease	1.28	1.18, 1.37
High chance of detection on the day of the event	1.22	1.14, 1.30
Public humiliation upon detection from the media	1.21	1.13, 1.30
No career benefit	1.21	1.13, 1.30
No performance benefit	1.21	1.12, 1.29
Increased risk of death	1.20	1.11, 1.29
High chance of detection in future from tests on stored samples	1.19	1.11, 1.26
Increased risk of major long-lasting illness, injury or disease	1.19	1.10, 1.27
High chance of being banned as a result of a positive drug test	1.18	1.11, 1.26
Fine of £75,000	1.17	1.10, 1.24

DOPING TRIAD

Table 2

Descriptive statistics, alpha coefficients, and zero-order correlations

Variable	<i>M</i>	<i>SD</i>	α	1.	2.	3.	4.
1. Moral Identity	6.05	0.81	.81				
2. Self-Regulatory Efficacy	5.89	1.45	.96	.18 *			
3. Moral Disengagement	1.94	0.96	.85	-.24 **	-.28 **		
4. Doping Likelihood (Benefits)	2.00	1.08	.96	-.22 **	-.41 **	.72 **	
5. Doping Likelihood (Costs)	1.23	0.60	.97	-.33 **	-.23 **	.59 **	.60 **

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

Table 3

Direct and indirect effects on self-regulatory efficacy, moral disengagement and doping likelihood in benefit situations

Effects	<i>B</i>	95% CI	CSIE	95% CI
Direct effects of MI on				
SRE	.32 **	.11, .54		
MD	-.23 ***	-.37, -.09		
Doping	-.03	-.14, .08		
Direct effects of SRE on				
MD	-.16 ***	-.24, -.08		
Doping	-.17 ***	-.23, -.11		
Direct effects of MD on				
Doping	.73 ***	.63, .82		
Indirect effects of MI on doping				
SRE	-.06 *	-.11, -.02	-.04 *	-.09, -.01
MD	-.17 *	-.31, -.04	-.13 *	-.23, -.03
SRE and MD	-.04 *	-.08, -.01	-.03 *	-.06, -.01

Notes: MI = moral identity, SRE = self-regulatory efficacy, MD = moral disengagement.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 4

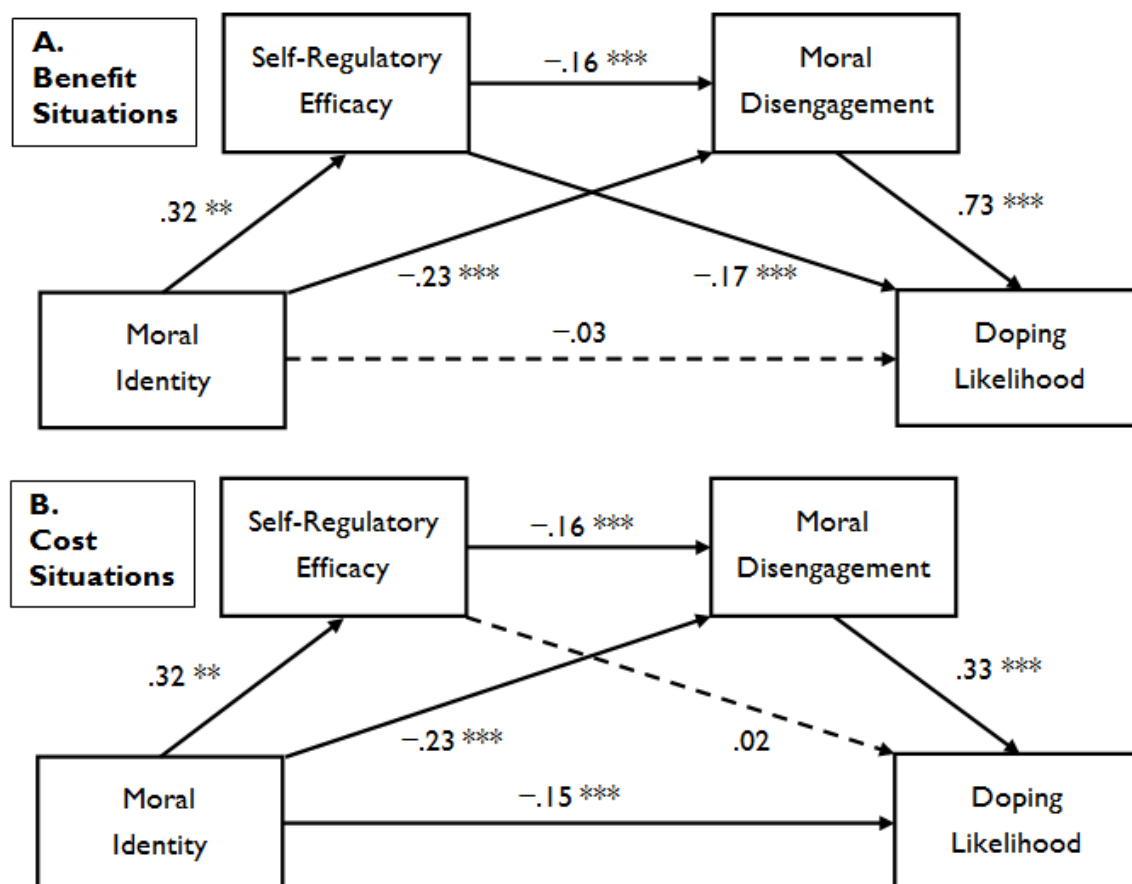
Direct effects and indirect effects on self-regulatory efficacy, moral disengagement and doping likelihood in cost situations

Effects	<i>B</i>	95% CI	CSIE	95% CI
Direct effects of MI on				
SRE	.32 **	.11, .54		
MD	-.23 ***	-.37, -.09		
Doping	-.15 ***	-.22, -.07		
Direct effects of SRE on				
MD	-.16 ***	-.24, -.08		
Doping	-.02	-.06, .02		
Direct effects of MD on				
Doping	.33 ***	.27, .40		
Indirect effects of MI on doping				
SRE	-.01	-.02, .01	-.01	-.04, .01
MD	-.08 *	-.17, -.02	-.10 *	-.20, -.03
SRE and MD	-.02 *	-.04, -.01	-.02 *	-.05, -.01

Notes: MI = moral identity, SRE = self-regulatory efficacy, MD = moral disengagement.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Figure 1. Statistical models of the effects of moral identity, self-regulatory efficacy and moral disengagement on doping likelihood in benefit (A) and cost (B) situations. The values are the unstandardized regression coefficients, a solid line depicts a significant relationship, and a dashed line depicts a non-significant relationship. * $p < .05$, ** $p < .01$, *** $p < .001$



- 1 • Self-referenced doping likelihood varied widely across situations
- 2 • Doping likelihood was greater in “benefit” situations than “cost” situations
- 3 • A social cognitive model based on moral identity and moral thought and
- 4 action theory was evaluated
- 5 • Moral identity was directly related to doping likelihood in cost but not benefit
- 6 situations
- 7 • In benefit situations, moral identity was indirectly related to doping via self-
- 8 regulatory efficacy and/or moral disengagement
- 9 • In cost situations, moral identity was indirectly related to doping via self-
- 10 regulatory efficacy and moral disengagement together and via moral
- 11 disengagement alone