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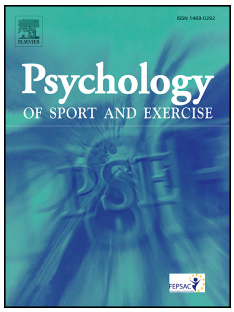
DOI:
10.1016/j.psychsport.2016.02.003

Document Version
Peer reviewed version

Citation for published version (Harvard):
Kavussanu, M, Hatzigeorgiadis, A, Elbe, AM & Ring, C 2016, 'The moral disengagement in doping scale', *Psychology of Sport and Exercise*, vol. 24, pp. 188-198. https://doi.org/10.1016/j.psychsport.2016.02.003

Accepted Manuscript



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PII: S1469-0292(16)30023-1

DOI: 10.1016/j.psychsport.2016.02.003

Reference: PSYSPO 1075

To appear in: *Psychology of Sport & Exercise*

Received Date: 30 June 2015

Revised Date: 13 February 2016

Accepted Date: 14 February 2016

Please cite this article as: Kavussanu, M., Hatzigeorgiadis, A., Elbe, A.-M., Ring, C., The Moral Disengagement in Doping Scale, *Psychology of Sport & Exercise* (2016), doi: 10.1016/j.psychsport.2016.02.003.

THIRD REVISION

The Moral Disengagement in Doping Scale

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Third Revision Submitted: February 13, 2016

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Abstract

Statement of Problem

The use of banned substances to enhance performance occurs in sport. Therefore, developing valid and reliable instruments that can predict likelihood to use banned substances is important.

Method

We conducted three studies. In Study 1, football players (N = 506) and athletes from a variety of team sports (N = 398) completed the Moral Disengagement in Doping Scale (MDDS). In Study 2, team sport athletes (N = 232) completed the MDDS and questionnaires measuring moral disengagement in sport, doping attitudes, moral identity, antisocial sport behavior, situational doping temptation, and task and ego goal orientations. A week later, a subsample (n = 102) completed the MDDS and indicated their likelihood to use a banned substance in a hypothetical situation. In Study 3, athletes (N = 201) from a variety of individual sports completed the MDDS and indicated their likelihood to use a banned substance in a hypothetical situation.

Results

The results of Study 1 showed that one-factor model fitted the data well, and the scale showed measurement invariance across males and females. In Study 2, we provided evidence for convergent, concurrent, discriminant, and predictive validity, as well as test-rest reliability, of the scale. In Study 3, doping moral disengagement was positively related with reported likelihood and temptation to use a banned substance. The scale exhibited very good internal consistency across the three studies.

Conclusions

In conclusion, the MDDS can be used to measure moral disengagement in doping in team and individual sports.

Keywords: doping susceptibility, moral identity, validity, test-retest reliability, scale development

The Moral Disengagement in Doping Scale

The use of banned substances to enhance performance, also known as doping, occurs in sport. Alaranta et al. (2006) reported that 22% of team sport athletes, 37% of endurance athletes, and 43% of speed and power athletes personally knew an athlete, who used banned substances. Understanding why athletes dope is important in the fight against doping. A variety of models have been developed to explain doping intentions and behavior. One of them is the Life Cycle Model (Petroczi & Aidman, 2008), which views doping use as a goal-directed behavior and distinguishes between personality traits, systemic factors (e.g., the performance enhancing culture of the team) and situational factors (e.g., interactions with peers) that make the athlete vulnerable to doping. Another example is the Sports Drug Control Model (SDCM; Donovan, Egger, Kapernick, & Mendoza, 2002; Jalleh, Donovan, & Jobling, 2014), which also views doping use as a goal-directed behavior, emphasizes the role of doping intentions and attitudes in the process of drug use, and includes personal morality as one of the factors assumed to influence doping attitudes. It has been suggested that doping is endemic in sport, commensurate with the demands of sport to exploit the limits of human performance (Petroczi, 2007; cited in Pappa & Kennedy, 2012). A qualitative study of 15 track-and-field elite athletes revealed that these athletes perceived doping as a normalized practice in competitive sport and maintained that most elite and professional athletes use performance enhancing substances (Pappa & Kennedy, 2012); most of these athletes (n = 13) had admitted using prohibited drugs.

Some models of doping have recognized the importance of moral variables in influencing doping intentions and behavior. For example, personal morality is part of the SDCM (Donovan et al., 2002; Jalleh et al., 2014), while sportspersonship is part of the integrative model of doping use (Lazuras, Barkoukis, & Tsorbatzoudis, 2015). The significance of morality to doping was also highlighted in two recent reviews of the literature (Engelberg, Moston, Houston, & Skinner, 2014; Ntoumanis, Ng, Barkoukis, & Backhouse, 2014[1]), in which moral variables were identified as strong predictors of doping intentions and behavior. A moral construct that has received increased

attention in recent years (see Kavussanu, 2016), and could facilitate our understanding of doping in sport, is moral disengagement (Bandura, 1991). The aim of the current research is to report the development of an instrument that measures this construct and is specific to doping. Developing valid and reliable instruments that measure variables specific to doping is essential for enhancing the accuracy of prediction of doping intentions and behavior.

The Construct of Moral Disengagement

Moral disengagement is a central construct in Bandura's (1991) social cognitive theory of moral thought and action. Bandura (1991) proposed that individuals develop moral standards during socialization which regulate transgressive behavior anticipatorily through evaluative self reactions: People refrain from acting in ways that violate their moral standards, because they expect to experience self reproof (Bandura, 1991). However, self sanctions can be disengaged from reprehensible behavior through the use of mechanisms of moral disengagement, which allow different behaviors by individuals with the same moral standards. The mechanisms operate by cognitively restructuring transgressive behavior and its consequences, minimizing or obscuring one's role in the harm one causes, disregarding or distorting the detrimental consequences of one's behavior, and dehumanizing or blaming one's victim. The mechanisms act on different aspects of the process of moral control (Bandura, 1991), and have been grouped into four sets.

The first set operates on detrimental conduct and includes moral justification, euphemistic labeling, and advantageous comparison. *Moral justification* entails the cognitive restructuring of a harmful behavior into a praiseworthy one, making it appear acceptable by portraying it as facilitating a valued social or moral purpose (Bandura, 1991). For example, doping could be justified as a way of helping one's team to win a competition. *Euphemistic labeling* involves the use of language to disguise transgressive behavior as less harmful (Bandura, 1991), such as when body-builders refer to banned substances as "juice" (Boardley & Grix, 2014). *Advantageous comparison* involves comparing transgressive behavior with more harmful acts, making the behavior in question

appear relatively benign (Bandura, 1991). For instance, athletes could compare doping to physical violence and conclude that it is not that bad.

The second set operates by obscuring one's role in one's actions and the effects they cause, and includes displacement and diffusion of responsibility. *Displacement of responsibility* occurs when people view their behavior as resulting from social pressures or dictates of an authority figure rather than something for which they are responsible. For instance, athletes may displace responsibility for taking banned substances to their coach, who may have asked them to dope. *Diffusion of responsibility* occurs through group decision making (when everyone is responsible, no one feels truly responsible), division of labor for tasks that appear harmless on their own but are harmful in their entirety, and group action, which involves attributing the harm done by the group to the behavior of the other group members (Bandura, 2002). An example of group decision making is when athletes attribute their doping behavior to a collective team decision to dope.

The third set operates on the consequences of detrimental behavior, and consists of *distortion of consequences*, which entails avoiding or downplaying the harm caused by the individual's transgressive behavior on others (Bandura, 1991). An example of distortion of consequences in sport is when athletes deny the seriousness of the injuries they have caused (Boardley & Kavussanu, 2007). The final set acts on the victim of the act and consists of dehumanization, which involves cognitively divesting victims of their human qualities or attributing animal-like qualities to them (Bandura, 1991), and *attribution of blame*, which occurs when individuals view themselves as faultless victims, who are forced to perform injurious behavior by their victim or the circumstances (Bandura, 1991). These two mechanisms do not appear to be relevant to doping: Individuals who dope do not actively harm another person, thus in the absence of a victim there is no one to dehumanize or blame for doping behavior. Indeed, these two mechanisms have not emerged in qualitative doping research (e.g., Boardley & Grix, 2014; Lucidi et al., 2008).

People often experience conflicts when behaviors they do not value can help secure benefits that they value. They are able to resolve these conflicts by disengaging moral self-sanctions, thus

enabling themselves to act in self-serving ways that have negative consequences for others (Bandura, 1991). For example, by comparing doping to more severe transgressive behaviors, convincing themselves that everybody does it, and blaming pressure from their coach or teammates for their own choices, athletes are likely to anticipate feeling less guilt and/or shame for doping. These justifications could enable athletes to give in to temptation to use Performance Enhancing Drugs (PEDs) to enhance their performance; such behavior will, in turn, necessitate further use of moral disengagement mechanisms to minimize negative affect and protect athletes' self esteem. In sum, moral disengagement is highly relevant to doping, which is a behavior that is intended to benefit oneself by taking unfair advantage over one's competitors.

Measures of Moral Disengagement

Several measures of moral disengagement exist and have been used in doping studies. The first doping study (Lucidi et al., 2004) to measure moral disengagement used an instrument constructed by Bandura and colleagues (Bandura et al., 1996) to measure the relationship between moral disengagement and aggressive and delinquent behavior in school children, and consists of 32 items, four for each mechanism; an overall score is computed to assess moral disengagement. Participants are asked to indicate the extent to which they agree with a number of statements; this format has been used in the remaining instruments described below. Example items are "it is all right to fight to protect your friends" measuring moral justification, and "slapping and shoving someone is just a way of joking" assessing euphemistic labeling.

Boardley and Kavussanu (2007) developed the Moral Disengagement in Sport Scale (MDSS), which, in line with Bandura et al (1996), also consists of 32 items. This was followed by the Moral Disengagement in Sport Scale - Short (MDSS-S), which comprises a subset of eight items from the MDSS, with only one item measuring each mechanism (Boardley & Kavussanu, 2008). Example items are "it is okay for players to lie to officials if it helps their team" for moral justification, and "bending the rules is a way of evening things up" for euphemistic labeling. Although these two scales measure moral disengagement in sport, none of their items refer to doping.

The only published instrument measuring moral disengagement that is specific to doping has been developed by Lucidi and colleagues (Lucidi et al., 2008) based on interviews conducted with 35 high school students, who competed in sport regularly. The "doping moral disengagement scale" consists of six items tapping the six moral disengagement mechanisms that are relevant to doping. Example items are "compared to the damaging effects of alcohol and tobacco, the use of illicit substances is not so bad", for advantageous comparison; and "it is not right to condemn those who use illicit substances to improve their body, since many do the same" for diffusion of responsibility. No items assess attribution of blame or dehumanization, the two mechanisms that operate on the victim, as these mechanisms did not emerge in the interviews (Lucidi et al., 2008).

This scale has made a valuable contribution to the literature, and showed very good internal consistency (Cronbach's alpha = .84) in previous research (Lucidi et al., 2008). However, it also has limitations. First, although the psychometric properties of the scale were assessed in a large sample of high school students, only 55% of that sample were active sport participants, thus the items were not relevant to a large proportion of the sample. Second, the scale included items that varied in terms of context, thus it is not specific to doping in *sport*. Specifically, only one item referred explicitly to sport, while two items pertained to one's body and physical appearance (e.g., "There is no reason to punish those who use illicit substances to improve their physical appearance; after all, they do not hurt anyone"). The remaining three items did not specify the doping context (i.e., sport, physical appearance/body building) but referred to the use of illicit substances in general (e.g., "It is ok to use illicit substances if this can help one to overcome one's own limits"). Thus, this scale measures moral disengagement with respect to doping in body building *and* sport, and includes some items that can be applied to both contexts.

Currently, there is a need for an instrument that measures doping moral disengagement specific to the context of sport. There is a call in sport psychology to measure sport phenomena with sport-specific rather than general psychological instruments (Kellmann & Beckmann, 2003), as the results are expected to be more precise. It has also been argued that social science doping research

lacks standardized measurement tools (Engelberg et al., 2014). The present research was designed to address the need for a moral disengagement scale that is specific to doping in sport.

The Present Research

The aim of this research was to develop a measure of moral disengagement in doping in the context of sport. To this end, we conducted three studies. In Study 1, the main purpose was to develop the items of the new scale and examine its content and factorial validity. Although multidimensional measures of moral disengagement exist (e.g., Boardley & Kavussanu, 2007; Osofsky, Bandura, & Zimbardo, 2005), several researchers have developed instruments that have a unidimensional structure (e.g., Boardley & Kavussanu, 2008; Detert et al., 2008; McAlister, 2001; Moore et al., 2012). Our aim was to develop a parsimonious unidimensional scale that measures the six mechanisms of moral disengagement that have been identified as relevant to doping in previous research (e.g., Boardley & Grix, 2014; Lucidi et al., 2008).

Support for this aim comes from previous research. For example, the 32-item (six-factor) instrument measuring moral disengagement in sport (Boardley & Kavussanu, 2007) has been very highly correlated (r = .94) with its short 8-item (one-factor) version (Boardley & Kavussanu, 2008), while the correlations of the two versions of the scale with prosocial (-.35, -.34) and antisocial (.59, .60) behaviors have been nearly identical. Similarly, in comparing three versions (with 24, 16, and 8 items) of a general measure of propensity to morally disengage, Moore et al. (2012) found that the correlations among the three versions of the scale were above .90, while their correlations with a number of variables from the proposed nomological network were all in the hypothesized direction and of similar magnitude. These researchers concluded that, based on both statistical and practical grounds, measuring the propensity to morally disengage in more complex ways produces no meaningful advantage. Taken together, these findings suggest that a parsimonious scale of moral disengagement could be developed without compromising standards of validity and reliability. Our aim was to develop a scale that included one item for each mechanism, in line with previous

research (e.g., Boardley & Kavussanu, 2008; Lucidi et al., 2008; Moore et al., 2012). Such a scale would be highly advantageous for use in field research (cf. Moore et al., 2012).

A second aim of Study 1 was to investigate the measurement invariance of the scale across males and females. Measurement invariance concerns the degree to which instrument items have the same meaning for members of different groups (Cheung & Rensvold, 2002) and is important when different groups are compared. If measurement invariance does not exist, differences between groups cannot be interpreted unambiguously (Cheung & Rensvold, 2002) because they may be due to different psychometric responses to the scale items rather than differences in the constructs of interest. Previous research has consistently identified gender differences in moral disengagement in a variety of populations, including adult team sport athletes (e.g., Boardley & Kavussanu, 2007), secondary school students (McAlister, 2001), and sixth and seventh grade pupils (Obermann, 2011): Typically, males report higher moral disengagement than females. As gender differences in moral disengagement are common, investigating measurement invariance of the scale across males and females is important.

In Studies 2 and 3, we sought to obtain further evidence of the construct validity and reliability of the scale. Specifically, in Study 2, which employed team-sport athletes, we examined convergent, concurrent, discriminant, and predictive validity, as well as test-retest reliability of the scale. In Study 3, we examined whether the factor structure of the scale is replicated in a sample of individual sport athletes and whether doping moral disengagement is related to likelihood to dope in a hypothetical situation.

Study 1

Method

Participants. Participants in Study 1 came from two samples. In Sample 1, they were male (n = 251) and female (n = 255) association football players[2]. At the time of data collection, participants ranged in age from 16 to 25 years (M = 18.42, SD = 1.90) and had competed for an average of 9.63 (SD = 3.24) years. Sample 2 consisted of male (n = 233) and female (n = 165)

netball (n = 137), rugby (n = 134), football (n = 71), basketball (n = 34), and korfball (n = 22) players from local leagues. Their age ranged from 16 to 40 years (M = 21.04, SD = 3.80) and they had competed in their respective sport for an average of 9.06 (SD = 4.22) years. A heterogeneous sample in terms of gender, age, and sport was recruited in the second sample to increase generalizability of the findings.

Item development. First, we developed a pool of 12 items designed to measure the six mechanisms of moral disengagement that are relevant to doping: moral justification, euphemistic labeling, advantageous comparison, displacement of responsibility, diffusion of responsibility, and distortion of consequences. Six items were adapted from the moral disengagement scales developed by Bandura and colleagues (1996) and Boardley and Kavussanu (2007), and six items were developed specifically for this study. The items were created or adapted by sport psychology academics to fit with Bandura's (1991, 1999) definitions of moral disengagement mechanisms.

Next, the content validity of the 12 items was examined. Content validity pertains to whether items are characteristic of the domain they are intended to measure and is typically assessed through expert opinion (Kline, 2005). The items were evaluated by eight sport psychology academics, who had conducted research in moral disengagement but were not involved in this research. The experts were asked to rate how representative each item was of the definition of each mechanism on a scale ranging from −3 (not at all representative) to +3 (very representative). Sample 1 participants were presented with the 12 items and were asked to indicate their degree of agreement with each item. Responses were made on a Likert scale anchored by *strongly disagree* (1) and *strongly agree* (7), in line with previous moral disengagement research (e.g., Bandura et al., 1996; Boardley & Kavussanu, 2008; Lucidi et al., 2008).

Procedure. Upon approval of the study protocol by the university research ethics committee, and contact with coaches of elite football teams, a research assistant visited the teams and collected data at the beginning or end of a training session. The research assistant informed athletes of the study's aims, its voluntary nature, that honesty in responses was vital, that data would be used only

for research purposes, and that the information would be kept confidential. The first sample was recruited for a larger study funded by the World Anti Doping Agency (WADA), while the second sample was recruited from local leagues. When responding to the questionnaire, participants did not include their name. We emphasized the anonymity of their responses as well as the importance of answering all questions honestly, in order to minimize socially desirable responding.

Results

First, following the guidelines of Clark and Watson (1995), we performed item analysis in Sample 1, in order to select the six most appropriate items (one for each mechanism). Then, we conducted a series of Confirmatory Factor Analyses (CFAs) on the selected items of this sample to test: (a) the factorial validity of the new instrument; (b) the measurement invariance of the one factor model across males and females in Sample 1; and (c) the measurement invariance of the model across Samples 1 and 2. These analyses are described below, followed by descriptive statistics and alpha coefficients.

Item analysis. Analysis of the expert ratings of the 12 items indicated that all items had a median of 2 (= representative of the definition), a mean greater than 2 (range = 2.01 – 2.88); a standard deviation greater than 1 (range = 1.30 – 1.80); a skewness less than 2 (range = 0.87 – 1.54); a kurtosis less than 3 (–0.22 – 2.18); and medium-to-large correlations (*r*s = .24 - .82, *p*s < .001). Thus, all items had appropriate properties for inclusion in the scale. The final six items were selected based on a combination of the following criteria: (a) conciseness and simplicity, giving priority to shorter and simpler than longer and more complex items; (b) results of content analysis, prioritizing items that had higher expert ratings than their competing item; (c) inter-item correlations, prioritizing items that were modestly correlated with each other and avoiding extremes; and (d) item means and standard deviations, prioritizing high values on these statistics (see Clark & Watson, 1995). Based on these criteria, we eliminated six out of 12 items, resulting in a six-item scale, with one item measuring each mechanism.

Confirmatory Factor Analyses. The items that were retained were expected to form one factor, which was tested through a series of CFAs using EQS 6.1 (Bentler & Wu, 2002) statistical package with the maximum likelihood method, using the covariance matrix. It is common practice in Structural Equation Modeling (SEM) to provide indices of model fit. Although this practice has become a contentious issue in the SEM literature, with contrasting views about reporting fit indices (see Barrett, 2007; Bentler, 2007), we have provided fit indices for the interested reader. Specifically, we assessed model fit with the chi-square (χ^2), the Comparative Fit Index (CFI), the Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR). Hu and Bentler (1998) suggest that values close to 0.95 for the CFI, 0.08 for SRMR, and 0.06 for RMSEA indicate a relatively good fit of the hypothesized model to the data. As can be seen in Table 1, the one-factor model had a good fit to the data in Sample 1, thus supporting the integrity of the factor structure; the items, standardized factor loadings, and error variances of this model can be seen in Table 2.

We examined the measurement invariance of the model across males and females using the method recommended by Byrne, Shavelson and Muthen (1989). Results of these analyses are presented in Tables 1 and 2. First, we tested the model separately in males and females. Second, we estimated a baseline unconstrained multisample model to test whether the factor pattern (i.e., number of factors and indicators) was similar across males and females. Finally, we tested a model, where all factor loadings were constrained to be equal across males and females (constrained model). Cheung and Rensvold (2002) suggest that the DCFI criterion should be used to compare the baseline and subsequent restricted models, with differences of .01 or less, supporting the equivalence of the fixed parameters across groups. Examination of the Langrange Multiplier test for releasing constraints - in the constrained model - showed that the fit of this model would improve if one constraint was released, χ^2 (1) = 7.55, $p < .01$); however, the fit indices of the unconstrained and constrained models were similar. The DCFI between the unconstrained and constrained model was .005, thus supporting the invariance of the model across the two genders.

Then, we examined the fit of the model to the data, in Sample 2, which included athletes from a variety of team sports. As can be seen in Table 1, the model fit was acceptable in Sample 2. Finally, we examined the measurement invariance of the model across Samples 1 and 2. Similar to the analyses described above, we tested an unconstrained model followed by a constrained model. The Langrange Multiplier test for releasing constraints showed that the fit of the constrained model would improve if one constraint was released, χ^2 (1) = 7.55, $p < .01$); however, the DCFI between the unconstrained and constrained models was .007, thus supporting the invariance of the model across the two samples.

Descriptive statistics and reliability. The six items used in the above analyses formed the Moral Disengagement in Doping Scale (MDDS). The item means and standard deviations in the two samples are presented in Table 3 and indicate that, on average, athletes disagreed with the moral disengagement statements. The 6-item scale had a mean of 2.40 and a standard deviation of 1.16 in the first sample, and a mean of 2.29 and standard deviation of 1.00 in the second sample. The scale exhibited very good internal consistency ($\alpha = .86$ in Sample 1; $\alpha = .82$ in Sample 2).

Discussion

In Study 1, we provided evidence for the content validity of our scale. Experts clearly rated each of the items as representative of each of the mechanisms of moral disengagement, as described by Bandura et al. (1996). It is worth noting that participants' responses to the six items were somewhat low. Previous research has also reported relatively low scores on moral disengagement with respect to antisocial behavior in sport (e.g., Boardley & Kavussanu, 2007, 2010; Hodge & Lonsdale, 2011). Doping is clearly a severe form of transgressive behavior; thus, it is not surprising that, on average, our participants scored low on this instrument. In Study 1, we also confirmed a single factor structure that encompassed six mechanisms of moral disengagement in two independent samples, found evidence of invariance of factor loadings across males and females and across the two samples, and provided evidence for the internal consistency of the scale. Overall,

results of Study 1 represented a good first step toward developing a valid and reliable scale of moral disengagement in doping in sport.

Study 2

In Study 2, we further examined construct validity of the MDDS. Construct validity has different aspects. Two of them, which were evaluated in this study, are convergent and concurrent validity. *Convergent validity*, refers to the degree to which a measure is associated with theoretically similar constructs (Brewer, 2000) and is evidenced when a scale is correlated at least moderately with established measures of the same or similar constructs (Kline, 2005). An established measure of moral disengagement is the Moral Disengagement in Sport Scale – Short (Boardley & Kavussanu, 2008), which measures moral disengagement in the context of sport. Previous research using this instrument has found that moral disengagement in sport has been positively associated with susceptibility to doping (Hodge et al., 2013). In order to evaluate the convergent validity of the MDDS, we examined whether moral disengagement in doping was associated with moral disengagement in sport (Boardley & Kavussanu, 2008).

Concurrent validity concerns whether a measure is related to an external standard (or criterion) when data are collected at the same point in time (Kline, 2005). We evaluated this type of validity using several measures. First, we examined the link of MDDS to the Performance Enhancement Attitude Scale (Petroczi & Aidman, 2009), which measures doping attitudes. Doping attitude has been defined as "an evaluative judgment (Fazio, 1995, cited in Petroczi & Aidman, 2009) of doping practice, where this evaluation is based on personal experience with the attitude object (doping situation) but filtered through individual values and dispositions" (Petroczi & Aidman, 2009, p. 392). Doping attitudes have been strongly associated with both sporting moral disengagement and susceptibility to doping in previous research (Hodge et al., 2013). Moreover, athletes who reported doping use scored higher on the doping attitude measure compared to non-users (Petroczi & Aidman, 2009). A positive relationship between doping attitude and doping moral disengagement would provide evidence for concurrent validity.

The second variable we used to evaluate the concurrent validity of MDDS is moral identity, which is the cognitive schema a person holds about his or her moral character (Aquino et al., 2009). Individuals with a strong sense of moral identity consider being moral an important part of who they are (Aquino & Reed, 2002) and are motivated to behave in a moral manner. Moral identity is organized around a set of moral traits (e.g., honest, fair, generous, hard working). In past research, the internalization dimension of moral identity (i.e., the centrality of moral identity to one's self concept) was negatively associated with moral disengagement (Aquino, Reed, Thau, & Freeman, 2007); moreover, moral identity has been inversely associated with antisocial behavior in sport (Kavussanu, Stanger, & Boardley, 2013) and had a negative influence on unethical decision making, which was mediated by moral disengagement (Detert, Treviño, & Sweitzer, 2008). An inverse relationship between moral identity and doping moral disengagement would provide support for the concurrent validity of the scale.

A third variable used to examine concurrent validity is antisocial sport behavior, which has been defined as behavior intended to harm or disadvantage another individual (Kavussanu, 2012), and has been distinguished as behavior directed at opponents and teammates (Kavussanu & Boardley, 2009); examples of antisocial sport behavior are trying to injure an opponent and verbally abusing a teammate. Antisocial behavior has been positively associated with sporting moral disengagement in numerous studies (e.g., Kavussanu et al., 2013; Stanger, Kavussanu, Boardley, & Ring, 2013). A positive relationship between doping moral disengagement and antisocial sport behavior would also provide evidence for the concurrent validity of the scale.

A final variable used to examine concurrent validity of the scale is temptation to dope. It can be assumed that an athlete who feels tempted to dope has increased likelihood to engage in doping behavior. Situational temptation reflects people's eagerness to endorse behaviors under specific circumstances, such as coercion and pressure (Maddock, Laforge, & Rossi, 2000). As measured in doping research (Lazuras, Barkoukis, Rodafinos, & Tsorbatzoudis, 2010), this variable captures the tendency to endorse and accept doping use under specific risk-conducive situations and has been a

strong positive predictor of doping intention (Lazuras et al., 2010). We expected that doping moral disengagement would be positively associated with situational doping temptation, and examined this link to obtain further evidence of concurrent validity of the scale.

We also investigated discriminant and predictive validity. *Discriminant* validity is evident when variables assumed to measure different constructs are not highly correlated (Kline, 2005). We examined the relationship of doping moral disengagement to two goal orientations: task orientation, which is the tendency to define success using self-referenced criteria, and ego orientation, which pertains to the tendency to define success using other-referenced criteria (Nicholls, 1989). In previous research, sporting moral disengagement has shown a null relationship with task orientation and a positive moderate relationship with ego orientation (Boardley & Kavussanu, 2010). However, correlations between these two goal orientations and doping attitudes have been small (e.g., Sas-Nowosielski & Swiatkowska, 2008). Thus, we expected that doping moral disengagement would evidence weak relationships with task and ego goal orientations; such relationships would support the discriminant validity of the scale. Predictive validity is evident when an instrument can predict a criterion variable, when measures are collected at two points in time (Kline, 2005). We examined this type of validity in a subsample of athletes by asking them to indicate the likelihood they would use a banned substance in a hypothetical situation.

In sum, the purpose of Study 2 was to provide further evidence of construct validity and reliability of the MDDS. We evaluated: convergent validity by examining the link between the new scale and moral disengagement in sport; concurrent validity by examining the link between doping moral disengagement and doping attitudes, moral identity, antisocial behavior toward teammates and opponents, and doping temptation; discriminant validity by investigating the link with task and ego orientation; and predictive validity by examining the link between doping moral disengagement and reported likelihood to use a banned substance. Finally, we examined test-retest reliability, which is typically estimated by administering a measure to the same people twice and correlating the two sets of scores (Pedhazur & Schmelkin, 1991).

Method

Participants

Participants were 232 college athletes (135 males) competing in the following team sports at a British university: football (*n* = 105), hockey (*n* = 46), rugby (*n* = 36), netball (*n* = 25), basketball (*n* = 10), lacrosse (*n* = 7), and volleyball (*n* = 3). At the time of data collection, participants ranged in age from 18 to 22 years and had competed in their respective sport for an average of 9.76 (*SD* = 3.36) years. The highest ever standard at which participants had played their sport was club (32%), county (29%), regional (26%), national (10%), and international (3%).

Measures

Moral disengagement in doping. The MDDS was used to measure moral disengagement in doping (see Study 1).

Moral disengagement in sport. The Moral Disengagement in Sport Scale - Short (Boardley & Kavussanu, 2008) was used to measure moral disengagement in sport. The two items relating to dehumanization and attribution of blame were not used. Participants were asked to indicate their level of agreement with six statements (e.g., Insults among players do not really hurt anyone) using a Likert scale anchored by 1 = *strongly disagree* and 7 = *strongly agree*. The scale has shown very good levels of internal consistency (α range = .80 - .85), and support for its factorial, convergent, and concurrent validity has been provided (Boardley & Kavussanu, 2008). The mean of the six items was computed and used in all analyses. The same procedure was followed for all measures.

Doping attitudes. The 6-item version of the Performance Enhancement Attitude Scale (Petroczi & Aidman, 2009), utilized in previous research (Gucciardi, Jalleh, & Donovan, 2010) was used to measure attitudes toward doping. Participants were asked to read statements describing views about doping and indicate their level of agreement using a Likert scale anchored by 1 = *strongly disagree* and 7 = *strongly agree*. Example items are “Doping is necessary to be competitive” and “The risks related to doping are exaggerated”. This abbreviated scale had acceptable reliability (α = .69) in previous research (Gucciardi et al., 2010).

Moral identity. The internalization dimension of the moral identity scale (Aquino & Reed, 2002) was used to measure moral identity. Participants were presented with nine traits (e.g., fair, honest, hardworking, helpful, etc) considered necessary characteristics of a moral person and responded to statements concerning these traits (e.g., it would make me feel good to be a person who has these characteristics) on a Likert scale anchored by 1 = *strongly disagree* and 7 = *strongly agree*. This scale has demonstrated very good internal consistency (α = .83; Aquino & Reed, 2002).

Antisocial behavior. Two subscales of the Prosocial and Antisocial Behavior in Sport Scale (Kavussanu & Boardley, 2009) were used to measure antisocial behavior in sport. Participants were presented with items describing antisocial behavior toward opponents (five items; e.g., deliberately fouled an opponent) and teammates (four items; e.g., verbally abused a teammate) and reported how often they had engaged in each behavior when playing sport on a Likert scale anchored by 1 = *never* and 5 = *very often*. The validity and reliability of the scale have been established in previous research (Kavussanu et al., 2013; Kavussanu & Boardley, 2009).

Doping temptation. This variable was assessed using a measure of situational temptation (Lazuras et al., 2010) slightly adapted for this study; for example, the term "colleagues" was replaced with the term "teammates". The stem "How much would you be tempted to use a prohibited (banned) doping substance to enhance your performance this season" was followed by items measuring temptation to dope under different circumstances: "When preparing for an important game"; "When you believe that most of your teammates use prohibited substances"; "When your coach suggests it"; and "When you have been told to improve your performance". Participants responded on a scale anchored by 1 = *not at all tempted* and 7 = *very tempted* with 4 = *somewhat tempted*. This scale has shown very good reliability (α = .86; Lazuras et al., 2010).

Goal orientation. Task and ego goal orientations were measured using the Perception of Success Questionnaire (POSQ; Roberts, Treasure, & Balague, 1998). The stem "When playing my main team sport I feel most successful when…" was used followed by two six-item subscales measuring task (e.g., "I show clear personal improvement") and ego (e.g., "I beat other people")

orientation. Participants responded on a Likert scale anchored by 1 (*strongly disagree*) and 5 (*strongly agree*). The POSQ has shown high internal consistency with alpha coefficients of .88 for each sub-scale (Roberts et al., 1998).

Likelihood to use PEDs. We measured likelihood to use PEDs with respect to a hypothetical situation described in a doping scenario. Participants were asked to imagine that they were in a situation, where they had the opportunity to use a banned substance to improve their fitness, thereby enhancing their performance, in an important competition (see Appendix). Then they were asked to indicate the likelihood that they would use the banned substance, if they were in the hypothetical situation, on a 7-point scale (1 = *not at all likely*; 7 = *very likely*). This item has been used to measure reported likelihood to act antisocially in previous studies (e.g., Kavussanu et al., 2015; Stanger et al., 2013).

Social desirability. The Brief Social Desirability Scale (Haghighat, 2007) was used to measure social desirability. Participants responded to the following questions: Would you smile at people every time you meet them? Do you always try to practice what you preach? Would you ever lie to people? If you say to people that you will do something, do you always keep your promise no matter how inconvenient it might be? Responses were coded 0 = *No* and 1 = *Yes*.

Procedure

Upon approval of the study by the university ethics committee, one of the researchers approached participants in undergraduate sport and exercise science classes. Participants completed the questionnaire at the beginning of a class. It was emphasized that data would be used only for research purposes, participation was voluntary, and honesty in responses was vital. One week later, a subsample of 102 students (54 males) indicated the likelihood they would use the banned substance in a hypothetical situation and completed the MDDS, to assess predictive validity and test-retest reliability of the scale; these participants also completed a measure of social desirability. When assessing test-retest reliability it is suggested that the interval between the two administrations is relatively short, that is, one to two weeks, to allow one to tap only random

measurement error and not true changes (Pedhazur & Schmelkin, 1991). Thus, the scale was administered to participants a week later, under standardised conditions (see Schutz, 1998), at the end of the same sport science undergraduate lecture, given at the same time-tabled lecture slot.

Results

Descriptive Statistics and Internal Consistency

We present descriptive statistics for the MDDS and the remaining variables used in this study in Table 4. This table also shows alpha coefficients for all variables. It can be seen that all measures exhibited very good internal consistency.

Construct Validity

We examined the various aspects of construct validity by computing zero-order correlations between the doping moral disengagement and the remaining variables measured in the study. These correlations appear in Table 4. Correlation coefficients of .15, .30, and .50 were considered to be small, medium and large effect sizes, respectively (Cohen, 1992). Doping moral disengagement was positively correlated with moral disengagement in sport providing evidence for convergent validity. Evidence for concurrent validity came from the moderate negative correlations with moral identity, and positive correlations with doping temptation, doping attitudes, and antisocial behavior toward teammates and opponents. Discriminant validity was supported by the small and weak, respectively, correlations between doping moral disengagement and task and ego goal orientations. The strong correlation between the doping moral disengagement, administered at Time 1, and reported likelihood to use a banned substance measured a week later (see Table 4) provided evidence for predictive validity. Finally, the MDDS was not significantly correlated with social desirability, $r(101) = -.15$, $p > .05$, and the partial correlation between doping moral disengagement and likelihood to use a banned substance, controlling for social desirability, was $r_{partial}(100) = .50$, $p < .001$; thus, the relationship between the two variables was not influenced by social desirability.

Test-Retest Reliability

We examined test-retest reliability of the scale using two methods. First, we computed Pearson correlations between the scores obtained in the first and second assessment times. This indicated that the scores were highly correlated across time, $r(101) = .78$, $p < .001$. Second, a 2 Time (test, retest) ANOVA confirmed that the score did not change significantly over time, $F(1, 101) = 0.77$, $p = .38$, $\eta^2 = .01$. At the first and second assessments, the mean (*SD*) scores for moral disengagement in doping were 2.34 (0.96) and 2.40 (1.04), respectively. Cronbach's coefficient alphas were .79 at the initial assessment and .82 at the follow-up assessment. Thus, the scale score was stable over a one-week interval.

Study 3

In Studies 1 and 2 we recruited team sport athletes. However, it was important to determine whether our scale can be used in athletes from individual sports. Therefore, we conducted a third study, in which we recruited athletes from a variety of individual sports. In this study, we investigated (a) the factorial validity of the instrument and (b) whether doping moral disengagement is related to reported likelihood and temptation to use a banned substance. We recruited participants from many different sports because a diverse sample increases the generalizability of the findings.

Method

Participants and Procedure

Participants were 201 athletes (115 females) competing in individual sports at a British university. Most participants competed in: athletics (52, 25.9%), swimming (26, 12.9%), gymnastics (17, 8.5%), cricket (16, 8.0%), martial arts (13, 6.5%), badminton (8, 4.0%), equestrian (8, 4.0%), golf (7, 3.5%), boxing (6, 3.0%), dance (5, 2.5%), rowing (6, 3.0%), tennis (6, 3.0%), and squash (5, 2.5%). Their age ranged from 18 to 31 years, and they had competed in their respective sport for an average of 8.08 (*SD* = 3.81) years. The highest ever standard at which athletes had competed in their sport was club (14%), county (22%), regional (25%), national (25%), and international (14%). Upon approval of the study by the university ethics committee, one of the

researchers approached participants in undergraduate sport and exercise science classes and asked them to participate in the study. Participants completed the questionnaire online after the class.

Measures

The athletes completed a slightly modified version of the MDDS. Specifically, the word "team" was replaced with the word "club" and the word "player" was replaced with the word "athlete" (see items 1, 4 and 5, Table 2). For instance, item 5 read "An athlete should not be blamed for doping if everyone in the club is doing it". Participants also responded to two questions pertaining to the doping scenario used in Study 2 (see Appendix). Similar to Study 2, they were asked to indicate how likely they were to use a banned substance if they were in the hypothetical situation described in the scenario. Reponses were made on a Likert scale ranging from 1 = *not at all likely* to 7 = *very likely*. We also asked participants to indicate how tempted they would be to use a banned substance. Responses to this question were made on a Likert scale ranging from 1 = *not at all tempted* to 7 = *very tempted*.

Results

The MDDS (M = 1.98, SD = 0.93) exhibited good internal consistency (α = .79). CFA was conducted to test the factorial validity of the scale in this sample. The one-factor model had a satisfactory fit to the data (χ^2/df: 31.46/9, NNFI: .896, CFI: .938, SRMR: .050, RMSEA: .112) and satisfactory factor loadings (ranging from .54 to .78). The mean (SD) responses to the doping scenario were 1.43 (0.97) for likelihood to dope and 2.12 (1.46) for temptation to dope. The zero-order correlations between doping moral disengagement and likelihood and temptation to use a banned substance were positive, significant, and moderate-to-large in magnitude: $r(200) = .37$, $p < .001$ for doping likelihood and $r(200) = .42$, $p < .001$ for doping temptation. These findings provide further support for the validity of the MDDS.

General Discussion

Doping is a practice that is pervasive across different sports and competitive levels (Alaranta et al., 2006). Understanding the social psychological factors associated with this practice is

important in our efforts to eliminate doping from sport. An essential part of this endeavor is the development of psychological instruments that are specific to doping. Such instruments are important to enhance the accuracy of prediction of doping behavior. With this in mind, the purpose of the current research was to develop a doping-specific measure of moral disengagement, a construct that has received much attention in recent years (e.g., Bandura, 1999; Boardley & Kavussanu, 2010; Kavussanu, 2016; Lucidi et al., 2008). To this end, we conducted three studies using four independent samples and provided evidence for construct validity, internal consistency, and test-retest reliability of the scale. Below we discuss the findings of these studies.

Factor Structure and Measurement Invariance

In the first study, we administered questionnaires with items measuring moral disengagement specific to doping in two samples of team sport athletes and examined content and factorial validity of the scale as well as measurement invariance across males and females. In both samples, the fit indices were good or very good, and the factor loadings were substantial indicating a good factor structure of the scale. The one-factor model of the moral disengagement in doping scale is consistent with previous research on moral disengagement, which has also revealed one factor for this construct with one item measuring each mechanism (Boardley & Kavussanu, 2008; Lucidi et al., 2008; Moore et al., 2012).

The invariance of the model across males and females was supported through the examination of unconstrained and constrained models in the first sample of Study 1. The differences in CFI and RMSEA between the unconstrained and the constrained models were minimal, indicating that the scale functions similarly for males and females. Moreover, the invariance test between the first and the second sample, which was more heterogeneous in terms of sports involved and the age of participants, further strengthens our confidence regarding the factorial integrity of the scale.

Construct Validity

The first type of construct validity that we examined was convergent validity. Consistent with our hypothesis, doping moral disengagement was positively associated with moral disengagement

in the broader context of sport; the relationship was moderate-to-strong. Strong relationships with established measures of similar constructs support the convergent validity of the moral disengagement in doping scale (see Brewer, 2000; Kline, 2005). The moderate-to-strong relationship with moral disengagement in sport indicates that although the two constructs share significant variance, they are distinct. Perhaps a stronger relationship would have been revealed with the doping moral disengagement scale of Lucidi and colleagues (Lucidi et al., 2008).

We also investigated concurrent validity, which is evidenced when an instrument shows the expected relationships with measures of theoretically-related constructs. Our scale demonstrated a strong correlation with doping attitudes, suggesting that these two constructs are very similar. A strong correlation between doping attitudes and sporting moral disengagement has also been reported in previous research (Hodge et al., 2013) suggesting a clear link between the two variables. It is also possible that doping moral disengagement captures positive attitudes towards doping use. Attitude has been defined as "a psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour" (Eagly & Chaiken, 1993, cited in Kirby, Guerin, Moran, & Matthews, 2016). It is reasonable to expect that individuals who morally disengage would also have favorable attitudes toward doping, as these athletes are more likely to dope. Indeed, our moral disengagement in doping scale predicted reported likelihood to dope in team and individual sport athletes. Future research could use semantic differential attitude tests to examine whether our scale captures attitudes toward doping.

A second variable that we used to examine concurrent validity was moral identity (Aquino & Reed, 2002). We found a negative moderate relationship between moral identity and doping moral disengagement. This is consistent with our hypothesis and in line with previous research, which has shown that moral disengagement propensity mediated the negative effects of moral identity on unethical decision making (e.g., Detert et al., 2008). Our results indicate that those athletes who felt that being moral is a central aspect of their sense of self, were less likely to endorse moral disengagement mechanisms; this finding provides support for the concurrent validity of the scale.

Two further variables used to examine concurrent validity were antisocial behavior toward opponents and teammates (Kavussanu & Boardley, 2009). Evidence for this type of validity was provided by the positive correlations between doping moral disengagement and the two antisocial behaviors with the link with antisocial opponent behavior being stronger. This is in line with previous research, in which moral disengagement has been positively associated with antisocial behavior in sport, more so with behavior toward opponents than teammates (e.g., Boardley & Kavussanu, 2010; Hodge & Lonsdale, 2011). Thus, athletes who score high on doping moral disengagement tend to also engage in behaviors such as trying to injure or criticizing their opponents and breaking the rules of the game.

The strong relationship between doping moral disengagement and doping temptation provided further evidence of concurrent validity. This finding is particularly important, as athletes who are tempted to use performance enhancing substances are very likely at some point to give in to this temptation. Indeed, in past research, situational temptation to dope was the strongest predictor of reported intentions to use prohibited substances among a number of psychosocial variables (Lazuras et al., 2010). Overall, our findings provide strong evidence for the concurrent validity of our scale.

Support for discriminant validity was offered by the weak links between doping moral disengagement and task and ego goal orientations. Task orientation has evidenced negligible correlations with moral disengagement in previous research (e.g., Boardley & Kavussanu, 2010); although ego orientation has been positively linked to moral disengagement, a recent meta-analysis (Ntoumanis et al., 2014) reported an overall negligible correlation between the two achievement goals and doping behavior (five studies) and intention (four studies). Clearly, task and ego achievement goals are distinct from moral disengagement in doping, and their weak correlations with doping moral disengagement support the discriminant validity of the scale.

Finally, we provided evidence for predictive validity: Moral disengagement in doping was prospectively and positively associated with reported likelihood to use a banned substance to enhance performance in a hypothetical situation in team sport athletes. In individual sport athletes,

higher scores on doping moral disengagement were concurrently and positively associated with likelihood and temptation to dope. This is in line with previous research (e.g., Lucidi et al., 2008), which has shown that moral disengagement is positively linked to the intention to dope. Overall, our findings support the validity of the moral disengagement in doping scale.

Reliability

We examined two aspects of reliability: internal consistency and test-retest reliability. Across the four samples, internal consistency was good to very good, while good levels of test-retest reliability were revealed in Study 2. With respect to test-retest reliability, a very strong correlation between the two assessment times indicated very good levels of this type of reliability. The ANOVA results also confirmed no significant changes in the doping moral disengagement score over a one-week interval further supporting the test-retest reliability of the scale.

Limitations of the Study and Directions of Future Research

Our study revealed some interesting findings but also has some limitations. First, even though we provided evidence for the convergent, concurrent, discriminant, and predictive validity, we did not report any evidence that our scale discriminates between PED users and non-users. Given that PED use is prohibited in sporting contexts that fall under the WADA Anti-Doping Code, this population is extremely difficult to recruit in large numbers. Indeed, numerous researchers have indicated that their efforts to recruit doping users have been unsuccessful, as very few people are willing to admit they dope (e.g., Hauw & Mohamed, 2015; Kirby, Moran, & Guerin, 2011). Nevertheless, researchers should examine potential differences in doping moral disengagement between PED users and non–users, similar to Petroczi and Aidman (2009). The ability of the MDDS to discriminate between users and non-users would strengthen the evidence for the predictive validity of the scale, and is an important avenue for future research.

Researchers could also examine whether doping moral disengagement interacts with moral values to predict doping behavior. Although studies typically investigate moral disengagement as predictor of morally relevant behavior (e.g., Bandura et al., 1996; Lucidi et al., 2008; Stanger et al.,

2013), moral disengagement may play a more prominent role, if there is a dissonance between the individual's values and behavior that is not consistent with these values. That is, moral disengagement could interact with moral (anti-doping) values to predict doping behavior. It would be interesting to examine this issue. Finally, future research should identify antecedents and consequences of doping moral disengagement in the specific context of sport. Doping intentions and behavior could be investigated as two important consequences of doping moral disengagement (see Engelberg et al., 2014; Ntoumanis et al., 2014), while a potential factor that could influence moral disengagement may be moral skills training (see Melzer, Elbe, & Brand, 2010).

Conclusion

In conclusion, we have developed a new scale of moral disengagement that is specific to doping in sport, the MDDS. Our scale measures six mechanisms of moral disengagement as described by Bandura (1999), and in this research, it has shown very good levels of internal consistency and test-retest reliability. We also provided evidence for convergent, concurrent, discriminant, and predictive validity. Although it is important to remember that scale validation is a continuous process, we are confident that our scale can be used successfully to measure moral disengagement in doping in sport, thus enhancing the precision of the measurement of this construct in future research.

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Endnotes

[1] The meta-analyses of Ntoumanis et al (2014) reported the following effect sizes for moral disengagement and sportspersonship, the two variables, which the authors used to compute their "morality" variable: For moral disengagement: r = .30 with doping behavior, based on three studies and 2,358 participants, and r = .48 for doping intentions, based on three studies and 2,657 participants. For sportspersonship: r = - 0.15 for doping intention based on four studies and 3,159 participants, and r = -.10 for doping behavior, based on 3 studies and 1,963 participants.

[2]The scale was developed for use in a project funded by the World Anti-Doping Agency (WADA). This project focused on football due to the priority placed by WADA at the time of funding in understanding doping in team sports. Although doping is not as pervasive in football as in other sports, Waddington, Malcolm, Roderick, and Naik (2005) reported that 6% of the English professional football players indicated that they personally knew players who used performance-enhancing drugs, thus doping does occur in football.

Acknowledgements

We would like to thank WADA for funding the project "A cross-cultural approach to a cross-cultural issue: Psychosocial factors and doping in young athletes". Participants from the first sample of Study 1 were part of this project. The project was led by Maria Kavussanu in collaboration with Anne-Marie Elbe and Antonis Hatzigeorgiadis. We would also like to thank Emma Sounders for collecting data for this project as well as Jamie Rose, Lindsay Bayliss and Hayley Cockshott for their help with data collection of some of the data reported in this manuscript.

Appendix

Doping Scenario

It's the week before the most important competitive game (event) of your season. Your opponents are of similar ability to you. Lately, your performance has been below your best. You don't feel you have the necessary fitness for this competition, and you're concerned about how you'll perform. You mention this to a mate, who tells you that he/she uses a substance to enhance fitness. The substance is prohibited for use in sport according to the rules, but there's only a very small chance you'll be caught.

Table 1

Fit indices for all CFA models: Study 1

	x^2 / *df*	NNFI	CFI	SRMR	RMSEA
Sample 1 (*n* = 506)	34.49/9	.966	.980	.030	.075
Multisample analyses: Gender					
Males (*n* = 255)	22.64/9	.964	.978	.035	.078
Females (*n* = 251)	35.13/9	.934	.961	.085	.107
Unconstrained model	57.76/18	.949	.969	.036	.066
Constrained model	69.91/24	.955	.964	.056	.062
Sample 2 (*n* = 398)	75.72/9	.874	.924	.053	.137
Multisample analyses: Samples 1 and 2					
Unconstrained model	110.21/18	.928	.957	.043	.075
Constrained model	130.67/24	.938	.950	.096	.070

Table 2

Standardized Solutions for all CFA Models: Study 1

	Sample 1		Sample 1 - Males		Sample 1- Females		Sample 2	
	Loading	Error	Loading	Error	Loading	Error	Loading	Error
1. Doping is alright because it helps your team	.778	.628	.729	.685	.835	.550	.857	.515
2. Doping is just a way to “maximize your potential”	.678	.735	.641	.768	.722	.692	.596	.803
3. Compared to the illegal things people do in everyday life, doping in sport is not very serious	.604	.797	.605	.796	.591	.807	.528	.849
4. Players cannot be blamed for doping if their teammates pressure them to do it	.803	.597	.845	.534	.765	.644	.762	.648
5. A player should not be blamed for doping if everyone on the team is doing it	.646	.763	.675	.738	.614	.790	.597	.802
6. Doping does not really hurt anyone	.792	.610	.797	.604	.786	.618	.709	.705

Table 3

Descriptive Statistics for Each Scale Item for Samples 1(N = 506) and 2 (N = 398): Study 1

Moral disengagement mechanism	Item	Sample 1 *M* (*SD*)	Sample 2 *M* (*SD*)
1. Moral justification	Doping is alright because it helps your team	2.01 (1.30)	1.89 (1.20)
2. Euphemistic labeling	Doping is just a way to "maximize your potential"	2.58 (1.65)	2.49 (1.57)
3. Advantageous comparison	Compared to the illegal things people do in everyday life, doping in sport is not very serious	2.63 (1.68)	2.81 (1.52)
4. Displacement of responsibility	Players cannot be blamed for doping if their teammates pressure them to do it	2.16 (1.34)	2.07 (1.23)
5. Diffusion of responsibility	A player should not be blamed for doping if everyone on the team is doing it	2.56 (1.64)	2.27 (1.49)
6. Distortion of consequences	Doping does not really hurt anyone	2.45 (1.46)	2.23 (1.22)

Table 4

Descriptive Statistics, Alpha Coefficients, and Zero-Order Correlations with the MDDS: Study 2 (N = 232)

Variable	*M*	*SD*	α	*r*
MD sport	2.92	1.05	.82	.45 ***
Doping attitudes	2.41	1.05	.82	.75 ***
Moral identity	5.63	0.99	.83	−.33 ***
Antisocial opponent behavior	2.55	0.73	.86	.24 **
Antisocial teammate behavior	2.26	0.69	.82	.17 **
Task orientation	4.53	0.54	.85	−.13 *
Ego orientation	4.05	0.66	.86	.05
Doping temptation	2.17	1.34	.90	.56 ***
Gender	0.42	0.49	-	–.10
MD doping	2.12	0.89	.78	
Likelihood to use PEDs[1]	1.89	1.19	-	.47***

Note. MD = moral disengagement; response scale was 1-5 for antisocial opponent and teammate behaviors, and 1-7 for all other variables. Gender was coded as 0 = male and 1 = female. [1] This variable was measured in a subsample (n = 102) of athletes.

*p < .05; **p < .01; ***p < .001

Highlights

- We developed a measure of moral disengagement in doping for use in individual and team sport athletes.
- The instrument consists of six items, which tap six mechanisms of moral disengagement.
- The scale demonstrated measurement invariance across males and females.
- The pattern of relationships between moral disengagement and a variety of criterion variables provided evidence for convergent, concurrent, discriminant, and predictive validity of the scale.
- The scale exhibited very good internal consistency and test-retest reliability.