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Perfectionism and Doping Willingness in Athletes: The Mediating Role of Moral
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**Perfectionism and Doping Willingness in Athletes:
The Mediating Role of Moral Disengagement**

Gareth E. Jowett¹, Nicholas Stanger¹, Daniel J. Madigan², Laurie B. Patterson¹, Susan H.
Backhouse¹

¹Carnegie School of Sport, Leeds Beckett University, UK

²School of Science, Technology, and Health, York St. John University, UK

Author Note

Correspondence concerning this article should be addressed to Gareth E. Jowett, 118 Fairfax
Hall, Carnegie School of Sport, Headingley Campus, Leeds Beckett University, UK, LS6
3QS. Email: g.e.jowett@leedsbeckett.ac.uk

Abstract

1 Although trait perfectionism has been related to doping attitudes in athletes, research investigating
2 variables that could account for relationships between perfectionism and doping outcomes has
3 received scant attention. Consequently, the aim of the present study was to investigate whether
4 perfectionism was related to doping willingness directly and indirectly via moral disengagement.
5 We recruited a sample of 204 student athletes (M age = 19.12 years, SD = 1.17, n = 81 females -
6 39.70%) who completed measures of perfectionistic strivings, perfectionistic concerns, doping
7 moral disengagement, and doping willingness. Multiple regression analyses revealed a significant
8 positive relationship between perfectionistic concerns and doping willingness (β = .13, p < .05) and
9 a nonsignificant relationship between perfectionistic strivings and doping willingness (β = -.01, p >
10 .05). Moreover, bias-corrected bootstrapped indirect effects revealed that doping moral
11 disengagement mediated the relationship between perfectionistic concerns and doping willingness
12 (ab = .12; 95% CI = .02 to .21). The findings suggest that the relationship between perfectionistic
13 concerns and doping extends beyond attitudes – to doping willingness – and the propensity to
14 morally disengage explains why this is the case.

15 *Keywords:* performance enhancing substances; drugs; perfectionistic strivings, perfectionistic
16 concerns

17

Introduction

Doping is defined as the occurrence of one or more of the anti-doping rule violations set out in the World Anti-Doping Agency Code (2021). Violations include the use of a prohibited substance or method and tampering with any part of the doping control process. The prevalence of doping in competitive sport remains poorly understood, with rates ranging from 0 to 73%, but with most falling under 5% (Gleaves et al., 2021). With such variability, social science researchers have sought to understand how and why some athletes dope, while others abide by the rules (e.g., Nicholls et al., 2020). From this research, personality has been identified as a central consideration. This is because certain personality traits appear to shape athletes' attitudes toward doping. For example, the Dark Triad (Machiavellianism, narcissism, and psychopathy) is associated with more favourable attitudes towards doping (Nicholls et al., 2020). These findings suggest that some athletes, by virtue of their personality traits, may be more likely to dope. One key personality trait that may increase athletes' propensity to dope is perfectionism. The purpose of the present study was to examine the relationships between multidimensional perfectionism and doping, and test a potential mediator of these relationships, namely moral disengagement.

Trait Perfectionism and Doping

Perfectionism is a multidimensional personality trait that comprises excessively high personal standards and overly critical evaluations of behaviour (Frost et al., 1990). There are numerous models and measures of perfectionism (Hill, 2016). The two-factor model of perfectionism allows the integration and comparison of these approaches (Hill, 2016). This model proposes that two higher-order dimensions capture the complexity of perfectionism. The first of these dimensions - perfectionistic strivings - comprises the excessively high personal standards and self-oriented elements of perfectionism. The second dimension - perfectionistic concerns - comprises the overly critical evaluations, negative reactions to imperfection, and socially-prescribed elements of perfectionism.

1 Perfectionism could underpin doping in sport. This is due to perfectionistic strivings and
2 perfectionistic concerns both having the potential to result in “dark striving” (Flett & Hewitt, 2014).
3 That is, dimensions of perfectionism can drive a win-at-all-costs mentality, that could manifest in a
4 will to do whatever is necessary to win. For perfectionistic strivings, the focus for this drive is on
5 self-enhancement, that is the pursuit of personal improvement and perfection (Hardwick et al.,
6 2022). Therefore, the dark side of perfectionistic strivings may only manifest when adverse
7 circumstances interrupt the personal pursuit of perfection (e.g., injury). By contrast, perfectionistic
8 concerns are driven by an enduring and fragile form of self-preservation based on futile attempts to
9 avoid imperfection. Therefore, while doping is a potential outcome of the perfectionistic drive of
10 both dimensions (Flett & Hewitt, 2014), the dark striving of perfectionistic concerns may be
11 relatively more salient in relation to doping, due to the desperation which characterizes this
12 dimension. In support of this position, a meta-analysis by Madigan et al. (2020) showed that
13 perfectionistic concerns (also known as evaluative concerns perfectionism) were a significant
14 positive correlate of more favourable attitudes towards doping, especially when controlling for the
15 overlap between perfectionistic concerns and perfectionistic strivings. By contrast, the link between
16 perfectionistic strivings (also known as personal standards perfectionism) and doping attitudes is
17 typically non-significant (Madigan et al., 2020).

18 It is worth noting that previous research investigating the trait perfectionism-doping
19 relationship has focused on attitudes toward doping (see Madigan et al., 2020). Another proxy
20 indicator of doping behaviour is doping willingness, which reflects “one’s openness to take a
21 banned substance in certain risk conducive situations or contexts even if there is no prior intention
22 to do so” (Stanger et al., 2020, p.1530). Examples of risk conducive situations or contexts for
23 doping include being injured and needing to recover quickly, under-performing or struggling to
24 perform as well as other competitors, and perceiving that other competitors are taking banned
25 substances (Stanger et al., 2020; Whitaker et al., 2014, 2017). However, researchers have yet to

1 examine how perfectionism is associated with willingness to dope under risk-conductive
2 circumstances (viz. doping willingness), and importantly not yet examined variables that could
3 mediate this relationship. One potential candidate is moral disengagement.

4 **Perfectionism, Moral Disengagement and Doping Willingness**

5 How athletes rationalize their (dark) behaviours may be helpful in explaining the
6 perfectionism-doping willingness relationship. Bandura (1999) explains that individuals refrain
7 from acting in ways that violate their moral standards because they expect to experience self-
8 reproof (e.g., guilt and shame). However, individuals can still commit transgressive behaviours that
9 can run counter to their moral standards without experiencing the typical (anticipated) negative
10 emotional consequences via the use of moral disengagement (Bandura, 1999).

11 Moral disengagement refers to psychosocial mechanisms (e.g., moral justification,
12 displacement of responsibility) that make transgressive acts more likely by cognitively
13 restructuring or distorting the consequences of the behaviour, or by reducing responsibility for the
14 act (Bandura, 1999). Researchers have found that moral disengagement towards doping is a
15 positive correlate of self-reported doping, doping likelihood and doping susceptibility (e.g.,
16 Boardley et al., 2017; Kavussanu & Ring, 2017; Stanger & Backhouse, 2020). Athletes higher in
17 perfectionism (particularly perfectionistic concerns) may be more likely to disengage from their
18 moral standards in the pursuit of attaining excessively high performance standards, and in so doing,
19 be more likely to justify their willingness to dope. For example, perfectionistic concerns may prime
20 an athlete to displace responsibility for doping onto a coach who demands perfection and asks the
21 athlete to take a banned substance. Recent findings outside of sport provide evidence for moral
22 disengagement as a mediator between moral perfectionism and transgressive behaviour for
23 personal gain in undergraduate students (e.g., Machiavellian behaviour; Abdollahi et al., 2021).
24 However, researchers have yet to examine this possibility in sport with a focus on trait
25 perfectionism and doping-related outcomes.

1 **The Present Study**

2 The aims of the present study were to examine the relationships between dimensions of
3 perfectionism and doping willingness; and whether doping moral disengagement mediated these
4 relationships. Based on previous research (e.g., Madigan et al., 2020) and theory (e.g., Bandura,
5 1999; Flett & Hewitt, 2016), we expected perfectionistic concerns to be positively related to doping
6 willingness directly (particularly when controlling for perfectionistic strivings) and indirectly via
7 moral disengagement. By contrast, given the mixed findings concerning links between
8 perfectionistic strivings and doping attitudes in previous research (e.g., Madigan et al., 2020), we
9 expected the relationship between perfectionistic strivings with doping willingness and moral
10 disengagement to be non-significant.

11 **Method**

12 **Participants and Procedure**

13 A sample of 204 student athletes: 118 (57.84%) males, 81 (39.70%) females, and 5 (2.45%)
14 undisclosed (mean age = 19.12 years; $SD = 1.17$) participated in the present study. The minimum
15 sample size required to detect small-to-medium effects was $n = 148$ (α path = .26, β path = .26, $\alpha =$
16 .05, power = .80) for bias-corrected bootstrap test of mediation (Fritz & MacKinnon, 2007). As the specific
17 relationships in our study had not been tested previously, we based the a priori power assessment on the
18 midpoint (.26) of the effects with similar variables reported previously (e.g., perfectionism and doping
19 attitudes $r^+ = .21$, Madigan et al., 2020; moral disengagement and doping willingness $r = .31$; Stanger et al.,
20 2020).

21 The athletes competed across different levels of sport, including club ($n = 131$, 64.22%),
22 county ($n = 18$, 8.82%), regional ($n = 23$, 11.28%), national ($n = 18$, 8.82%) and international ($n =$
23 12, 5.88%) levels. Athletes had participated in their sport for an average of 9.07 ($SD = 3.90$) years.
24 Following ethical approval by the lead author's institution, participants were invited to voluntarily
25 participate in the research at the end of lectures or seminars. After reading an information sheet,
26 participants completed and signed an informed consent form and were then provided with an

1 anonymous paper and pencil questionnaire comprising the measures described below. On
2 completion, participants inserted their consent form and questionnaire in separate envelopes and
3 handed these directly back to the researcher, who thanked them for their participation and securely
4 stored these in separate locations to further maintain participant anonymity.

5 **Measures**

6 **Trait perfectionism.** We used four subscales from the Sport Multidimensional
7 Perfectionism Scale (SMPS-2; Gotwals & Dunn, 2009) to measure perfectionism. To measure
8 perfectionistic strivings, we combined two indicators: the 7-item subscale capturing personal
9 standards (e.g., “I have extremely high goals for myself in my sport”) and the 6-item subscale
10 capturing organisation (e.g., “On the day of competition, I have a routine that I try to follow”). To
11 measure perfectionistic concerns, we also used two indicators, the 8-item subscale capturing
12 concern over mistakes (“People will probably think less of me if I make mistakes in competition”) and the 6-item subscale capturing doubts about action (e.g., “I rarely feel that my training fully
13 prepares me for competition”). Participants were asked to indicate to what degree each statement
14 characterised their attitudes in their sport, responding on a scale from 1 (*strongly disagree*) to 5
15 (*strongly agree*). The four subscales have demonstrated validity and reliability ($\alpha \geq .73$) in previous
16 studies (e.g., Dunn et al., 2016).

18 **Moral disengagement.** We used the moral disengagement in doping scale (MDDS;
19 Kavussanu et al., 2016) to measure athletes’ doping moral disengagement. The MDDS comprises 6
20 items (e.g., “doping is just a way to ‘maximise your potential’”). Participants responded on a scale
21 from 1 (*strongly disagree*) to 7 (*strongly agree*). The MDDS has demonstrated validity and
22 reliability ($\alpha \geq .79$) in previous research (e.g., Kavussanu et al., 2016).

23 **Doping willingness.** We used the doping willingness in sport scale (DWiSS; Stanger et al.,
24 2020) to measure doping willingness. The DWiSS includes 8-items capturing doping willingness,
25 using the stem: “Would you be willing to use a banned substance if... (e.g., “You suffered an

injury and needed to recover quickly”). Responses were scored using a 5-point Likert scale ranging from 1 (*not at all willing*) to 5 (*extremely willing*). There is evidence for the validity and reliability ($\alpha \geq .92$) of the DWiSS (Stanger et al., 2020).

Analytic Strategy

First, mean scores were calculated for each measure, and aligned with Tabachnick & Fidell (2007), the data was screened for univariate (i.e., cases with an extreme score on one variable) and multivariate outliers (i.e., cases with an unusual combination of scores on two or more variables). Second, we used multiple regression with robust estimators in Mplus to examine the relationships between perfectionism and doping willingness. Regression provided the independent effects of perfectionistic strivings and perfectionistic concerns. Next, path modelling in Mplus was used to test our hypothesized mediational model. The model was tested using robust maximum likelihood estimation, which is robust to deviations from normality. In order to evaluate model fit, the following absolute and relative fit indices were chosen: Comparative Fit Index (CFI), Tucker-Lewis Index (TLI; this is also known as non-normed fit index, NNFI), Standardised Root Mean square Residual (SRMR), and the Root Mean Square Error of Approximation (RMSEA; see Marsh, Hau & Wen, 2004). In line with Marsh et al. (2004), the following conventional criteria were used to assess the model for adequate (CFI and TLI > .90, SRMR < .10, RMSEA < .10) and good fit (TLI and CFI > .95, SRMR < .08, RMSEA < .08). Finally, to examine mediation, bias-corrected bootstrapping (1,000 samples) was used to estimate indirect effects (Rucker et al., 2011). The indirect effects are significant ($p < .05$) if the 95% Confidence Interval (CI) does not contain zero (Rucker et al., 2011).

Results

Preliminary Analysis, Descriptive Statistics and Bivariate Correlations

Two univariate outliers ($Z > \pm 3.29$) and one multivariate outlier (Mahalanobis distance larger than the critical value of $\chi^2 [4] = 18.47, p < 0.001$) were identified and were subsequently

1 removed from further analyses. Then, Cronbach's alpha was calculated for all subscales, of which
2 all were acceptable ($> .70$; see Table 1). The final sample size was $N = 201$. Means, standard
3 deviations and bivariate correlations can be found in Table 1.

4 **Multiple Regression**

5 In the multiple regression model, perfectionism dimensions explained 2% of the variance
6 in doping willingness. When controlling for the relationship between perfectionistic strivings and
7 perfectionistic concerns, perfectionistic concerns had a small positive and significant relationship
8 with doping willingness ($\beta = .13$), whereas perfectionistic strivings had a nonsignificant
9 relationship with doping willingness ($\beta = -.01$).

10 **Path Model**

11 The hypothesised model provided good fit to the data ($\chi^2(2) = 1.33, p > .05, CFI = 1.00,$
12 $TLI = 1.01, RMSEA = .00, SRMR = .02$). The size and significance of standardized model paths
13 can be found in Figure 1. The model showed that perfectionistic concerns was a positive predictor
14 of moral disengagement, while perfectionistic strivings was a nonsignificant predictor of moral
15 disengagement. Moral disengagement was a positive predictor of doping willingness.¹

16 **Indirect Effects**

17 A significant positive indirect effect was found for the relationship between perfectionistic
18 concerns and doping willingness via moral disengagement (indirect effect = .12; 95% CI = .02 to
19 .21). However, the indirect effect for the relationship between perfectionistic strivings and doping
20 willingness via moral disengagement was nonsignificant (indirect effect = -.05; 95% CI = -.14 to

¹ We ran a path model that included the direct effects of perfectionism on doping willingness. Neither path was significant (perfectionistic strivings \rightarrow doping willingness = .04, $p > .05$; perfectionistic concerns \rightarrow doping willingness = .02, $p > .05$). Due to the direct effects model having 0 degrees of freedom we were not able to test fit.

1 .05).

2 **Discussion**

3 The aims of the present study were to examine whether multidimensional perfectionism was
4 related to doping willingness directly and indirectly via moral disengagement. In partial support of
5 the hypotheses, although the bivariate correlation was nonsignificant, perfectionistic concerns was
6 positively associated with doping willingness when controlling for perfectionistic strivings in the
7 regression model. Moreover, moral disengagement mediated the relationship between
8 perfectionistic concerns and doping willingness. In line with the hypotheses, perfectionistic
9 strivings was not associated with doping willingness nor moral disengagement.

10 **Perfectionism and Doping Willingness**

11 The findings in the present research align with previous work illustrating that perfectionistic
12 concerns is important in relation to doping, whereas, perfectionistic strivings does not appear to be
13 linked (e.g., Madigan et al., 2020). Accordingly, it appears that perfectionistic concerns may be the
14 catalyst for dark striving and the foundation for perfectionistic reactivity (Flett & Hewitt, 2016), in
15 the form of doping willingness, that could serve as the basis for doping behaviour. As such,
16 perfectionistic concerns would appear most relevant in future work and interventions that consider
17 the role of perfectionism in understanding and preventing doping in sport.

18 It is notable that the significant positive relationship between perfectionistic concerns and
19 doping willingness only emerged after controlling for the overlap between perfectionism
20 dimensions, as evidenced in the multiple regression. By contrast, the bivariate correlation between
21 perfectionistic concerns and doping willingness was nonsignificant. Differences in the magnitude
22 and significance of associations between perfectionism dimensions and behavioral outcomes are
23 common, depending on whether or not the overlap between perfectionistic concerns and
24 perfectionistic strivings is controlled (Hill, 2014). Indeed, in recent studies, the relationships
25 between perfectionistic concerns and doping-related outcomes are typically stronger, when the

1 overlap between perfectionism dimensions is controlled (e.g., Madigan et al., 2020). Together,
2 these findings highlight the importance of reporting analyses in which the overlap between
3 perfectionistic dimensions is free to vary as well as controlled, when examining the relationships
4 between perfectionism and doping.

5 **The Role of Moral Disengagement**

6 Our findings provide the first insights into variables that account for why perfectionism is
7 related to athletes' willingness to dope. Specifically, perfectionistic concerns was positively linked
8 with moral disengagement, which in turn, was positively linked with doping willingness. In accord,
9 it appears that athletes higher in perfectionistic concerns, so as to avoid self-reproof, are more likely
10 to morally disengage to justify doping, which in turn increases their willingness to engage in
11 doping behaviours. Educational interventions seeking to moderate the consequences of
12 perfectionistic concerns could therefore incorporate strategies targeted at reducing athletes'
13 propensity to morally disengage.

14 **Limitations and Future Research**

15 Firstly, our sample included student athletes who competed across a range of different
16 sports and levels of competition. Given the different prevalence levels of doping in different sports,
17 and the varied demands of non-elite, sub-elite and elite sport, future work may benefit from more
18 targeted samples to identify when perfectionism places athletes most at risk of doping. Second,
19 while cross-sectional studies are required to test the initial plausibility of hypothesised
20 relationships, longitudinal studies provide stronger tests of mediation, and should therefore be a
21 priority of future research in this area. Lastly, there was also a possibility of socially desirable
22 responding in relation to completion of items pertaining to socially stigmatised behaviours, such as
23 doping. While we didn't formally assess social desirability, the mean scores for moral
24 disengagement and doping willingness in our study were low. Broader evidence of socially
25 desirable responding is equivocal for doping moral disengagement (Kavussanu et al., 2016) and

1 doping willingness (Stanger et al., 2020). However, further work may wish to control for the
2 possibility of such biased responding, and in doing so determine whether the relationships found in
3 the present research are strengthened. Finally, other aspects of perfectionism (e.g., moral
4 perfectionism, Ring et al., 2019) also appear to be relevant for doping related outcomes, and
5 therefore, warrant further investigation.

6 **Conclusion**

7 Our findings provide the first evidence that perfectionism is related to doping willingness.
8 and perfectionistic concerns largely accounts for this association, but only when the overlap with
9 perfectionistic strivings is controlled. In addition, perfectionistic concerns is associated with higher
10 propensity to morally disengage, which could help explain why this is the case.

11

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Table 1. *Descriptive Statistics, Bivariate Correlations and Cronbach's Alphas,*

Variable	1	2	3	4
1. Perfectionistic strivings	-			
2. Perfectionistic concerns	.39***	-		
3. Moral disengagement	-.01	.14*	-	
4. Doping willingness	.05	.13	.68***	-
Mean	3.28	2.70	1.83	1.67
SD	0.68	0.62	0.83	0.81
Scale	1-5	1-5	1-7	1-5
α	.88	.85	.75	.94

Note. $n = 201$.

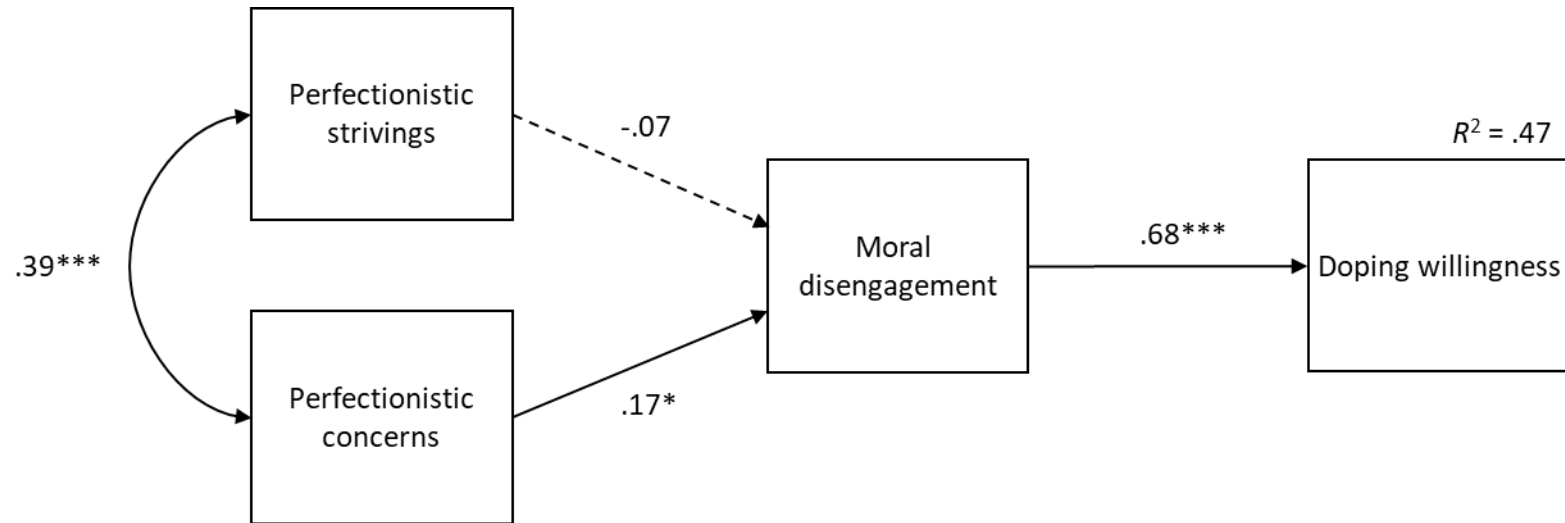


Figure 1. Empirical mediation model of perfectionism, moral disengagement, and doping willingness ($N = 201$). * $p < .05$. *** $p < .001$ (Dashed path = nonsignificant.).