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Perfectionism and Attitudes Towards Doping in Athletes: The Mediating Role of Achievement Goal Orientations

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Abstract

Perfectionism predicts attitudes towards doping in athletes. It is currently unclear, however, why this is the case. To help shed light on this particular issue, in the present study we provided a first examination of whether achievement goal orientations explain (mediate) the relationship between perfectionism and attitudes towards doping. A sample of 173 athletes (mean age 24.4 years) completed measures of perfectionistic strivings, perfectionistic concerns, ego-orientation, task-orientation, and attitudes towards doping. Based on bias-corrected bootstrapping of indirect effects, ego-orientation mediated the positive relationships between perfectionistic strivings and attitudes towards doping and perfectionistic concerns and attitudes towards doping. Task-orientation mediated the negative relationship between perfectionistic strivings and attitudes towards doping. In this regard, athletes high in either dimension of perfectionism have more favourable attitudes because of a tendency to define success as outperforming others. However, those athletes high in perfectionistic strivings may simultaneously hold less favourable attitudes because they also have a tendency to define success as improving their own performance.

Keywords: performance enhancing substances; drugs; addiction; perfectionistic strivings, perfectionistic concerns

Introduction

While not ubiquitous, data from both the World Anti-Doping Agency (WADA, 2015) and social science research suggests that doping can occur across many sports, levels, and ages (e.g., Ulrich et al., 2018). To understand why this is the case, substantial effort has been expended in order to understand why, despite numerous detrimental consequences, athletes continue to break the rules by engaging in doping behaviours (Ntoumanis, Ng, Barkoukis, & Backhouse, 2014). In this regard, recent research has highlighted that facets of an athlete's personality may be important (Bae et al., 2017; Bahrami et al., 2014; Madigan et al., 2016, 2020; Nicholls et al., 2018, 2020). One personality factor that has been implicated in an athlete's decision of whether to dope or not is perfectionism (e.g., Flett & Hewitt, 2016). In the present study, we aimed to extend previous research by examining whether achievement goal orientations may help explain the relationship between perfectionism and attitudes towards doping.

Doping

Doping refers to the use of banned substances or methods to enhance performance (WADA, 2015). There are significant health risks that accompany the use of banned substances. For example, unsupervised anabolic steroid use may cause liver damage, increase the possibility of heart failure, and increase the risk of suicide (e.g., Lindqvist et al., 2013). It is hardly surprising, then, that such substances are banned. Nonetheless, research indicates that a significant proportion of athletes engage in doping (e.g., Ulrich et al., 2018). In order to mitigate the deleterious consequences and prevalence of doping, it is imperative that athletes are educated about its risks through targeted interventions (see e.g., Backhouse, Patterson, & McKenna, 2012).

Work has begun to examine the effectiveness of educational interventions, which have recently been emphasised by WADA as promising means to reduce doping prevalence (e.g.,

2021 International Standards of Education). In this regard, there are several characteristics that anti-doping education could emphasise (see e.g., Ntoumanis et al., 2014). Of these factors, the majority of research has focused on attitudes towards doping. At its broadest, an attitude represents an evaluation of an object or thought (Bohner & Dickel, 2011). Attitudes towards doping, therefore, represent evaluative judgements about the use of banned substances or methods for performance enhancement (Petróczi & Aidman, 2009). Favourable attitudes towards doping are formed when individuals view doping as necessary and socially acceptable (Petróczi & Aidman, 2009). A growing body of evidence supports the importance of attitudes. For example, a recent meta-analysis identified them as one of the most important predictors of intentions to dope ($\beta = .31$) and actual doping behavior ($\beta = .17$; Ntoumanis et al., 2014). Understanding how and why athletes' attitudes become more favourable is therefore an important and relevant area for research to address.

Numerous models have been proposed to help explain the development of favourable attitudes towards doping (see Barkoukis, Lazarus, & Tsorbatzoudis, 2015 for a review). Several of these models posit that an athlete's personality will be integral to forming doping-related attitudes. Although research on personality and doping is in its infancy (to date, only ten studies have been conducted; see Madigan et al., 2020), there is strong reason to believe that certain traits may be important in understanding and explaining doping in athletes. For example, there is evidence to suggest that the Dark Triad (Machiavellianism, narcissism, and psychopathy) predisposes athletes to more favourable attitudes towards doping (Nicholls et al., 2017; 2020). It appears therefore that some individuals by virtue of their personality traits may be more comfortable adopting questionable behaviours in the pursuit of victory and therefore view doping in a favourable manner.

Perfectionism and Doping

As perfectionism may imbue extreme levels of competitiveness it may be another

important personality factor involved in the formation of favourable attitudes towards doping. Perfectionism is broadly defined as a multidimensional personality trait that is characterised by excessively high personal standards and overly critical evaluations of behaviour (Frost, Marten, Lahart, & Rosenblate, 1990). A multitude of models and measures of perfectionism exist (Stoeber, 2018). A useful heuristic that allows comparisons across these models and measures is the two-factor model of perfectionism (Stoeber & Otto, 2006). This model is derived from factor analytic studies and proposes that two higher-order dimensions capture the complexity of perfectionism. The first of these dimensions is labelled perfectionistic strivings and comprises the excessively high personal standards and self-oriented elements of perfectionism. The second dimension is labelled perfectionistic concerns and comprises the overly critical evaluations, negative reactions to imperfection, and socially-prescribed elements of perfectionism.

Perfectionism could ultimately lead to doping behaviours. The theoretical propositions offered by Flett and Hewitt (2016) are highly relevant to this notion. Specifically, these authors suggest that both dimensions of perfectionism could result in "dark striving" (Flett & Hewitt, 2014). That is, because perfectionism instils a win-at-all-costs mentality, athletes higher in perfectionism will do whatever they can to win. This may include engaging in illegal and unacceptable behaviours such as doping (Flett & Hewitt, 2014). This may be especially the case when a perfectionistic athlete is placed under extreme pressures, either from themselves or others. In such circumstances, they may use banned performance enhancing substances as a means to alleviate and deal with these pressures. Therefore, we may expect perfectionistic athletes to have more favourable attitudes towards doping.

Several studies have examined the relationships between perfectionism and attitudes towards doping (e.g., Bae, Yoon, Kang, & Kim, 2017; Bahrami, Yousefi, Kaviani, & Ariapooran, 2014; Zucchetti, Candela, & Villosio, 2015). A recent meta-analysis of this

research provided mixed support for the propositions of dark striving. In particular, perfectionistic concerns emerged as a significant positive predictor of attitudes towards doping (k = 5; Madigan et al., 2020). However, contrary to the notion of dark striving, perfectionistic strivings emerged as a nonsignificant predictor of attitudes towards doping. These findings led Madigan and colleagues to propose that in context of the two higher-order dimensions of perfectionism, dark striving is more closely characterised by a "dark demand" placed on athletes by perfectionistic concerns, and it is this dimension that provides the main impetus for doping.

One way to help further understand the perfectionism-attitudes towards doping relationship is to examine factors that may explain why the two are related. This approach may also provide additional insight on why it appears to be perfectionistic concerns that are more relevant to doping. It would also provide an opportunity to examine whether there are other indirect mechanisms by which perfectionistic strivings does influence an athlete's decision to dope. Such tests, then, would help clarify whether it is only perfectionistic concerns (via a dark demand) or both dimensions (via dark striving) that are important. In the present study, we begin a line of research with the aim of answering this question. In doing so, we adopt achievement goal theory as a theoretical framework for understanding the two possibilities.

Achievement Goal Theory and Doping

Achievement goal theory posits that in achievement domains, such as sport, an individuals' main goal is to demonstrate competence (Nicholls, 1989). From this perspective, the way in which individuals construe their competence has implications for their motives, beliefs, and performance in sport. Individuals can be predisposed to view their competence in two ways. Individuals can view their competence in a task-oriented manner (task-orientation), whereby they aim to display their competence through self-assessment and a

desire to improve their own performance (Nicholls, 1989). They may also view it in an ego-oriented manner (ego-orientation), that is, they aim to display competence by outperforming others, winning, and by displaying their superior performance to others in their social surroundings (Nicholls, 1989). Importantly, these two views are considered to be orthogonal to one another and so both views can be present in individuals to varying degrees.

Goal orientations have been found to be important for numerous outcomes in sport, and may also be important in relation to doping. Task-oriented athletes practice sport for internal purposes (e.g., self-esteem, being physically active, and developing mastery). This can result in them experiencing more positive feelings and cognitions when engaging in sport. Over time, these experiences may result in positive beliefs about sport and, consequently, less favourable attitudes towards doping. This latter point has both indirect (e.g., a positive association between task orientation and prosocial behaviour; Kavussanu & Ntoumanis, 2003; Kavussanu, 2006) and direct support (e.g., a negative meta-analytic association between task orientation and attitude towards doping; Ntoumanis et al., 2014). Therefore, it is unlikely that a task orientation is implicated in cheating behaviours like doping but instead may be protective in this regard.

Contrary to a task orientation, an ego orientation will likely be more central to doping. This is because ego-oriented athletes believe that they should perform better than others and, in most circumstances, can do so with less effort. When faced with challenges (e.g., competing against individuals of a greater ability), ego-oriented athletes may reach for whatever they can (e.g., banned substances) to ensure they can beat other people (e.g., Barkoukis et al., 2013). Indirect (e.g., a positive association between ego orientation and anti-social behaviour; Sage, Kavussanu & Duda, 2006) and direct evidence supports this suggestion (e.g., a positive meta-analytic association between task orientation and attitude towards doping; Ntoumanis et al., 2014). As such, the preoccupation with being the best may

necessitate winning by any means, fair or otherwise (Nicholls, 1989).

Perfectionism, Achievement Goal Orientations, and Doping

Conceptually, perfectionism is linked to achievement goal orientations (e.g., Stoeber, Damian, & Madigan, 2018). Both provide the cognitive basis for the situational construction of success and failure which, in turn, acts as the purpose for achievement-related behavior (cf. Kaplan & Maehr, 2007). In this regard, high personal standards and a self-oriented striving for perfection may manifest in the belief that one should always demonstrate one's ability relative to past personal performance, as well as in comparison to others (higher task and higher ego orientations). Conversely, concerns over mistakes and negative reactions to imperfection (and external pressures to be perfect) may manifest solely in the belief that one should always demonstrate one's ability in comparison to others (higher ego orientation). In this manner, athletes high in either perfectionistic strivings or perfectionistic concerns (or high in both) may be more concerned about beating others than trying to master a task.

Many studies have examined the relationships between perfectionism and achievement goal orientations (e.g., Dunn, Dunn & Syrotuik, 2002; Hall, Kerr & Matthews, 1998; Ommundsen et al., 2005). A recent meta-analysis of these studies largely supports the aforementioned conceptual relationships. Specifically, perfectionistic strivings showed a small-to-medium positive relationship with both task and ego orientation (k = 7; Hill et al., 2018). Perfectionistic concerns showed a small-to-medium positive relationship with ego orientation and also a small negative relationship with task orientation (k = 8). Based on these findings, it would appear that achievement goal theory may have utility in relation to explaining the perfectionism-doping relationship.

We believe that goal orientations may help us explain the perfectionism-attitudes towards doping relationship and resolve the aforementioned issues. Particularly, an ego-orientation may, at least in part, account for the dark demand of perfectionistic concerns. In

addition, both a task and ego orientation may help reconcile previous inconclusive findings in regard to dark striving underpinned by perfectionistic strivings. This is because perfectionistic strivings is guided by a "dual" motivation that simultaneously *pushes* athletes towards doping (ego-orientation) and *pulls* athletes away from doping (task-orientation). Importantly, however, these paths and hypothesized relationships have yet to be empirically tested.

The Present Study

The aim of the present study was to examine whether achievement goal orientations mediate the relationship between perfectionism and athletes' attitudes towards doping. In this regard, we had several expectations (see Figure 1). Overall, we expected a task orientation and an ego orientation to mediate the relationship between perfectionistic strivings and attitudes towards doping, and we expected only an ego orientation to mediate the relationship between perfectionistic concerns and attitudes towards doping.

Method

Participants and Procedure

A sample of 173 athletes (125 men, 48 women; mean age = 23.34 years; *SD* = 6.76) participated in the present study. Athletes were involved in a range of sports, which included; football (*n* = 82), rugby league (*n* = 26), American football (*n* = 17), and several other sports (e.g., netball, tennis; *n* = 45). These athletes competed across different levels of their sport, including; recreational (*n* = 67), regional (*n* = 68), national (*n* = 36) and international levels (*n* = 1). Athletes trained on average 7.97 hours (*SD* = 5.36) per week. A university ethics committee approved the study. Participants were approached at training and invited to participate in the study. Informed consent was obtained from all participants.

Measures

Perfectionism. To measure perfectionism, we utilised a multi-measure approach

(Stoeber & Madigan, 2016) and employed four subscales from two multidimensional measures of perfectionism in sport: the Sport Multidimensional Perfectionism Scale (SMPS; Dunn et al., 2006) and the Multidimensional Inventory of Perfectionism in Sport (MIPS; Stoeber, Otto, Pescheck, Becker, & Stoll, 2007). To measure perfectionistic strivings, we used two indicators: the 7-item SMPS subscale capturing personal standards (e.g. “I have extremely high goals for myself in my sport”) and the 5-item MIPS subscale capturing striving for perfection (“I strive to be as perfect as possible”), and then standardised the scale scores before combining them to measure personal standards perfectionism (cf. Madigan, Stoeber, & Passfield, 2015). To measure perfectionistic concerns we also used two indicators, the 8-item SMPS subscale capturing concern over mistakes (“People will probably think less of me if I make mistakes in competition”) and the 5-item MIPS subscale capturing negative reactions to imperfection (“I feel extremely stressed if everything does not go perfectly”), and again standardised the scale scores before combining them to measure evaluative concerns perfectionism. The four subscales have demonstrated reliability and validity in previous studies (e.g., Madigan, 2016; Stoeber, Stoll, Salmi, & Tiikkaja, 2009). In addition, both are reliable and valid indicators of perfectionistic strivings and perfectionistic concerns (e.g., Gotwals et al., 2012; Stoeber & Madigan, 2016). Participants were asked to indicate to what degree each statement characterised their attitudes in their sport responding on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*).

Achievement Goal Orientations. The Task and Ego Orientation in Sport Questionnaire (TEOSQ; Chi & Duda, 1995) was used to measure athletes’ task and ego orientations. The TEOSQ comprises 13 items with six ego-oriented items (e.g., "I can do better than my friends"), and seven task-oriented items (e.g., "I learn a new skill and it makes me want to practice more"). The two subscales have demonstrated validity and reliability in previous research (Chi & Duda, 1995; Li et al., 1998). Participants responded on a scale

from 1 (*strongly disagree*) to 5 (*strongly agree*).

Attitudes Towards Doping. To measure attitudes towards doping, we used the Short-Performance Enhancement Attitude Scale (Nicholls, Madigan, & Levy, 2017; Petróczi & Aidman, 2009), which comprises 8 items capturing attitudes towards doping (e.g. "Doping is necessary to be competitive"). The Short-Performance Enhancement Attitude Scale has demonstrated validity and reliability in previous studies (Nicholls et al., 2017; Vargo et al., 2015). Each item was preceded by the phrase "My opinion regarding sport in general is that ...", and participants responded on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*).[1]

Analytic Strategy

The data were analysed using the following steps. First, following Tabachnick & Fidell (2007), the data was screened for missing values, out of range values and for univariate and multivariate outliers. Second, in order to examine the relationships between perfectionism, achievement goals and attitudes towards doping, descriptive statistics and correlations were calculated for all variables. Next, structural equation modelling with manifest variables in Mplus was used to test the hypothesised model (see Figure 1). The model was tested using robust maximum likelihood estimation. This analysis was accompanied by the mean-adjusted chi-square test statistic, which is robust to test 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),

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[1]We also ran confirmatory factor analyses on all scales. In line with previous studies, the majority of fit criteria were indicative of acceptable fit (Perfectionism: χ^2 (269) = 472.86, RMSEA = .07, CFI = .90, SRMR = .07; Achievement Goals: χ^2 (65) = 152.81, CFI = .86, RMSEA = .09, SRMR = .08; Doping Attitudes: χ^2 (20) = 44.07, RMSEA = .08, CFI = .91, SRMR = .05).

Standardised Root Mean square Residual (SRMR), and the Root Mean Square Error of Approximation (RMSEA; see Marsh, Hau & Wen, 2004). In line with Marsh, Hau & Wen (2004), the following conventional criteria were used in order 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 (5000 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

First, because few items were missing ($i = 24$), the missing values were replaced with the mean value of the non-missing items from each individual case (Graham, Cumsile & Elekfisk, 2003). The data was then screened for univariate and multivariate outliers (Tabachnick & Fidell, 2007). One multivariate outlier was identified and removed (Mahalanobis distance larger than the critical value of χ^2 [5] = 20.52, $p < 0.001$). In addition, Cronbach's alpha was calculated for all subscales, of which all were acceptable (> .70; see Table 1).

Descriptive Statistics and Bivariate Correlations

Means, standard deviations, and correlations can be found in Table 1. Perfectionistic concerns had a small, positive and significant correlation with attitudes towards doping and a medium, positive and significant correlation with ego orientation. Perfectionistic strivings had a small, positive and significant correlation with task orientation and a moderate, positive and significant correlation with ego orientation. Finally, ego orientation also had a small,

positive and significant correlation with attitudes towards doping.[2]

Structural Equation Modelling with Manifest Variables

The hypothesised model provided an adequate fit to the data (χ^2 (2) = 1.52, $p > .40$, CFI = 1.00, TLI = 1.00, RMSEA = .00, SRMR = .01). The size and significance of standardized model paths can be found in Figure 2. The model showed that perfectionistic strivings was a positive predictor of both ego and task orientations. Perfectionistic concerns was a positive predictor of ego orientation. Task orientation was a negative predictor of attitudes towards doping, whereas ego orientation was a positive predictor of attitudes towards doping.[3]

Indirect Effects

In the mediational model, perfectionistic strivings had a negative indirect effect on attitudes towards doping via task-orientation (indirect effect = –.05; 95% CI = –.13 to –.01). Perfectionistic strivings had a positive indirect effect via ego-orientation (indirect effect = .06; 95% CI = .01 to .13). Perfectionistic concerns had a positive indirect effect on attitudes towards doping via ego-orientation (indirect effect = .08; 95% CI = .02 to .16).

Discussion

The aim of the present study was to provide a first examination of the mediating role of achievement goal orientations in the relationship between perfectionism and attitudes towards doping. In line with our expectations, an ego-orientation mediated the positive relationships between perfectionistic strivings and attitudes towards doping and

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[2]We also conducted a continuously cumulating meta-analysis of these relationships (see Madigan et al., 2020) which can be found in the Supplementary Material.

[3]A model including direct pathways from perfectionism dimensions to attitudes towards doping was also tested. Both direct pathways were nonsignificant.

perfectionistic concerns and attitudes towards doping. Task-orientation mediated the negative relationship between perfectionistic strivings and attitudes towards doping.

Perfectionism and Doping

The findings here echo previous work illustrating that perfectionism is important in relation to athletes' attitudes towards doping. In this regard, the findings are congruent with recent meta-analytic evidence in highlighting that this is particularly the case for perfectionistic concerns (Madigan et al., 2020). These findings are also consistent with the broader literature showing that other personality traits are important for doping (e.g., Dark Triad; Nicholls et al., 2017; 2020). It appears that personality may provide a more engrained basis for favourable beliefs about the necessity and acceptability of doping. Perfectionism, and perfectionistic concerns in particular, should therefore be considered in future research exploring the factors that comprise a "dopogenic personality" in sport.

Mediational Effects

We found that achievement goal orientations mediated the perfectionism-doping relationship. In doing so, we provide the first empirically supported explanation of why perfectionism is linked to athletes' attitudes towards doping. For perfectionistic concerns, the findings were in line with both conceptual thinking and empirical evidence (e.g., Hill et al., 2018; Ntoumanis et al., 2014). In particular, perfectionistic concerns positively predicted an ego-orientation which in turn predicted more favourable attitudes towards doping. In other words, athletes higher in perfectionistic concerns are more likely to dope because they are driven by a need to outperform others. Perhaps, then, in the pursuit of victory the use of banned substances comes to be viewed as a legitimate option for those athletes higher in perfectionistic concerns. Consequently, we reiterate recent calls (e.g., Madigan et al., 2020) for anti-doping education to include aspects aimed at reducing perfectionistic concerns.

It would appear that the findings for perfectionistic strivings are more complex. On the

one hand, the finding that perfectionistic strivings predicts attitudes towards doping via a task orientation is in agreement with previous studies that have found a negative association between perfectionistic strivings and attitudes towards doping (e.g., Madigan et al., 2016). On the other hand, the finding that perfectionistic strivings predicts attitudes towards doping via an ego orientation provides initial evidence for dark striving in sport. When combined, these findings help explain some of the ambiguity in previous findings for perfectionistic strivings (e.g., Madigan et al., 2020). It appears that the two indirect pathways, providing opposite effects, cancel each other out (competitive mediation; see Zhao, Lynch, & Chen, 2010). Importantly, however, and contrary to several previous studies (e.g., Bae et al., 2017), the present findings suggest that perfectionistic strivings may indeed be a risk factor for doping.

The present findings provide some clarity in regards to theory. They suggest that perfectionistic athletes' dark behaviours may not be driven solely by a dark demand placed on athletes by perfectionistic concerns. Rather, in agreement with the original proposition of dark striving, these behaviours are caused by both perfectionistic concerns and perfectionistic strivings. Just like in other achievement domains, where research has linked perfectionism to so-called smart drug use (Stoeber & Hotham, 2016), perfectionistic athletes may be competitive to such a degree that they are willing to engage in and enact behaviours that are not only against the rules but potentially harmful to themselves. This is also in line with a growing body of research in sport that shows perfectionism puts athletes at risk of other harmful behaviours such as overtraining which can also lead to deleterious outcomes such as injury (Madigan et al., 2017).

There will be other mechanisms by which perfectionism affects attitudes towards doping. In this regard, how athletes justify their dark behaviours may be particularly relevant. According to Bandura (1999), individuals refrain from acting in ways that violate their moral

standards because they expect to experience self-reproof (e.g., shame and guilt). However, individuals can disengage from their moral standards by cognitively restructuring transgressive behaviours. Preliminary evidence is beginning to provide credence to these ideas in relation to athletes' likelihood to dope (e.g., Kavussanu & Ring, 2017). Consequently, those athletes higher in perfectionism may be more likely to disengage from their moral standards, and in so doing, be able to better justify to themselves that doping behaviours are acceptable. Future research wishing to build on the present study should examine whether moral disengagement can help further explain the perfectionism-doping relationship.

Practical Implications

The present findings lend themselves to several practical recommendations. First and foremost, the findings reiterate that athletes high in perfectionism may require targeted anti-doping interventions (see also Madigan et al., 2020). In terms of educational interventions, and in addition to the normal suite of educational content, this could include additional educational modules provided specifically to perfectionistic athletes. In terms of interventions delivered by anti-doping organizations (ADOs), the present findings suggest that education aimed at changing the coach-created motivational climate, with a particular emphasis on mastery, may be effective and worthy of further exploration (see also Allen et al., 2015). Finally, the present findings may be helpful in informing ongoing anti-doping education developments and initiatives such as WADA's 2021 International Standard for Education. This could be done by emphasizing the role of personality which has so far been omitted from such discussions and documentation, despite a growing body of work attesting to its relevance.

Limitations and Other Future Research

The present study has several limitations. First, whereas testing mediational effects

with cross-sectional data is an important first step into establishing explanatory relationships, longitudinal data are required for a proper test of mediation. As such, future research should examine if the explanatory pathways identified here replicate in longitudinal, multi-wave studies (see e.g., Madigan et al., 2016). Second, although the present study recruited participants from all levels of sport, future research may benefit from focusing on elite athletes as they may be faced with greater pressure to achieve and the consequences of failure may be much greater. It will be interesting to see whether the present effects are larger in such samples as a consequence. We also note that the majority of the present sample were from team sports, because achievement goal orientations may be related to sport type, future studies are required to examine whether the present findings replicate in individual sport samples. Finally, there is a growing body of research examining doping as an unintentional behaviour (Chan et al., 2019). We are interested to see if the self-oriented elements of perfectionism provide protection against such unintentional doping by promoting protective behaviours (e.g., checking the ingredients of supplements) or if these behaviours are overwritten by a disregard for the consequences while striving to win.

Conclusion

Goal orientations help explain why perfectionism predicts attitudes towards doping in athletes. In this regard, athletes higher in either dimension of perfectionism have more favourable attitudes because of a tendency to define success as outperforming others. However, those athletes higher in perfectionistic strivings may simultaneously hold less favourable attitudes because they also have a tendency to define success as improving their own performance.

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Table 1

Descriptive Statistics, Cronbach's Alphas, Bivariate and Correlations

Variable	1.	2.	3.	4.	5.
1. Perfectionistic Strivings					
2. Perfectionistic Concerns	.70**				
3. Task Orientation	.19*	.06			
4. Ego orientation	.41**	.42**	.10		
5. Attitudes towards doping	.08	.17**	–.13	.27**	
M	.01	.01	3.93	2.82	1.78
SD	.91	.92	.53	.95	.80
Cronbach's alpha.	.80	.86	.78	.87	.83

Note. $N = 172$. * $p < .05$. ** $p < .01$.

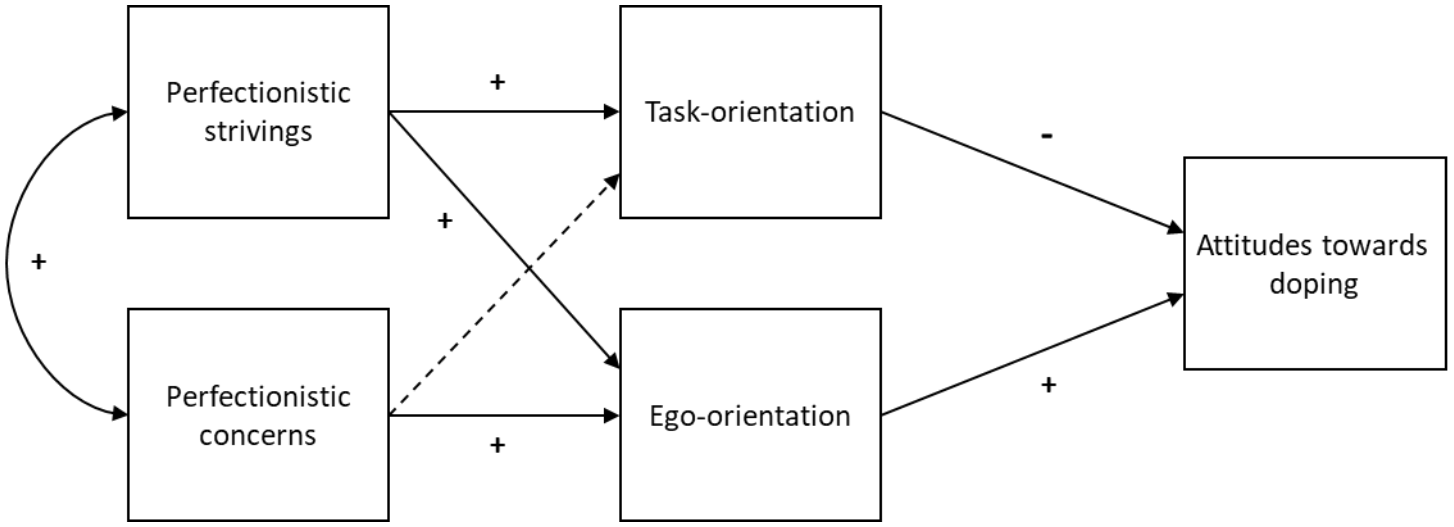

Figure 1. Hypothesized mediation model of the relationships between perfectionism, achievement goal orientations, and attitudes towards doping (dashed path = no relationship).

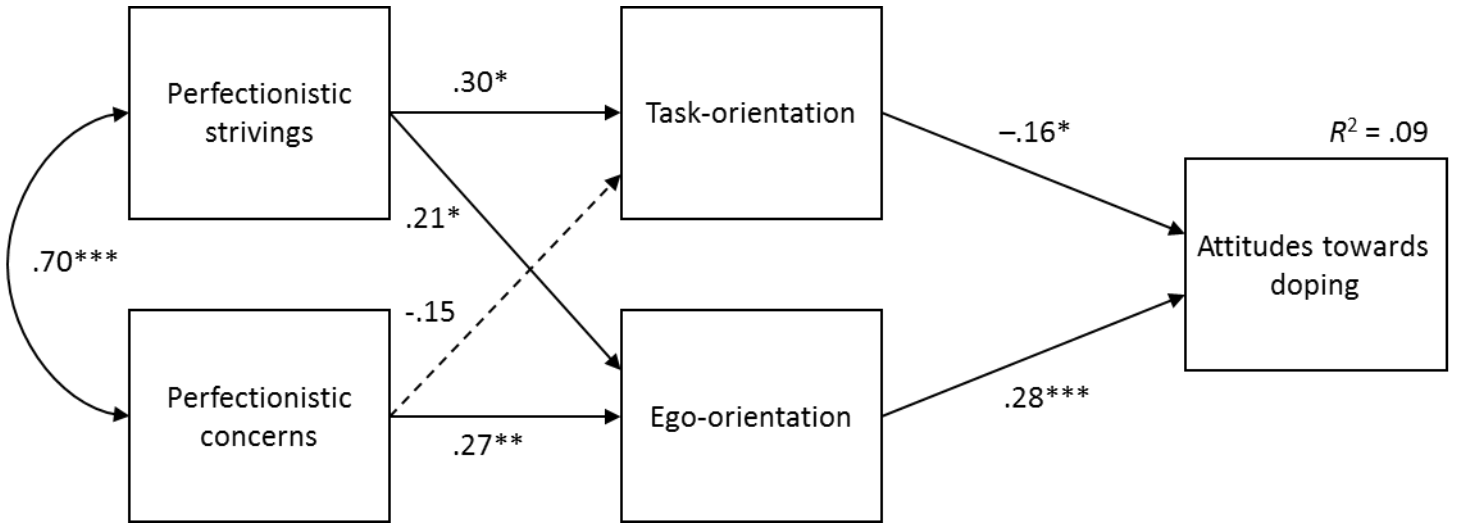

Figure 2. Empirical mediation model of perfectionism, achievement goal orientations, and attitudes towards doping (N = 172). (Dashed path = nonsignificant.) * $p < .05$. ** $p < .01$. *** $p < .001$.