Predicting Moral Attitudes and Behavior in Young Team Sport Athletes: A Self-Determination Theory Perspective

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Abstract

Identifying the factors associated with moral behaviors in youth sport may provide evidence to inform interventions aimed at promoting prosocial behaviors and minimizing moral transgressions in young athletes. We investigated relations among social-contextual factors (e.g., social support), personal motivational factors (e.g., psychological need satisfaction and motivation), young athletes' attitudes toward prosocial (e.g., keeping winning in proportion) and antisocial (e.g., acceptance of cheating and gamesmanship) behaviors, and their actual rule violations during matches in two samples of athletes. Participants in Sample 1 were young team sport athletes (N = 355) and participants in Sample 2 were young male futsal players (N = 296). Athletes in Sample 1 completed validated self-report measures of perceived autonomy support, basic need satisfaction, and autonomous and controlled motivation from self-determination theory, prosocial and antisocial attitudes, and past cheating behaviors. Athletes in Sample 2 completed identical measures and two additional behavioral measures: athletes' self-reported number of yellow cards received during competition in the last six months and the number of yellow cards athletes received from referees in the subsequent two months from competition records. We found significant relations between psychological need satisfaction and self-determined motivation, and athletes' prosocial and antisocial attitudes in both samples. These effects held when statistically controlling for past behavior. Importantly, our prospective analysis of Sample 2 indicated that antisocial attitudes predicted athletes' rule violations during subsequent tournament matches. Findings indicate that promoting autonomous motivation and need satisfaction through autonomy support may foster prosocial attitudes, and minimize rule transgressions, in young athletes.

Keywords: Perceived Autonomy Support; Needs Satisfaction; Motivation; Cheating; Gamesmanship; Penalties; Team Sports; Young Athletes

Research on moral behavior in sport has indicated that a substantive minority of athletes engage in behaviors considered ethically inappropriate in sport, such as injuring an opponent, cheating, retaliating to a foul, faking an injury, or engaging in behaviors that will psychologically distract or upset the opponents (Boardley & Kavussanu, 2007; Lee, Whitehead, & Ntoumanis, 2007; Lee, Whitehead, Ntoumanis, & Hatzigeorgiadis, 2008; Long, Pantaléon, Bruant, & D'Arripe-Longueville, 2006). Although many of these behaviors contravene the rules and regulations of sport, and are duly sanctioned if identified by officials or in retrospective evidence (e.g., TV, video footage), some behaviors go undetected and others are not considered rule transgressions, but are still considered contrary to the 'spirit' of fair play and moral conduct in sport. This presents considerable problems when the goal of sport, even at the highest level, is to ensure fair competition in which success and winning are attributable to superior ability, tactics, effort, and preparation and done so on a 'level playing field'.

Attitudinal antecedents of moral behaviors in sport

Much research on moral behavior in sport has been concerned with describing *how* athletes conduct themselves when performing their sport (e.g., whether they respect rules and officials or comply with conventions). Vallerand and colleagues (1997) developed a social psychological model to move beyond mere description and provided a deeper understanding of the antecedent factors of moral behavior and sportspersonship in sport, arguing that moral behavior should be understood both in terms of individual characteristics including antisocial (i.e., acceptance of cheating and acceptance of gamesmanship) and prosocial attitudes (i.e., keeping winning in proportion) (e.g., Lee et al., 2007) and contextual (Vallerand et al., 1997) characteristics.

Research has also stressed the need to treat cheating and gamesmanship in sport as separate behaviors (Lee et al., 2007; Ponseti et al., 2012). Both behaviors are considered

goal-directed with the purpose of yielding an illegitimate advantage. However, while cheating is characterized by explicit rule-violation acts (e.g., doping, professional fouls), gamesmanship represents subtler, dishonourable behaviors that are at odds with sport ethics with the aim of gaining an advantage over the opponent, but without a de jure violation of the rules. Examples include 'sledging' – the deliberate verbal haranguing and mocking of an opponent, so as to upset their concentration or provoke retaliation (Lee et al., 2007; Lucidi, Zelli, Mallia, Nicolais, Lazuras, & Hagger, 2017; Ponseti et al., 2012). However, with few exceptions (e.g., Lucidi et al., 2017), existing literature on this topic (e.g., Gonçalves, e Silva, Cruz, Torregrosa, & Cumming, 2010; d'Arripe-Longueville, Corrion, Scoffier, Rousse, & Chalabaev, 2010; Lee et al., 2008; Ntoumanis & Standage, 2009) does not explicitly address the relationship between attitudes towards these antisocial behaviors and athletes' actual behaviors during sport competitions.

Toward a motivational model of moral behaviors in sport

The identification of the antecedent factors of athletes' moral attitudes and behaviors is essential to understand the processes that lead to cheating and gamesmanship in sport. Several authors (e.g., Kavussanu, Seal, & Phillips, 2006; Ntoumanis & Standage, 2009) have claimed that the reasons *why* athletes participate in sport (i.e., their motives) influence their moral behavior, including their prosocial and antisocial behaviors. Specifically, researchers have turned to theories of motivation to provide a framework for understanding how motivation is related to behaviors like cheating and gamesmanship in sport. Prominent among these theories is self-determination theory (Deci & Ryan, 1985; Ryan & Deci, 2017). The theory aims to identify the contextual and environmental factors that influence individuals' motivation. Central to the theory is the distinction between autonomous and controlled forms of motivation. Autonomous motivation relates to engaging in behaviors for personally-endorsed reasons and to knowledge that the behavior is consistent with personal values.

Controlled motivation, on the other hand, reflects engaging in behavior for reasons perceived as external to the individual and is, therefore, other- rather than self-endorsed. Both forms of motivation make behavioral engagement more likely, but autonomous motivation tends to be related to more adaptive outcomes and behavioral persistence because it is related to self-endorsed reasons for acting, while controlled motivation is less adaptive because it is viewed as externally referenced and, therefore, only likely to persist, as long as the external contingencies are present.

Antecedents of autonomous and controlled motivation

According to the self-determination theory, the type of motivation adopted toward behaviors is generally dependent on the extent to which the behavior is perceived to satisfy three innate, basic psychological needs: autonomy, competence, and relatedness. Behaviors that satisfy these needs are more likely to be experienced as autonomous, and individuals are likely to engage in these behaviors out of a sense of personal ownership and volition and more likely to persist with the behaviors. Given that autonomous motivation leads to adaptive behavioral outcomes and persistence, it may be that fostering autonomous motivation and need satisfaction can assist in promoting prosocial behaviors in sport and minimizing antisocial behaviors.

Autonomous motivation can be promoted by fostering need satisfaction through the socio-contextual environments generated by figures of authority and significant others (Reeve, 1998). Such environments (e.g., school, family, sport team) are known as *autonomy supportive* environments and support individuals' autonomous choices and individual volition, minimize external pressure and control, acknowledge negative feelings, and offer a rationale for engaging in activities (e.g., Ryan & Deci, 2000). For example, parents and coaches acting in an autonomy supportive manner are more likely to promote athletes' own

choices, to give them opportunities for initiative, and to offer positive, informative, and constructive feedback. They are also capable of offering a rationale to explain the decisional process underlying the need to respect rules and norms that are often inherent to complex social systems (e.g., family, sport team). Autonomy supportive interventions have demonstrated considerable efficacy in promoting autonomous motivation and persistence on tasks and behaviors in multiple contexts (Hagger & Chatzisarantis, 2015; Ryan & Deci, 2017).

A Self-Determination Theory Perspective on Moral Behavior in Sport

Previous research has shown that personal (e.g., types of motivation, basic needs satisfaction) and socio-contextual (e.g., autonomy support) factors are related to moral attitudes and behavior in sport (e.g., Hodge & Lonsdale, 2011; Ntoumanis & Standage, 2009; Sheehy & Hodge, 2015). Research has indicated that autonomy supportive contexts fostered by key figures such as coaches and parents positively promotes athletes' satisfaction of their basic psychological needs (i.e., competence, relatedness, and autonomy). The satisfaction of these needs increases the likelihood that young athletes will experience sport as autonomously motivated. This is adaptive from a moral behavior perspective given research demonstrating that autonomous motivation is positively related to athletes' prosocial attitudes and negatively related to their attitudes toward antisocial behaviors in sport (i.e., cheating and gamesmanship).

The likely process by which autonomous motivation fosters prosocial attitudes is through internalization and integration processes. Athletes experiencing their sport as autonomous are more likely to internalize all aspects of the sport and to view their involvement as an important part of their genuine sense of self. The internalization of rules is part of sport motivation, as athletes value the game as an entity which includes all aspects

from tactics to rules and fair play. This 'ownership' over sport participation is also likely to extend to an assimilation of the rules, fair play, and responsibility toward others in the sporting context. Autonomously motivated athletes are also more likely to view achievement in sport as intrinsic or self-referenced, rather than extrinsic or other-referenced. Therefore, seeking to gain external recognition or other extrinsic rewards, like money, through winning is likely to be secondary to self-referenced markers of success, like mastering the task and fulfilling their team role effectively.

A more complex pattern of predictions relates to the role of controlled motivation and its relation to moral behavior in sport. The need for competence is positively related to controlled motivation (e.g.,Ntoumanis & Standage, 2009) which, on the surface, appears to contrast with theory predictions. However, researchers have indicated that individuals can satisfy their need for competence without feeling autonomous. For example, an athlete can feel competent in completing a sport task or skill, but may still feel that his/her participation in the task is controlled by external forces (e.g., they feel obliged to do the task for others or do the task to gain recognition, acceptance, or a reward) or may be guided by internal motives (e.g., engage in the task in order to maintain contingent self-worth or to avoid negative emotional states such as shame, guilt or anxiety, if they do not). Controlled motivation, however, is proposed to have a negative impact on prosocial attitudes and a positive impact on attitudes toward antisocial behaviors in sport. Athletes who feel that they are controlled by internal pressures, such as feelings of guilt or shame, and fear of punishment (by parents, coaches, or teammates), or by external pressures, such as the desire to attain extrinsic rewards, are unlikely to have internalized the sport as an important part of their genuine self, and instead more likely to view the attainment of external/internal contingencies as the only goal or purpose of participation. They might, therefore, be more likely to engage in any kind of behavior, even anti-social behaviors, in order to succeed, particularly if they view

sanctions or punishments for antisocial behaviors as unlikely. This is epitomized by the "win at all costs" or the "the ends justify the means" reasons that athletes tend to use to justify these behaviors.

Finally, a hypothesis arising from the model that has yet to be tested in research on moral behavior in sport is the effect of autonomous motivation and prosocial attitudes on future moral behaviors. It is hypothesized that individuals reporting autonomous motivation and prosocial attitudes are less likely to engage in future negative moral behaviors (e.g. fouls or breaking rules), whereas individuals endorsing controlled motivation and antisocial attitudes are more likely to engage in these types of transgression.

The Importance of Past Behavior

An important consideration when evaluating the effectiveness of social cognitive and motivational theories in explaining behavioral outcomes is the extent to which the predictions hold when controlling for past behavior. There is a considerable body of research that has demonstrated attenuation or even extinction of effects in tests of social psychological models once a measure of past behavior has been included alongside the theory predictors (Ajzen, 2002; Conner, Warren, Close, & Sparks, 1999; Hagger, Chan, Protogerou, & Chatzisarantis, 2016; Ouellette & Wood, 1998; Sutton, 1994). Past behavior, often conceptualized as the frequency with which an individual has engaged in the behavior of interest in the past, tends to model the effects of unmeasured variables in the model that explain the consistency or stability of the behavior over time (Hagger, Chatzisarantis, & Harris, 2006). Some researchers have suggested that such effects reflect habitual or non-conscious influences on behavior (Ouellette & Wood, 1998). The inclusion of past behavior in such models has also been flagged as controversial in that the measures have a redundant explanatory role from the perspective of the model as they do not represent or reflect a theoretical construct (Ajzen,

2002). These conceptual issues aside, if the inclusion of past behavior leads to a substantial reduction or nullification of the predictive validity of the constructs of theory or model with respect to the target behavior, the theory is rendered redundant as an adequate explanation (Hagger & Chatzisarantis, 2016; Hagger et al., 2016). Such findings also mean that any intervention or manipulation to change the theory variables will have no effect on behavior. The inclusion and control for past behavior in tests of theories and models is therefore advocated as it provides a robust test of its predictions. In the context of the current research, previous studies testing the hypotheses of models to explain moral behavior in sport have not generally considered or accounted for previous behavior. Without these data, researchers cannot definitively conclude that the effects of psychological antecedents like prosocial and antisocial attitudes and motivational constructs from self-determination theory reflect the true effects among the constructs in the absence of past behavior. Consequently, research that tests these effects when controlling for the effects of past behavior would make a valuable contribution to knowledge and assist in determining the validity of the model in accounting for unique variance in moral behavior in sport.

The Present Research

The present research aimed to test the general hypothesis that social-contextual (i.e., social support) and personal motivational (i.e., need satisfaction and motivation) factors from SDT are related to prosocial (e.g., keeping winning in proportion) and antisocial (e.g., acceptance of cheating and gamesmanship) attitudes in youth sport, as well as to negative sport behaviors.

With this broad hypothesis in mind, we firstly sought empirical confirmation of Ntoumanis and Standage's (2009) model of moral functioning in sport based on SDT in a large sample of team sport athletes. Figure 1 depicts this model, which specifically hypothesizes that (a) perceived autonomy support from coaches and parents would positively

predict young athletes' satisfaction of basic psychological needs (i.e., autonomy, competence, and relatedness); (b) all psychological needs would positively predict athletes' autonomous motivation, and the need for competence would also positively predict controlled motivation; (c) autonomous motivation would negatively predict antisocial moral attitudes, and positively predict prosocial attitudes; and (d) controlled motivation would positively predict antisocial attitudes and negatively predict prosocial attitudes.

The present research also examined the empirical value of a second model, depicted in Figure 2, which provides a second test of relations proposed in model 1, and also tests the extent to which these constructs predicted athletes' moral behavior in sport competitions. Specifically, this second model hypothesized that antisocial and prosocial attitudes would have positive and negative effects, respectively, on rule-based infringements, as determined by number of infringements (yellow cards) received in competition.

Our analysis extends existing knowledge in several ways. First, we expect to provide a replication of Ntoumanis and Standage's (2009) model in a different national group and in different sports, thus providing a rigorous test of the generalizability of the model. Second, our analysis examines the predictive validity of this model by adopting an externally-validated, objective measure of moral behavior, namely, the number of yellow cards that athletes received during competitions. In this context, yellow card infringements by athletes were treated as indirect indicators of athletes' antisocial behaviors on the sport field. Finally, our analyses offer the opportunity to test the proposed effects while controlling for past behavior, an important endeavour when evaluating the effectiveness of psychological models of behavior.

Method

Participants

Participants were young team sport athletes. We collected data from two separate samples. The first sample (Sample 1) comprised young Italian team sport athletes (*N* = 355; 81.4% male; *M* age = 18.98 years, SD = 4.35) participating in soccer (n = 172; 48.5%), volleyball (n = 99; 27.9%), rugby (n = 72; 20.3%), or basketball (n = 12; 3.4%). The second sample (Sample 2) comprised young Italian male futsal players (*N* = 296; *M* age = 21.09 years, SD = 7.56). All participants were recruited through direct contact with sport clubs, which voluntarily gave permission to contact their athletes. All recruited athletes gave their consent to participate in the study. The institutional review board of [UNIVERSITY OMITTED FOR MASKED REVIEW] approved the study protocol. Participants were informed of the aims and purposes of the study, as well as of their participation rights (e.g., confidentiality of responses, right to withdraw any time without any consequences).

Measures

Athletes completed a survey containing study measures individually in isolated conditions. Full details of study measures including reliability coefficients and item characteristics are presented in Appendix A. Athletes in Sample 1 completed validated measures of perceived autonomy support (Grolnick, Ryan, & Deci, 1991), basic need satisfaction (Ng, Lonsdale, & Hodge, 2011), autonomous and controlled motivation (Pelletier, Tuson, Fortier, Vallerand, Briére, Blais, 1995), as well as prosocial (i.e., keeping winning in proportion) and antisocial (i.e., acceptance of cheating and acceptance of gamesmanship) attitudes (Lee et al., 2007). Participants also reported their past cheating behaviors during their sport activity of the previous six months (e.g., cheating during a competition). With the exception of the measurement of perceived autonomy support, athletes in Sample 2 completed the same set of psychological and behavioral measures as participants in Sample 1. Athletes in Sample 2 also provided an additional behavioral measure by indicating the number of penalties (i.e., yellow cards) they had received during

games in the previous six months. Finally, this latter behavioral measure was complemented by recording the actual number of yellow cards athletes received from referees during their competitive matches in the subsequent two months. The measure was taken from referees' official match reports.

Model tests and statistical analyses

Fit of the proposed models depicted in Figures 1 and 2 with the data was tested using variance-based structural equation modeling (VB-SEM – also known as Partial Least Squares analysis) with the WARP PLS v.5.0 statistical software (Kock, 2015). Constructs in each model were represented by latent factors indicated by its constituent scale items, with estimated structural relations specified among constructs consistent with the proposed models. Analyses also included a statistical control of the possible effects past self-reported behaviors might have on the key variables of the models. Finally, we tested the invariance of the measurement parameters and structural relations common to both models using multigroup analysis. These include relations among the need satisfaction, motivational variables and prosocial and antisocial attitudes. This analysis allowed us to examine the extent to which the hypothesized relations held across samples of athletes.

In all analyses, construct validity of the latent factors was tested using average variance extracted (AVE) and composite reliability coefficients (ρ) for each factor, which should exceed .50 and .70, respectively. Discriminant validity of each factor is supported when the square-root of the AVE for each latent variable exceeds its correlation coefficient with other latent variables (Esposito Vinzi et al., 2010). In addition, potential multicollinearity was checked using the full collinearity variance inflation factor (AFVIF), with values lower than 3.30 indicative of no issues with multicollinearity (Kock, 2015). Adequacy of the hypothesized model was established using an overall goodness-of-fit (GoF) index given by the square root of the product of the AVE and average R^2 for the model, with values of .100,

.250, and .360 corresponding to small, medium, and large effect sizes, respectively (Tenenhaus, Esposito Vinzi, Chatelin, & Lauro, 2005). Further information on the adequacy of the model is provided by the average path coefficient (APC) and average R^2 (ARS) coefficient across the model parameters, both of which should be statistically significantly different from zero. With respect to model effects, each structural relation among model constructs was estimated with standardized coefficients, confidence intervals, and test of difference from zero.

Results

Table 1 shows the measurement-level statistics of the estimated models. Composite reliability coefficients for each latent factor exceeded the .70 criterion. In addition, the square root of the estimated variance extracted by each factor exceeded its correlation with all other latent variables supporting the discriminant validity of each factor. Overall, the analyses showed good fit with the observed data for models 1 (GoF = 0.250; APC = .165, p < .001; ARS = .093, p= 0.019; AFVIF = 1.512) and 2 (GoF = 0.234; APC = .116, *p* = .011; ARS = .074, *p* = 0.050; AFVIF = 1.701).

Focusing on estimates of proposed effects among model constructs in Sample 1 (Figure 1), perceived autonomy support significantly and positively predicted their need satisfaction for competence, relatedness, and autonomy, both when support was from parents (β=.15, *p*=.002; β=.15, *p*=.003; β=.19, *p*<.001, respectively) and from coaches (β=.11, *p*=.023; β=.30, *p*<.001; β=.30, *p*<.001, respectively). Consistent with hypotheses, we found significant effects of athletes' need satisfaction on autonomous and controlled motivation for the competence (β = .20, *p* < .001; β = .26, *p* < .001, respectively), relatedness (β = .34, *p* < .001; β = .11, *p* = .016), and autonomy (β = .12, *p* = .014; β = -.10, *p* = .034) needs. As above, these effect sizes remained virtually identical after the statistical control of past cheating behavior. Finally, the analysis also showed significant effects of motivational factors on athletes'

attitudes. Specifically, athletes' autonomous motivation predicted keeping winning in proportion (β = .15, p = .003), and controlled motivation predicted acceptance of cheating (β = .18, p < .001) and gamesmanship (β = .18, p < .001). For these latter two effects, inclusion of past cheating behavior reduced the size of the effects and rendered the effect non-significant.

Focusing on the analysis for Sample 2 (see Figure 2). These analyses tested identical effects as model 1 and also included effects of model constructs on the number of yellow cards athletes received as an objective measure of cheating behavior. As expected, both acceptance of gamesmanship (β = .10, p = .038) and acceptance of cheating (β = .13, p = .011) positively predicted the behavioral outcome. As also expected, these effects were substantially attenuated with the inclusion of past behavior: the effect of acceptance of gamesmanship was extinguished (β = .02, p = .34), while the effect of acceptance of cheating was significantly reduced but remain significant (β = -.12, p = .019), although the negative effect which is inconsistent with previous effects was probably attributable to a suppressor effect.

Finally, we tested invariance of the common effects across the two models using multi-group analysis. The analysis provided support for the measurement invariance and equivalence in the hypothesized latent relations among variables. [1]

Discussion

Based on key tenets from theories of moral and prosocial behavior in sport and self-determination theory (e.g., Lee et al., 2007; Ntoumanis and Standage, 2009; Vallerand et al., 1997), the present investigation tested an extended version of the Ntoumanis and Standage's (2009) model that comprised three main hypotheses. First, we hypothesized that athletes'

[1]The only exception was the path from autonomous motivation to acceptance of gamesmanship, which was significantly different across the two samples (t = -2.07; p = .02).

perceived autonomy support from parents and coaches would predict athletes' autonomy, competence, and relatedness need satisfaction. Second, we hypothesized that need satisfaction would predict athletes' attitudes toward cheating and gamesmanship through the mediation of autonomous and controlled forms of motivation in sport. Finally, we hypothesized that athletes' attitudes toward cheating and gamesmanship would predict moral behaviors in sport.

Our hypotheses were tested in two samples of athletes practicing different sports. Findings provided support for the general hypothesis that motivational factors (i.e., psychological need satisfaction and self-determined forms of motivation) are linked in meaningful ways to athletes' sport-related prosocial and antisocial attitudes. Specifically, autonomy, competence, and relatedness need satisfaction predicted athletes' autonomous and controlled motivation and these motivational variables predicted athletes' prosocial (keeping winning in proportion) and antisocial (acceptance of cheating and gamesmanship) attitudes. We also showed that the estimates of these effects were virtually identical across the two samples of athletes providing strong evidence for the generalizability to the guiding model (Ntoumanis & Standage, 2009; Vallerand et al., 1997).

The present investigation also provided evidence to support the hypothesis that both parents' and coaches' support to athletes' autonomy contribute to the motivational experiences that partly shape athletes' prosocial and antisocial attitudes (e.g. see Gagne, Ryan, & Bargmann, 2003; Smith, Ntoumanis, Duda, & Vansteenkiste, 2011; Vierling, Standage, & Treasure, 2007). In addition, we demonstrated that model effects were largely unaffected when controlling for past moral transgressions in sport. If these effects were nullified by the inclusion of past behavior, it would have rendered the model redundant as a description of the antecedents of antisocial and prosocial attitudes in sport, and of moral behavior. These findings thus are quite relevant given that prior research (e.g. Ajzen, 2002;

Conner, Warren, Close, & Sparks, 1999; Hagger, Chan, Protogerou, & Chatzisarantis, 2016; Ouellette & Wood, 1998; Sutton, 1994) has demonstrated attenuating effects of past behavior on the effects of motivational and social cognitive factors in the prediction of prospective behavior in sport and exercise contexts. Current findings suggest that the psychological factors and processes proposed by self-determination theory and theories of moral behavior in sport have predictive validity in determining behavior-related moral outcomes. As past behavior tends to reflect previous decision making or unmeasured psychological factors that impact behavior, the current evidence is encouraging given that the past behavior effects are relatively minimal. This means that any factors that predict moral behavior beyond past moral transgressions are relevant to explaining the behavior. Of course, this does not mean that the set of factors identified in the current model is definitive, but it does mean that they retain predictive validity and, therefore, could be feasible targets for effective evidence-based interventions to deal with moral transgressions in sport.

Finally, we also demonstrated that athletes' attitudes toward cheating was related to subsequent moral transgressions in sport, as indicated by the number of yellow cards they received in competition. If one considers that athletes' cheating behavior is guided by the goal of "not being caught", the finding of a relation between cheating attitudes and penalties on the field seems particularly relevant. It also is unique, in that existing literature has traditionally focused on self-reported measures of rule-breaking behavior. This notwithstanding, one must also consider that the effects of cheating attitudes on penalties in the current study were relatively small, and that no other attitudinal or motivational factor in the model had effects on this outcome. This may have been a measurement issue due to the generalized nature of the psychological measures used in the current study that may encompass more than officially-sanctioned moral behaviors. There may have been many other morally questionable behaviors which were not seen by the referee or were left

unsanctioned because they did not contravene any rule (e.g., sledging), that participants adopted but were not measured in the present investigation.

Limitations and suggestions for future research

It is important to acknowledge the limitations of the current data and the extent to which they can be generalized. As with much of the data in this field, the current data were correlational which is inherently problematic when it comes to inferring causal directions. Although there was a longitudinal component in the current investigation – our measure of moral behavior (referees awarding yellow cards for fouls and rule violations) was collected in the months following the initial psychological measures – this temporal displacement does not mitigate the fact that these data did not model change. Future studies could adopt more powerful longitudinal designs which model change, such as cross-lagged panel designs. This would also enable testing of reciprocal effects among the constructs while controlling for intra-individual change.

An additional possible limitation is related to the choice to use the yellow cards received by athletes as an indicator of moral and antisocial behavior. We acknowledge that although receipt of a yellow card may be an indicator of antisocial behavior, such as a deliberate decision to violate rules to gain an advantage, it may also reflect a technical error. However, in elite and sub-elite athletes, this type of error is less common, and thus our measure may be more likely to reflect antisocial behavior. Other studies (e.g. Vansteenkiste et al., 2010) effectively used self-reported sanctions (i.e., yellow cards and penalties) as objective outcomes of moral functioning. In any case, future studies including other suitable objective measures of antisocial behavior in the playing field are needed. For example, researcher could use observational tools and expert raters to identify and code the antisocial in-competition behaviors of athletes independent of official sanctions and penalties.

Another limitation of the present investigation is the lack of any assessment of autonomy support from parents and coaches in the second sample of athletes. This did not allow us to test hypotheses with respect to this aspect of Ntoumanis and Standage's (2009) model alongside the additional measures of moral behavior and past behavior we incorporated in this sample. We look to future research that incorporates all constructs from the original model with our innovations in behavioral measurement. Future studies could also integrate additional constructs from self-determination theory that may strengthen the predictive capacity of the model with respect to athletes' moral attitudes and behaviors. For instance, inclusion of need thwarting (Bartholomew et al. 2011) and controlling behaviors may be important predictors of athletes' need satisfaction, ill-being, and behavioral problems in sport.

In addition, the current samples of athletes were not selected at random nor were they stratified by age, gender, ethnicity, or demographic background which limited their generalizability to the wider population of athletes. It must, however, be pointed out that athletes are a very homogenous and select group of individuals, which means that obtaining a 'representative' sample of 'typical' athletes for a given sport presents considerable challenges. The current data still have value in contributing to the predictors of moral behavior and the processes involved as the samples are of reasonable size and reflect more than one sport code. Future research may consider collecting data on larger samples and testing the effects across multiple sport codes, age groups, gender, and other demographic factors likely to impact on these effects. It may be that such data are accumulated over time through multiple research groups and a future quantitative synthesis of the effects proposed in the current model from the multiple tests may provide more definitive data on the generalizability of findings.

Conclusions and Recommendations for Practice

Current findings identify the importance of psychological need satisfaction and motivational constructs from self-determination theory in predicting prosocial and antisocial behaviors, and actual rule transgressions in sport. Results also indicate support for autonomy from parents and coaches as important correlates of need satisfaction in this context. Results indicate pervasive positive effects of need satisfaction and autonomous motivation on keeping winning in perspective, a prosocial attitude, and positive effects of controlled motivation on acceptance of gamesmanship and cheating. In addition, both antisocial attitudes linked with rule transgressions indicated by number of yellow cards awarded in competition. Results, in general, held after controlling for past behavior.

Findings of the present research point to some possible practical implications. The findings overall have highlighted the importance of perceived autonomy support and the satisfaction of basic needs. These factors are crucial in fostering athletes' autonomous motivation and, indirectly, in shaping their prosocial or antisocial attitudes. In other words, autonomy supportive environments may not only foster one's need satisfaction, volition and autonomous choices and individual volition, but also significantly contribute to promoting prosocial attitudes, reducing the risk of acquiring antisocial attitudes, and possibly limiting behaviors that are morally questionable. As such, the findings point to the importance of significant figures, such as parents and coaches, and to the value of educational approaches seeking to foster environments in which young athletes' autonomy, competence, relatedness, motivation, and prosocial attitudes are key building blocks of the athletes' growth.

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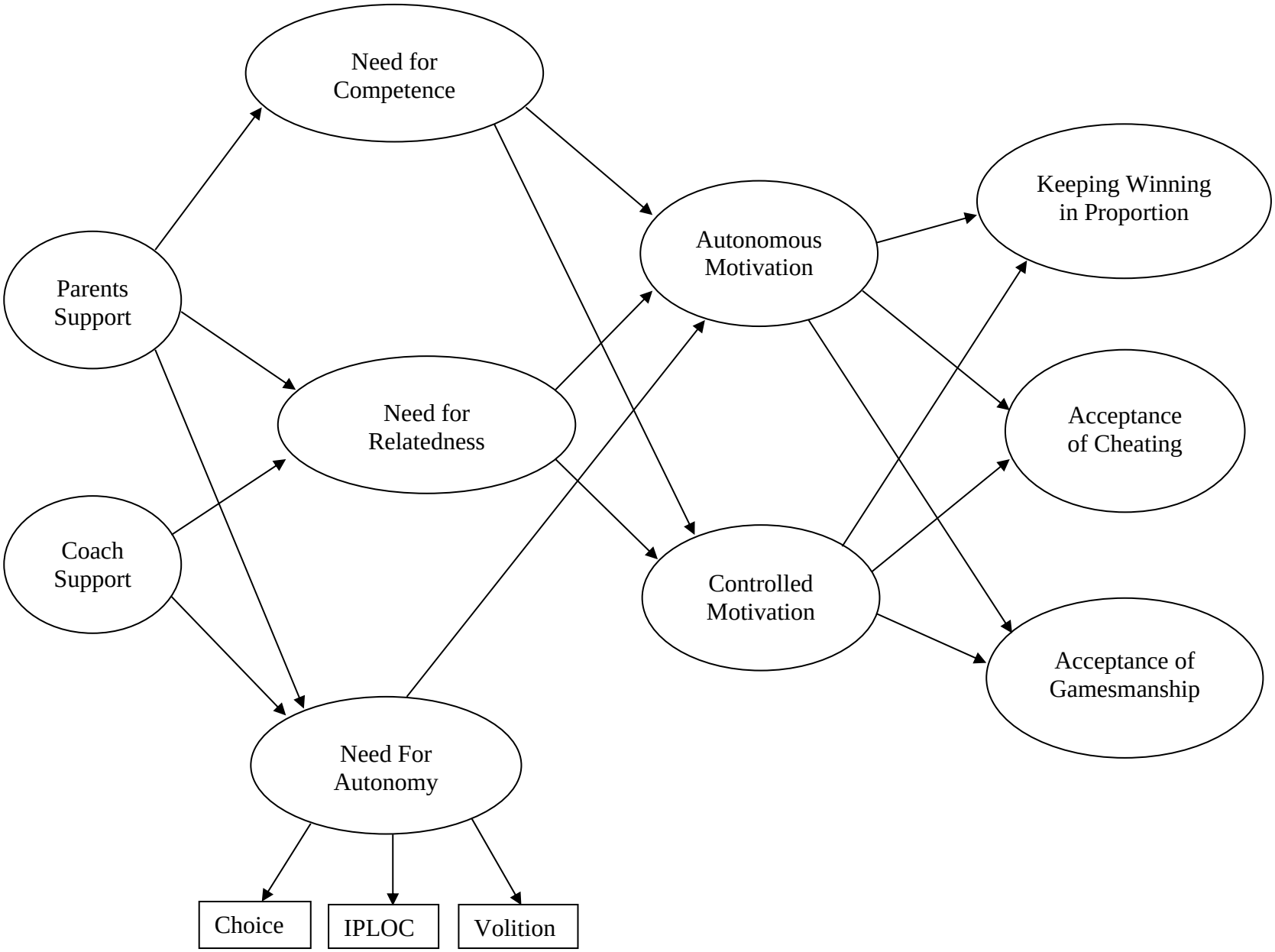
Need for Competence
Parents Support
Autonomous Motivation
Keeping Winning in Proportion
Need for Relatedness
Acceptance of Cheating
Coach Support
Controlled Motivation
Acceptance of Gamesmanship
Need For Autonomy
Choice
IPLOC
Volition

564

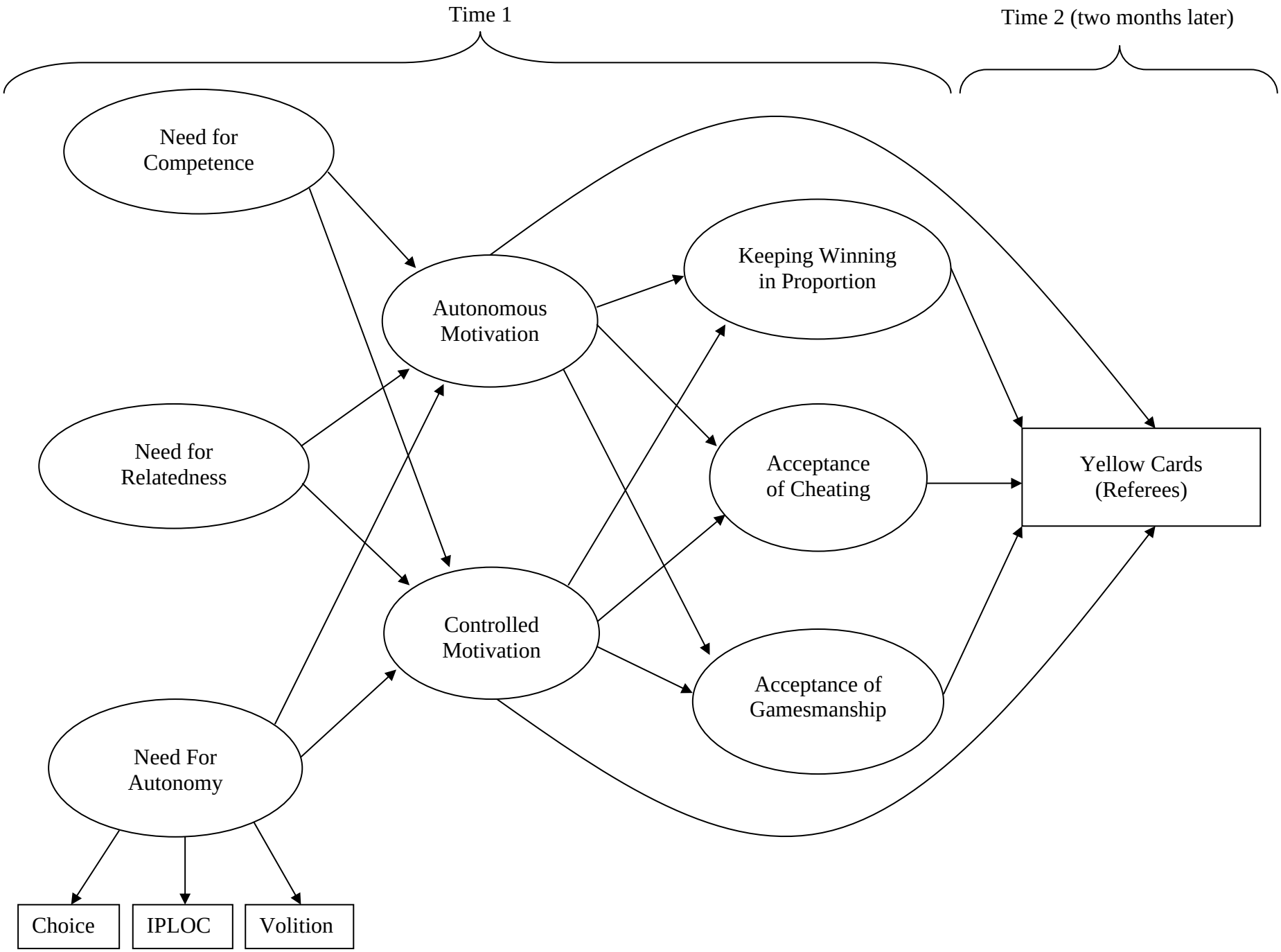
Time 1
Time 2 (two months later)
Need for Competence
Need for Relatedness
Need For Autonomy
Autonomous Motivation
Controlled Motivation
Keeping Winning in Proportion
Acceptance of Cheating
Acceptance of Gamesmanship
Yellow Cards (Referees)
Choice
IPLOC
Volition

Table 1

Measurement Model Statistics and Factor Intercorrelations for Latent Variables

		ρ	AVE	1	2	3	4	5	6	7	8	9	10	11	12	13
1.	Support from	.85	.60	.77												
	Parents	-	-	-												
2.	Support from	.87	.63	.20***	.79											
	Coach	-	-	-	-											
3.	Need for	.90	.75	.15**	.06	.86										
	Competence	.90	.74	-	-	.86										
4.	Need For	.85	.66	.19***	.31***	.28***	.81									
	Relatedeness	.82	.60	-	-	.34***	.78									
5.	Need For	.72	.49	.23***	.34***	.46***	.45***	.70								
	Autonomy	.75	.51	-	-	.52***	.53***	.71								
6.	Autonomous	.93	.83	.19***	.19***	.34***	.44***	.32***	.91							
	Motivation	.95	.87	-	-	.31***	.46***	.36***	.93							
7.	Controlled	.88	.71	.12*	.07	.28***	.15**	.05	.58***	.84						
	Motivation	.90	.74	-	-	.24***	.18**	.13*	.65***	.86						
8.	Keeping Winning	.79	.55	.12*	.03	-.02	.13*	.00	.13*	.03	.74					
	in Proportion	.85	.66	-	-	-.03	.16**	.13*	.21***	.06	.81					
9.	Acceptance of	.92	.79	-.12*	-.03	-.00	-.12*	-.18***	-.01	.15**	-.22***	.89				
	Cheating	.93	.81	-	-	.03	-.03	-.12*	.07	.16**	-.28***	.90				

10. Acceptance of	.90	.75	-.04	-.01	.11*	.03	-.03	.01	.18***	-.26***	.58***	.87			
Gamesmanship	.90	.76	-	-	.06	.-.01	-.02	.06	.08	-.11*	.67**	.87			
11. Self-reported	.94	.80	-.11*	-.09	-.01	-.12*	-.11*	-.04	.13*	-.15**	.62***	.46***	.90		
Cheating	.92	.75	-	-	.07	.07	-.03	.06	.10	-.18**	.63***	.54***	.87		
12. Self Repoted	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Yellow cards	1.0	1.0	-	-	.10	-.08	.06	.02	.06	-.13*	.07	.13*	.16**	1.0	
13. Yellow Cards given	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
by the referee (T2)	1.0	1.0	-	-	.13*	.09	.05	.07	.08	-.10	.17**	.17**	.26***	.24***	1.0

Note. Coefficients on the upper line are for Sample 1 and coefficients on the lower line are for Sample 2. ρ = composite reliability coefficient; AVE= Average Variance Extracted; values on principal diagonal are squared-root of AVE.

$^{***}p < .001$; $^{**}p < .01$; $^{*}p < .05$.

Appendix A

Summary of characteristics of the instruments used to measure the key constructs of the model [a] tested in sample 1 and in sample 2

Construct- Measure [b]	Item(s)	Scoring or Rating	Alpha[c]	Study samples
Perceived Autonomy Support				
From Coach- Adapted from SCQ [e]	*My coach encouraged me to ask questions* *My coach pays attention to me when I share personal matters to him/her* *I feel that my coach provides me choices and option* *I feel my coach is comprehensive and understands me*	strongly disagree (1) - strongly agree (5)	.80 [NA]	1
From Parents- Adapted from POPS [e]	*My parents let me make my own choices when it comes to sport* *My parents find time to talk with me about my sport activity* *My parents gave me many opportunities to make my choices in my sport but also are always interested in knowing the reasons for these choices* *My parents are supportive when I make mistakes*	strongly disagree (1) - strongly agree (5)	.77 [NA]	1

Basic Need Satisfaction in sport -BNSS (Ng et al. 2011)		not at all true (1) -very true (7)		1 & 2
Need for competence	*I can overcome challenges in my sport.*		.82 [.85]	
	I am skilled at my sport.			
	I feel I am good at my sport			
	I get opportunities to feel that I am good at my sport.			
	I have the ability to perform well in my sport			
Perceived Autonomy Support from Parents- Adapted from POPS [e]	*In my sport…*		.83 [.83]	
	... I get opportunities to make choices.			
	… I have a say in how things are done.			
	…I can take part in the decision-making process.			
	…I get opportunities to make decisions.			
Need for Autonomy- Internal Perceived Locus of Causality (IPLOC)	*… I feel I am pursuing goals that are my own*		.75 [.73]	
	…I really have a sense of wanting to be there			
	… I feel I am doing what I want to be doing			
Need for Autonomy- Volition	*I feel I participate in my sport willingly.*		.49 [.58]	

	In my sport, I feel that I am being forced to do things that I don't want to do (Reverse) *I choose to participate in my sport according to my own free will.*			
Need for Relatedness	*In my sport, I feel close to other people.* *I show concern for others in my sport.* *There are people in my sport who care about me.* *In my sport, there are people who I can trust.* *I have close relationships with people in my sport.*		.72 [.63]	
Sport Motivation- SMS (Pelletier et al., 1995)	*Why do you practice your sport?*	totally disagree (1)- totally agree (7)		1 & 2
Autonomous Motivation [d]			.89 [.92]	
Intrinsic Motivation to know	*For the pleasure it gives me to know more about the sport that I practice.* *For the pleasure of discovering new training techniques*			

	For the pleasure that I feel while learning training techniques that I have never tried before.
	For the pleasure of discovering new performance strategies
Intrinsic Motivation to accomplish	*Because I feel a lot of personal satisfaction while mastering certain difficult training techniques*
	For the pleasure I feel while improving some of my weak points
	For the satisfaction I experience while I am perfecting my abilities
	For the pleasure that I feel while executing certain difficult movements.
Intrinsic Motivation to experience stimulation	*For the pleasure I feel in living exciting experiences*
	For the excitement I feel when I am really involved in the activity
	For the intense emotions I feel doing a sport that I like
	Because I like the feeling of being totally immersed in the activity

Extrinsic Motivation - identified	*Because, in my opinion, it is one of the best ways to meet people*	
	Because it is one of the best way I have chosen to develop other aspects of myself.	
	Because it is a good way to learn lots of things which could be useful to me in other areas of my life.	
	Because it is one of the best ways to maintain good relationships with my friends.	
Controlled Motivation [d]		.78 [82]
Extrinsic Motivation - introjected	*Because it is absolutely necessary to do sports if one wants to be in shape.*	
	Because I must do sports to feel good myself	
	Because I would feel bad if I was not taking time to do it.	
	Because I must do sports regularly	
Extrinsic Motivation - external	*Because it allows me to be well regarded by people that I know*	
	For the prestige of being an athlete	

	Because people around me think it is important to be in shape			
	To show others how good I am good at my sport.			
Amotivation	*I used to have good reasons for doing sport, but now I am asking myself if I should continue doing it.*			
	I don't know anymore; I have the impression of being incapable of succeeding in this sport.			
	It is not clear to me anymore; I don't really think my place is in sport			
	I often ask myself; I can't seem to achieve the goals that I set for myself.			
Moral attitudes in sport-AMDYSQ (Lee et al., 2007)		*strongly disagree(1)-strongly agree* (5)		1 & 2
Keeping Winning in Proportion	*It is OK to lose sometimes because in life you don't win everything*		.58 [.73]	
	Winning and losing are a part of life			
	If you win properly, it feels better than if you did it dishonestly			

	You have to think about the other people and not just winning			
Acceptance of Cheating	*I would cheat if I thought it would help me win* *If other people are cheating, I think I can too* *It is OK to cheat if nobody knows* *I cheat if I can get away with it*		.87 [.88]	
Acceptance of Gamesmanship	*Sometimes I waste time to unsettle the opposition* *It is not against the rules to 'psyche' people out so it is OK to do* *I sometimes try to wind up the opposition* *It's a good idea to upset your opponents* *If I don't want another person to do well, then I put them off a bit*		.85 [.87]	
Self-reported past cheating behavior	*How often you cheated (or broke a rule) in the last six months…* *…in a moment of the competition (tournament) when no one could notice it ,* *…when it is a way (the only way) to win,* *…when even the opponents did,*	*Never* (0) - *almost always* (5).	.92 [.89]	1 & 2

	…when even your teammates did.		
Self-reported yellow cards	*How many yellow card you received in the last six months?*	N/A	2

Note.

[a]In order to maximise the parsimony of the model tested, we used the principle of item parcelling to obtain measure indicators for need for competence and need for relatedness, autonomous and controlled motivation, keeping winning in proportion, acceptance of cheating, and acceptance of gamesmanship constructs. Item parcelling is a procedure in which scale items are combined to produce a smaller set of items to reduce the number of estimated parameters of a latent variable model. The procedure aims to produce a more parsimonious measurement model and more stable parameter estimates (Little, Cunningham, Shahar, & Widaman, 2002). Parcels were created by randomly grouping items of each scale into item sets, and by averaging the item scores within each set. We used sets of three items per parcel for each latent variable. We did not parcel items for the perceived autonomy support, self-reported cheating, and need for autonomy scales.

[b]All questionnaires were translated in Italian using the translation/back translation method (Hambleton, 2001).

[c]Values presented outside parentheses are for Sample 1 and those within parentheses are for Sample 2.

[d]According to the autonomous versus controlled motivation distinction posited in self-determination theory, and in line with past work (Ntoumanis & Standage 2009), the score for autonomous motivation was obtained by averaging the intrinsic (i.e., to know, to accomplish, and to experience stimulation) and extrinsic-identified subscales from the sport motivation scale. Similarly, the score for controlled motivation was obtained by averaging the extrinsic-introjected and extrinsic-external subscales. The amotivation subscale was omitted from the analysis.

587 [e]The sport climate questionnaire and perceptions of parents scales are described in detail and available from the self-determination theory

588 website: http://www.psych.rochester.edu/SDT/measures/auton_sport.html

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