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2 Determination Theory Perspective

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10

Abstract

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

33 **Keywords:** Perceived Autonomy Support; Needs Satisfaction; Motivation; Cheating;

34 Gamesmanship; Penalties; Team Sports; Young Athletes

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

48 **Attitudinal antecedents of moral behaviors in sport**

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

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

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

72 **Toward a motivational model of moral behaviors in sport**

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

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

92 **Antecedents of autonomous and controlled motivation**

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

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

109 choices, to give them opportunities for initiative, and to offer positive, informative, and
110 constructive feedback. They are also capable of offering a rationale to explain the decisional
111 process underlying the need to respect rules and norms that are often inherent to complex
112 social systems (e.g., family, sport team). Autonomy supportive interventions have
113 demonstrated considerable efficacy in promoting autonomous motivation and persistence on
114 tasks and behaviors in multiple contexts (Hagger & Chatzisarantis, 2015; Ryan & Deci,
115 2017).

116 **A Self-Determination Theory Perspective on Moral Behavior in Sport**

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

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

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

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

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

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

167 **The Importance of Past Behavior**

168 An important consideration when evaluating the effectiveness of social cognitive and
169 motivational theories in explaining behavioral outcomes is the extent to which the predictions
170 hold when controlling for past behavior. There is a considerable body of research that has
171 demonstrated attenuation or even extinction of effects in tests of social psychological models
172 once a measure of past behavior has been included alongside the theory predictors (Ajzen,
173 2002; Conner, Warren, Close, & Sparks, 1999; Hagger, Chan, Protogerou, & Chatzisarantis,
174 2016; Ouellette & Wood, 1998; Sutton, 1994). Past behavior, often conceptualized as the
175 frequency with which an individual has engaged in the behavior of interest in the past, tends
176 to model the effects of unmeasured variables in the model that explain the consistency or
177 stability of the behavior over time (Hagger, Chatzisarantis, & Harris, 2006). Some
178 researchers have suggested that such effects reflect habitual or non-conscious influences on
179 behavior (Ouellette & Wood, 1998). The inclusion of past behavior in such models has also
180 been flagged as controversial in that the measures have a redundant explanatory role from the
181 perspective of the model as they do not represent or reflect a theoretical construct (Ajzen,

182 2002). These conceptual issues aside, if the inclusion of past behavior leads to a substantial
183 reduction or nullification of the predictive validity of the constructs of theory or model with
184 respect to the target behavior, the theory is rendered redundant as an adequate explanation
185 (Hagger & Chatzisarantis, 2016; Hagger et al., 2016). Such findings also mean that any
186 intervention or manipulation to change the theory variables will have no effect on behavior.
187 The inclusion and control for past behavior in tests of theories and models is therefore
188 advocated as it provides a robust test of its predictions. In the context of the current research,
189 previous studies testing the hypotheses of models to explain moral behavior in sport have not
190 generally considered or accounted for previous behavior. Without these data, researchers
191 cannot definitively conclude that the effects of psychological antecedents like prosocial and
192 antisocial attitudes and motivational constructs from self-determination theory reflect the true
193 effects among the constructs in the absence of past behavior. Consequently, research that
194 tests these effects when controlling for the effects of past behavior would make a valuable
195 contribution to knowledge and assist in determining the validity of the model in accounting
196 for unique variance in moral behavior in sport.

197 **The Present Research**

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

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

231 Participants were young team sport athletes. We collected data from two separate
232 samples. The first sample (Sample 1) comprised young Italian team sport athletes ($N = 355$;
233 81.4% male; M age = 18.98 years, $SD = 4.35$) participating in soccer ($n = 172$; 48.5%),
234 volleyball ($n = 99$; 27.9%), rugby ($n = 72$; 20.3%), or basketball ($n = 12$; 3.4%). The second
235 sample (Sample 2) comprised young Italian male futsal players ($N = 296$; M age = 21.09
236 years, $SD = 7.56$). All participants were recruited through direct contact with sport clubs,
237 which voluntarily gave permission to contact their athletes. All recruited athletes gave their
238 consent to participate in the study. The institutional review board of [UNIVERSITY
239 OMITTED FOR MASKED REVIEW] approved the study protocol. Participants were
240 informed of the aims and purposes of the study, as well as of their participation rights (e.g.,
241 confidentiality of responses, right to withdraw any time without any consequences).

242 **Measures**

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

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

260 **Model tests and statistical analyses**

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

272 In all analyses, construct validity of the latent factors was tested using average variance
273 extracted (AVE) and composite reliability coefficients (ρ) for each factor, which should
274 exceed .50 and .70, respectively. Discriminant validity of each factor is supported when the
275 square-root of the AVE for each latent variable exceeds its correlation coefficient with other
276 latent variables (Esposito Vinzi et al., 2010). In addition, potential multicollinearity was
277 checked using the full collinearity variance inflation factor (AFVIF), with values lower than
278 3.30 indicative of no issues with multicollinearity (Kock, 2015). Adequacy of the
279 hypothesized model was established using an overall goodness-of-fit (GoF) index given by
280 the square root of the product of the AVE and average R^2 for the model, with values of .100,

281 .250, and .360 corresponding to small, medium, and large effect sizes, respectively
282 (Tenenhaus, Esposito Vinzi, Chatelin, & Lauro, 2005). Further information on the adequacy
283 of the model is provided by the average path coefficient (APC) and average R^2 (ARS)
284 coefficient across the model parameters, both of which should be statistically significantly
285 different from zero. With respect to model effects, each structural relation among model
286 constructs was estimated with standardized coefficients, confidence intervals, and test of
287 difference from zero.

288 Results

289 Table 1 shows the measurement-level statistics of the estimated models. Composite
290 reliability coefficients for each latent factor exceeded the .70 criterion. In addition, the square
291 root of the estimated variance extracted by each factor exceeded its correlation with all other
292 latent variables supporting the discriminant validity of each factor. Overall, the analyses
293 showed good fit with the observed data for models 1 (GoF = 0.250; APC = .165, $p < .001$;
294 ARS = .093, $p = 0.019$; AFVIF = 1.512) and 2 (GoF = 0.234; APC = .116, $p = .011$; ARS =
295 .074, $p = 0.050$; AFVIF = 1.701).

296 Focusing on estimates of proposed effects among model constructs in Sample 1 (Figure
297 1), perceived autonomy support significantly and positively predicted their need satisfaction
298 for competence, relatedness, and autonomy, both when support was from parents ($\beta = .15$,
299 $p = .002$; $\beta = .15$, $p = .003$; $\beta = .19$, $p < .001$, respectively) and from coaches ($\beta = .11$, $p = .023$; $\beta = .30$,
300 $p < .001$; $\beta = .30$, $p < .001$, respectively). Consistent with hypotheses, we found significant
301 effects of athletes' need satisfaction on autonomous and controlled motivation for the
302 competence ($\beta = .20$, $p < .001$; $\beta = .26$, $p < .001$, respectively), relatedness ($\beta = .34$, $p < .001$;
303 $\beta = .11$, $p = .016$), and autonomy ($\beta = .12$, $p = .014$; $\beta = -.10$, $p = .034$) needs. As above, these
304 effect sizes remained virtually identical after the statistical control of past cheating behavior.
305 Finally, the analysis also showed significant effects of motivational factors on athletes'

306 attitudes. Specifically, athletes' autonomous motivation predicted keeping winning in
307 proportion ($\beta = .15, p = .003$), and controlled motivation predicted acceptance of cheating (β
308 $= .18, p < .001$) and gamesmanship ($\beta = .18, p < .001$). For these latter two effects, inclusion
309 of past cheating behavior reduced the size of the effects and rendered the effect non-
310 significant.

311 Focusing on the analysis for Sample 2 (see Figure 2). These analyses tested identical
312 effects as model 1 and also included effects of model constructs on the number of yellow
313 cards athletes received as an objective measure of cheating behavior. As expected, both
314 acceptance of gamesmanship ($\beta = .10, p = .038$) and acceptance of cheating ($\beta = .13, p =$
315 $.011$) positively predicted the behavioral outcome. As also expected, these effects were
316 substantially attenuated with the inclusion of past behavior: the effect of acceptance of
317 gamesmanship was extinguished ($\beta = .02, p = .34$), while the effect of acceptance of cheating
318 was significantly reduced but remain significant ($\beta = -.12, p = .019$), although the negative
319 effect which is inconsistent with previous effects was probably attributable to a suppressor
320 effect.

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

324 Discussion

325 Based on key tenets from theories of moral and prosocial behavior in sport and self-
326 determination theory (e.g., Lee et al., 2007; Ntoumanis and Standage, 2009; Vallerand et al.,
327 1997), the present investigation tested an extended version of the Ntoumanis and Standage's
328 (2009) model that comprised three main hypotheses. First, we hypothesized that athletes'

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

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

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

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

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

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

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

381 **Limitations and suggestions for future research**

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

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

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

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

427 **Conclusions and Recommendations for Practice**

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

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

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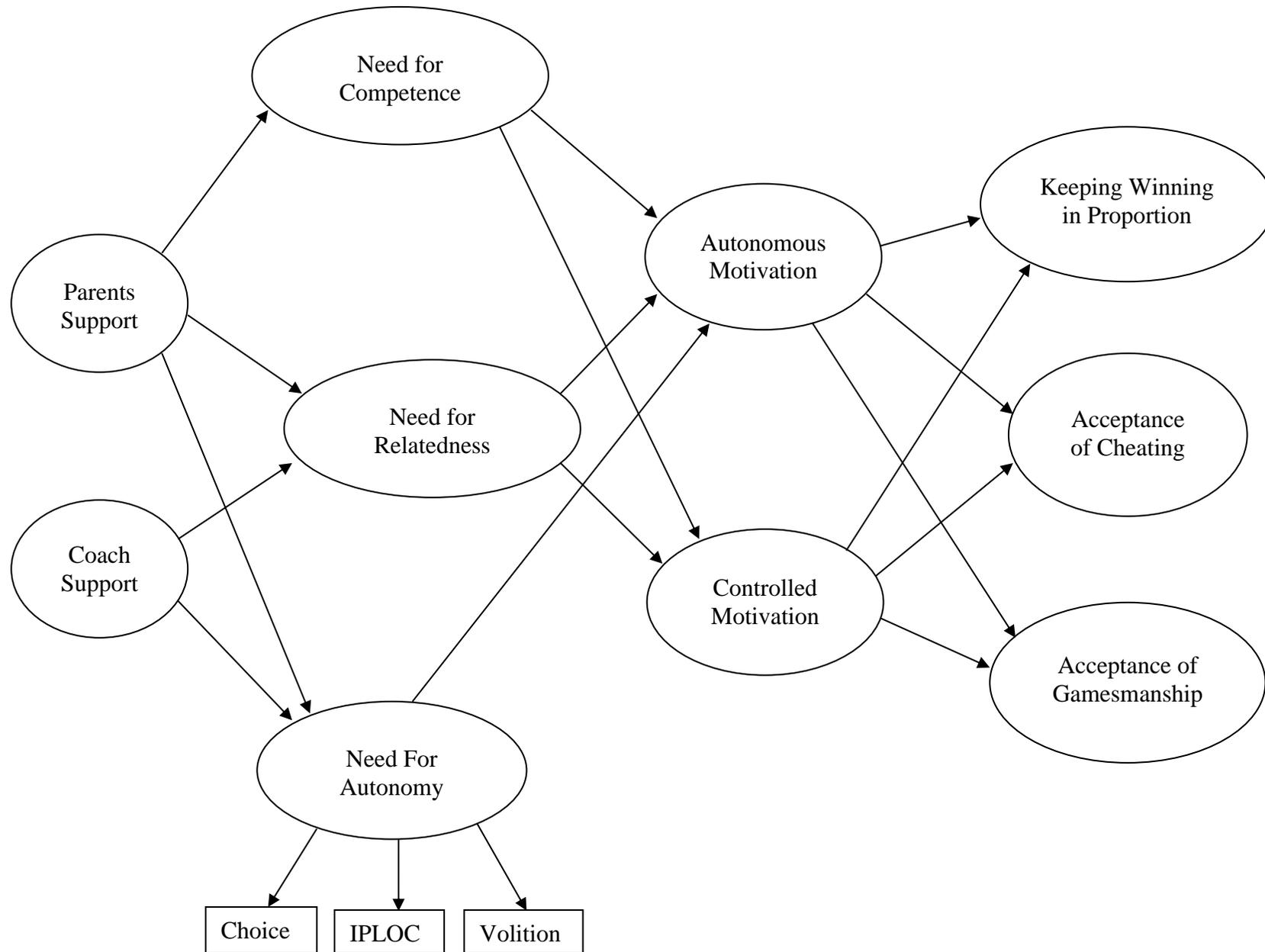
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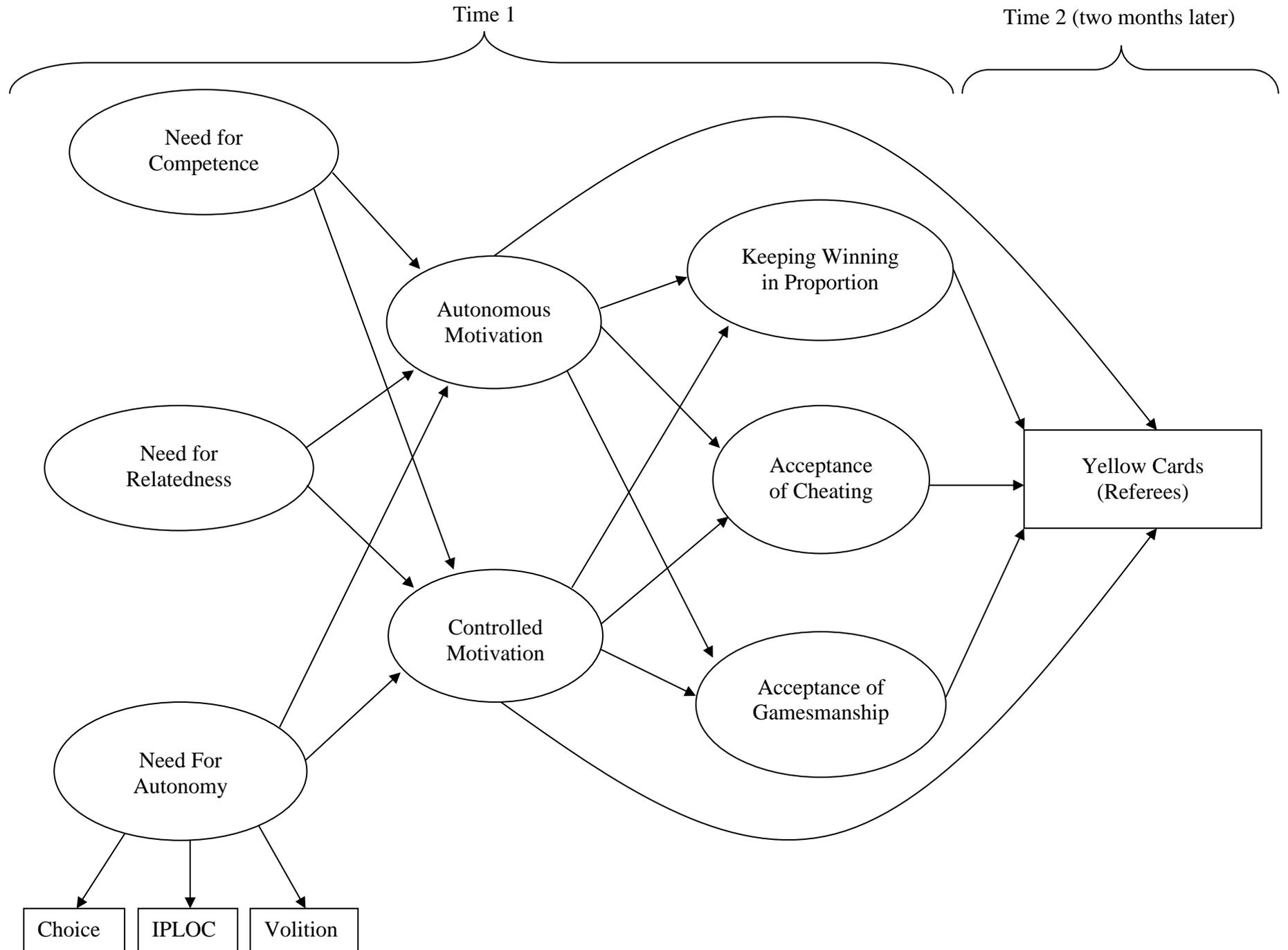
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564



565 Table 1

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

10. Acceptance of Gamesmanship	.90	.75	-.04	-.01	.11*	.03	-.03	.01	.18***	-.26***	.58***	.87			
11. Self-reported Cheating	.94	.80	-.11*	-.09	-.01	-.12*	-.11*	-.04	.13*	-.15**	.62***	.46***	.90		
12. Self Reported 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

567 *Note.* Coefficients on the upper line are for Sample 1 and coefficients on the lower line are for Sample 2. ρ = composite reliability coefficient;

568 AVE= Average Variance Extracted; values on principal diagonal are squared-root of AVE.

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

570

571 **Appendix A**572 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	<i>My coach encouraged me to ask questions</i>	strongly disagree (1) -	.80 [NA]	1
	<i>My coach pays attention to me when I share personal matters to him/her</i>	strongly agree (5)		
	<i>I feel that my coach provides me choices and option</i>			
	<i>I feel my coach is comprehensive and understands me</i>			
From Parents- Adapted from POPS ^e	<i>My parents let me make my own choices when it comes to sport</i>	strongly disagree (1) -	.77 [NA]	1
	<i>My parents find time to talk with me about my sport activity</i>	strongly agree (5)		
	<i>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</i>			
	<i>My parents are supportive when I make mistakes</i>			

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

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.

.72 [.63]

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.

Sport Motivation- SMS

Why do you practice your sport?

totally disagree (1)-

1 & 2

(Pelletier et al., 1995)

totally agree (7)

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

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

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

	<i>You have to think about the other people and not just winning</i>			
Acceptance of Cheating	<i>I would cheat if I thought it would help me win</i>		.87 [.88]	
	<i>If other people are cheating, I think I can too</i>			
	<i>It is OK to cheat if nobody knows</i>			
	<i>I cheat if I can get away with it</i>			
Acceptance of Gamesmanship	<i>Sometimes I waste time to unsettle the opposition</i>		.85 [.87]	
	<i>It is not against the rules to 'psyche' people out so it is OK to do</i>			
	<i>I sometimes try to wind up the opposition</i>			
	<i>It's a good idea to upset your opponents</i>			
	<i>If I don't want another person to do well, then I put them off a bit</i>			
Self-reported past cheating behavior	<i>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,</i>	<i>Never (0) - almost always (5).</i>	.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

573 *Note.*

574 ^aIn order to maximise the parsimony of the model tested, we used the principle of item parcelling to obtain measure indicators for need for
575 competence and need for relatedness, autonomous and controlled motivation, keeping winning in proportion, acceptance of cheating, and
576 acceptance of gamesmanship constructs. Item parcelling is a procedure in which scale items are combined to produce a smaller set of items to
577 reduce the number of estimated parameters of a latent variable model. The procedure aims to produce a more parsimonious measurement model
578 and more stable parameter estimates (Little, Cunningham, Shahar, & Widaman, 2002). Parcels were created by randomly grouping items of each
579 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
580 parcel items for the perceived autonomy support, self-reported cheating, and need for autonomy scales.

581 ^bAll questionnaires were translated in Italian using the translation/back translation method (Hambleton, 2001).

582 ^cValues presented outside parentheses are for Sample 1 and those within parentheses are for Sample 2.

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

587 °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

589