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The influence of social variables and moral disengagement on prosocial and antisocial behaviours in field hockey and netball

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Abstract
In this study, we examined: (a) the effects of perceived motivational climate and coaching character-building competency on prosocial and antisocial behaviours towards team-mates and opponents in field hockey and netball; (b) whether the effects of perceived character-building competency on sport behaviours are mediated by moral disengagement; and (c) whether these relationships are invariant across sport. Field hockey ($n = 200$) and netball ($n = 179$) players completed questionnaires assessing the aforementioned variables. Structural equation modelling indicated that mastery climate had positive effects on prosocial and negative effects on antisocial behaviour towards team-mates, while performance climate had a positive effect on antisocial behaviour towards team-mates. Perceived character-building competency had a positive effect on prosocial behaviour towards opponents and negative effects on the two antisocial behaviours; all of these effects were mediated by moral disengagement. No effect was found for prosocial behaviour towards team-mates. The model was largely invariant across sport. The findings aid our understanding of social influences on prosocial and antisocial behaviours in sport.

Keywords: *Motivational climate, character building, coaching competency, mediation*

Introduction

Rule breaking and aggressive behaviours can result in negative experiences for sport participants, whereas behaviours such as helping injured opponents and encouraging team-mates can contribute to a more positive sport experience. Researchers have found that the social team environment has implications for positive social behaviours such as helping an opponent off the floor as well as for negative social behaviours such as retaliating to a bad tackle (e.g. Boardley, Kavussanu, & Ring, 2008; Kavussanu, Seal, & Phillips, 2006). We examined the effects of social-environmental factors on positive and negative social behaviours in field hockey and netball and investigated a potential mediator of these effects.

Morality and sport behaviours

In his social cognitive theory of moral thought and action, Bandura (1991) suggests that individuals judge whether behaviour is reprehensible using a variety of rules or standards, such as the consequences of the action and resultant injury. Individuals must integrate the morally relevant information in the situations that confront them to decide whether behaviour is reprehensible. For Bandura (1991), the *consequences* of the act for others are of primary importance, but other factors also play a role in judging the morality of the conduct.

Bandura (2002) has also described two aspects of morality: proactive and inhibitive. Proactive morality is the power to behave humanely, whereas inhibitive morality pertains to the power to refrain from behaving inhumanely. In sport, the terms prosocial and antisocial behaviour have been used to refer to the proactive and inhibitive aspects of morality, respectively (e.g. Sage, Kavussanu, & Duda, 2006). Prosocial behaviours have been defined as voluntary acts intended to help or benefit another person (Eisenberg & Fabes, 1998), and antisocial behaviours are voluntary acts intended to harm or disadvantage another individual (Sage et al., 2006). In sport, helping an injured opponent and deliberately fouling an opponent are prosocial and antisocial behaviours, respectively.

In the past, researchers have mainly investigated social behaviours towards *opponents*, while those

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aimed at team-mates have only been examined using one or two items in global measures of behaviour (Sage & Kavussanu, 2007, 2008; Shields, LaVoi, Bredemeier, & Power, 2007). However, due to the social nature of team sport, and hence the potential interactions among team-mates, prosocial and antisocial behaviours are also likely to occur towards team-mates. A recent study showed that these behaviours can be distinct from the ones directed at opponents and have different correlates (Kavussanu & Boardley, 2009). Thus, research is needed to examine prosocial and antisocial behaviours towards team-mates to enhance our understanding of the morally relevant behaviours that occur in sport.

Social influences on behaviours

It could be argued that the most influential individual in athletes' sport experience is their coach. Coaches should create a team environment that promotes prosocial behaviours and deters antisocial behaviours in their athletes because such an environment provides a more positive experience for participants. Thus, identifying aspects of the coaching environment associated with prosocial and antisocial behaviours is important.

The first aspect of the team environment likely to influence sport behaviours is the motivational climate, which pertains to the goals emphasized and the values that are salient in the achievement context (Ames, 1992) and is created by significant others (e.g. coaches); motivational climate has been distinguished into mastery climate, where the emphasis is on individual progress and task mastery, and performance climate, where the emphasis is on normative success and outperforming others. The two climate dimensions have been differentially associated with moral variables in sport. Specifically, mastery climate has been positively related to prosocial behaviour and sportspersonship and negatively linked to antisocial behaviour, whereas performance climate has been positively linked to antisocial behaviour and low levels of sportspersonship and moral functioning (e.g. Kavussanu, 2006; Kavussanu & Spray, 2006; Miller, Roberts, & Ommundsen, 2004).

The second aspect of the team environment that may affect sport behaviours is character-building competency. This variable was derived from the coaching efficacy model (Feltz, Chase, Moritz, & Sullivan, 1999), which posits that one of the four dimensions of coaching efficacy is character-building; this is a coach's belief in his or her ability to influence athletes' personal development and positive attitudes towards sport. In the conceptual model of coaching efficacy, coaches high in character-building efficacy have been proposed to demonstrate greater frequency of character-development behaviours, such as promoting good sportspersonship, respect for others, and fair play, and have athletes who display more positive attitudes towards sportspersonship and more sportsman-like behaviours (see Feltz et al., 1999).

Models of coaching effectiveness propose that coaching behaviours influence athletes' attitudes and behaviours through athletes' *perceptions* (see Horn, 2002; Smoll & Smith, 1989). In one study, rugby players, who perceived that their coach was effective in character building, engaged in more prosocial behaviours (Boardley et al., 2008). In another study, ice hockey players who perceived that their coach was competent in motivation (i.e. one of the coaching-efficacy dimensions) reported more satisfaction with their coach (Myers, Feltz, Maier, Wolfe, & Reckase, 2006). Thus, athletes' perceptions of their coach have been associated with athlete-related outcomes as posited in the coaching efficacy model (Feltz et al., 1999). Based on the work described above, athletes' perceptions of coaching character-building competency may be linked to their prosocial and antisocial behaviour in sport.

Moral disengagement

A key variable in Bandura's (1991) social cognitive theory of moral thought and action is moral disengagement, which refers to eight psychosocial mechanisms that allow individuals to cognitively reconstrue transgressive behaviours into benign or laudable acts. These mechanisms are moral justification, euphemistic labelling, advantageous comparison, diffusion of responsibility, displacement of responsibility, distortion of consequences, dehumanization, and attribution of blame. Bandura (2002) has described these mechanisms in detail, and Boardley and Kavussanu (2007) have provided sport-specific examples of their use. Moral disengagement in sport has been strongly and positively related to antisocial behaviours, such as retaliating after a bad foul and deliberately obstructing an opponent (Boardley & Kavussanu, 2007).

Bandura and colleagues have also proposed that moral disengagement may influence prosocial behaviour (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996). Specifically, certain moral disengagement mechanisms, such as dehumanization and attribution of blame, operate by minimizing empathic feelings towards the recipient of the behaviour. Due to these lower levels of empathy, people who disengage morally may be less likely to consider other people's feelings when deciding how to behave towards them, thereby engaging in fewer prosocial behaviours (Bandura et al., 1996). Moral disengagement has been inversely linked to prosocial

behaviour in Italian schoolchildren (Bandura et al., 1996) and team sport athletes (Boardley & Kavussanu, 2007).

Mediating effects

The social context plays an important role in determining moral thought and action (Bandura, 2002). In one study, athletes reported that coaches had ''encouraged cheating or hurting an opponent to help their team win'' and ''encouraged getting back at an opponent who plays dirty'' (Shields, Bredemier, LaVoi & Power, 2005). These coaching behaviours have the potential to promote moral disengagement, which can occur, in part, when people view their actions as resulting from the directives of others (Bandura, 1991). Athletes who perceive coaching behaviours similar to those identified by Shields et al. (2005) may morally disengage by displacing responsibility for their actions on their coach, morally justifying transgressions in pursuit of a valued social outcome (i.e. to help the team win), or by attributing blame to people they harm in response to provocation (see Bandura, 1991). Thus, a coach's behaviour may influence players' moral disengagement.

Moral disengagement may mediate the effects of perceived coaching character-building competency on athletes' prosocial and antisocial behaviours. Athletes are assumed to make their evaluations regarding their coach's character-building competency based on their coach's behaviour. Coaches who engage in behaviours such as those reported by Shields et al. (2005) are more likely to be rated low on character-building competency, as these behaviours are not consistent with fair play and good sportspersonship. Thus, athletes who perceive that their coach is high on character-building competency may have lower levels of moral disengagement because they may have reduced exposure to coaching behaviours that promote its use. In turn, higher moral disengagement is likely to increase and decrease, respectively, the frequency of athletes' prosocial and antisocial behaviour.

The current study

In this study, we examined the effects of perceived motivational climate and character-building competency on prosocial and antisocial behaviours towards team-mates and opponents in field hockey and netball, and whether the effects of character-building competency on the behaviours are mediated by moral disengagement. We hypothesized that: (a) perceived mastery climate would predict positively the two prosocial behaviours and negatively the two antisocial behaviours; (b) perceived performance climate would predict positively the two antisocial behaviours; and (c) perceived coaching character-building competency would predict positively the two prosocial behaviours and negatively the two antisocial behaviours, and that these latter effects would be mediated by athletes' moral disengagement.

We also expected links between mastery climate, character-building competency, and performance climate, and between the different behaviour types. First, a mastery climate shares similarities with character-building competency because both are aspects of a positive coaching environment. In contrast, a performance climate is part of a negative coaching environment. Thus, we expected a positive relationship between mastery climate and character-building competency and a negative relationship between these two variables and performance climate. Finally, we expected positive relationships between the two prosocial behaviours and between the two antisocial behaviours (Kavussanu & Boardley, 2009).

The relationships specified above formed the hypothesized model, which was based on research conducted using a variety of sports. However, in the current study, we focused on the sports of field hockey and netball. A central issue concerning the applicability of theoretical models is their invariance across different groups (Byrne, 2006). When testing hypothesized models in samples that consist of members from different groups, it is important to determine whether the relationships identified in the model are equivalent across groups (Byrne, 2006). Demonstrating invariance across groups provides additional support for identified models. In this study, we examined the invariance of the final model across the sports of field hockey and netball.

Methods

Participants

Participants were male ($n = 155$) and female ($n = 224$) athletes competing in the sports of field hockey ($n = 200$) and netball ($n = 179$); all netball players were females. These two sports were selected because they can be classified as medium- or high-contact sports with high potential to raise moral issues (see Bredemeier, Weiss, Shields, & Cooper, 1986). At the time of data collection, participants ranged in age from 15 to 64 years (mean = 22.2, $s = 6.5$), they had played for their current team for an average of 4.2 years ($s = 4.9$), they had been with their current coach for 3.3 years ($s = 4.3$), and had participated in their respective sport for an average of 10.3 years ($s = 6.1$). The standard (current/highest ever) at which the athletes had played their sport was club (61.7/30.9%), county (11.6/33.5%), regional (16.9/19.5%), national (8.5/12.7%), or international (1.3/3.4%).

Measures

Prosocial and antisocial behaviour in sport. The Prosocial and Antisocial Behaviour in Sport Scale (PABSS; Kavussanu & Boardley, 2009) was used to assess reported prosocial and antisocial sport behaviours. Players were presented with 20 items describing sport behaviours and asked to report how often they had engaged in each behaviour this season on a scale anchored by 1 (*never*) and 5 (*very often*). The PABSS consists of four subscales that measure prosocial behaviour towards team-mates (four items; e.g. encouraged a team-mate), prosocial behaviour towards opponents (three items; e.g. helped an injured opponent), antisocial behaviour towards team-mates (five items; e.g. criticized a team-mate), and antisocial behaviour towards opponents (eight items; e.g. deliberately fouled an opponent). Team-mate behaviours are only verbal, whereas opponent behaviours are verbal and physical. Kavussanu and Boardley (2009) have provided evidence for the reliability of the prosocial team-mate ($\alpha = 0.74$) and opponent ($\alpha = 0.74$), and antisocial team-mate ($\alpha = 0.83$) and opponent ($\alpha = 0.86$), subscales.

Perceived motivational climate. The Perceived Motivational Climate in Sport Questionnaire-2 (PMCSQ-2; Newton, Duda, & Yin, 2000), which consists of 33 items that measure mastery and performance climate, was used to assess players' perceptions of the motivational climate in their team. Athletes were asked to think about how it felt to play for their team this season, read the items, and circle the number that best represented how they felt. The stem for each item was ''On this team . . .''. Participants responded using a Likert scale anchored by 1 (*strongly disagree*) and 5 (*strongly agree*). Newton et al. (2000) have provided evidence for the factorial validity of the scale and the reliability of the mastery ($\alpha = 0.87$ in Study 1 and $\alpha = 0.88$ in Study 2) and performance ($\alpha = 0.89$ in Study 1 and $\alpha = 0.87$ in Study 2) subscales. Example items are ''each player has an important role'' (mastery) and ''only the top players 'get noticed' by the coach'' (performance).

Perceived coaching character-building competency. Athletes' perceptions of their coach's character-building competency were measured using the 4-item character-building subscale of the Coaching Competency Scale (CCS; Myers et al., 2006). Athletes were informed that coaches differ in their ability to influence the learning and performance of their players and were asked to rate their coach's competence by circling the number that best represented how they felt on statements referring to coaching competency. The stem for each item was ''How competent is your head coach in his or her ability to. . .''. Athletes responded on a scale from 0 (*not at all competent*) to 9 (*extremely competent*). Myers et al. (2006) have provided evidence for the factorial validity and reliability ($\alpha = 0.82$) of this subscale. An example item is ''instil an attitude of good moral character''.

Moral disengagement. The Moral Disengagement in Sport Scale – Short (MDSS-S; Boardley & Kavussanu, 2008) was used to assess athletes' moral disengagement. The MDSS-S consists of eight items measuring moral disengagement in sport. Athletes were asked to read a number of statements describing thoughts and feelings players may have and indicate their level of agreement using a Likert scale anchored by 1 (*strongly disagree*) and 7 (*strongly agree*). The scale has demonstrated very good internal consistency with alpha coefficients ranging from 0.80 to 0.85; evidence for its factorial, convergent, and concurrent validity has been provided (Boardley & Kavussanu, 2008). An example item is ''Insults among players do not really hurt anyone''.

Procedure

After receiving ethical clearance from the ethics committee of our university, we contacted the head coaches of 21 netball and 12 field hockey teams in central England. All coaches agreed to their athletes' participation, and arrangements were made for one of two trained research assistants to collect the data during designated practice sessions. Athletes completed questionnaires that included the measures detailed above. Before completing the questionnaire, participants were informed that the survey examined sporting attitudes and that honesty in responses was vital. It was also explained that all responses would be strictly confidential and only used for research purposes. Then, participants signed an informed consent form and completed the questionnaire in approximately 15 min. Data were collected around the middle of the season. On average, netball players had played 10.2 ($s = 5.1$) matches and hockey players had played 11.8 ($s = 5.6$) matches at the time of data collection after matches.

Results

Data screening

Preliminary data screening was conducted to check for missing values, normality, linearity, and outliers (Tabachnick & Fidell, 2001). Only 0.1% of the data were missing and these data were unrelated to any variable, thus they were assumed to be missing at random. The expectation maximization algorithm

was used to impute missing values. No cases had greater than 50% of the items missing on any scale. Acceptable distributions were evidenced by skewness and kurtosis $< |2|$ (see Table I). Linear relationships were confirmed between all variable pairs through inspection of the bivariate scatterplots. Finally, to identify outliers, we inspected the frequency distributions of each item's *z*-scores. Two cases with scores in excess of ± 3.29 on several (≥ 5) items were identified as multivariate outliers and were removed, leaving a total of 377 cases.

Descriptive statistics, scale reliabilities, and factor correlations

Descriptive statistics, alpha coefficients, and factor correlations of the variables used in this study are presented in Table I. On average, athletes reported high frequencies of prosocial and low frequencies of antisocial behaviours towards team-mates and moderate frequencies of prosocial and antisocial behaviours towards opponents. They also reported moderately high perceptions of coaching character-building competency, high perceptions of mastery motivational climate, moderately low perceptions of performance climate, and low-to-moderate levels of moral disengagement. All scales demonstrated good or very good internal consistency.

Mastery climate had strong positive and negative relationships respectively with prosocial and antisocial team-mate behaviours. Performance climate had a moderate-to-strong relationship with antisocial team-mate behaviours. Character-building competency had weak positive and modest negative relationships with prosocial and antisocial opponent behaviours, respectively. Moral disengagement had modest negative and very strong positive relationships with prosocial and antisocial opponent behaviours, respectively. Finally, coaching character-building competency was inversely and moderately related to moral disengagement. Correlation coefficients of 0.10, 0.30, and 0.50 represent small, moderate, and high effect sizes, respectively (Cohen, 1992).

Structural equation modelling

The aims of the study were to examine: (a) the effects of motivational climate and character-building competency on prosocial and antisocial behaviours; (b) whether the effects of character-building competency on sport behaviours are mediated by athletes' moral disengagement; and (c) whether the hypothesised model is invariant across sport. These aims were examined using structural equation modelling. The first aim was addressed using the two-step approach recommended by Anderson and Gerbing (1988), the second using the procedures recommended by Holmbeck (1997), and the third using multi-sample analyses.

Structural equation modelling was conducted using the EQS 6.1 statistical package (Bentler & Wu, 2002). Initial analyses produced high values for the normalized estimate of Mardia's coefficient, indicating deviation from multivariate normality. Therefore, the robust maximum likelihood estimation method was employed. The fit indices used to evaluate model fit were the Satorra-Bentler chi-square (χ^2), the robust comparative fit index (CFI), the standardized root mean square residual (SRMR),

Table I. Descriptive statistics, scale reliabilities, and factor correlations ($N = 377$).

Variable	Mean	*s*	Range	Skew	Kurtosis	1	2	3	4	5	6	7	8
1. Prosocial team-mates	4.19	0.62	2.25–5.00	−0.63	−0.06	(0.76)							
2. Prosocial opponents	2.90	0.90	1.00–5.00	−0.07	−0.37	0.32	(0.76)						
3. Antisocial team-mates	1.78	0.71	1.00–4.50	1.08	0.86	−0.27	0.21	(0.77)					
4. Antisocial opponents	2.36	0.88	1.00–4.75	0.24	−0.60	0.02★	−0.03★	0.57	(0.79)				
5. Mastery climate	4.11	0.55	1.20–5.00	−0.85	1.83	0.49	0.13	−0.46	−0.11★	(0.81)			
6. Performance climate	2.39	0.70	1.00–4.50	0.57	0.18	−0.22	0.06★	0.40	0.21	−0.47	(0.73)		
7. CB competency	6.72	1.41	1.75–9.00	−0.26	−0.51	0.32	0.13	−0.35	−0.22	0.48	−0.29	(0.90)	
8. Moral disengagement	3.04	1.10	1.00–6.38	0.24	−0.55	−0.13	−0.21	0.38	0.75	−0.22	0.20	−0.26	(0.84)

Note: Variables 1–4 refer to behaviour. CB = character-building. Alpha coefficients are presented on the diagonal. Possible scale ranges: 1 to 7 for moral disengagement; 0 to 9 for character-building competency; 1 to 5 for all other scales. All statistics were computed using only the items included in the final model.

★Not significant at $P < 0.05$.

and the robust root mean square error of approximation (RMSEA). A good fit is achieved when CFI values are close to 0.95, the SRMR is close to 0.08, and the RMSEA is close to 0.06 (Hu & Bentler, 1999). The consistent Akaike information criterion (CAIC) and $\Delta\chi^2$ test were used to compare models. Lower CAIC values (Hair, Anderson, Tatham, & Black, 1998), and significantly lower χ^2 values, indicate better model fit.

Testing the measurement model. The first step of the Anderson and Gerbing (1988) approach involves testing the measurement model – that is, the posited relationships of the observed variables to their underlying constructs, with the constructs allowed to intercorrelate. The measurement model consisted of all items ($N = 65$) measuring motivational climate, coaching character-building competency, moral disengagement, and behaviours. This model had unacceptable fit: χ^2 (1987) = 3700.20; CFI = 0.795; RMSEA = 0.048; SRMR = 0.079. The items that contributed most to model misfit were removed in a series of confirmatory factor analyses. The final model, consisting of 36 items, had a good fit: χ^2 (566) = 867.79; CFI = 0.932; RMSEA = 0.038; SRMR = 0.056; CAIC = −3055.87. Factor loadings ranged from 0.57 to 0.87.

The specific content of the final model was as follows. For perceptions of a mastery climate, the items used were: each player contributes in some important way; players feel good when they try their best; players help each other learn; players feel successful when they improve; and each player has an important role. For perceptions of a performance climate, the items used were: the coach gives most of his or her attention to the stars; the coach praises players only when they outplay team-mates; the coach thinks only the starters contribute to the success of the team; and only the top players ''get noticed'' by the coach. All items were retained from the MDSS-S and the character-building competency subscale of the CCS. Finally, all PABSS items were used except for ''showed frustration at a team-mate's poor play'' (antisocial team-mate) and ''tried to injure an opponent'', ''intentionally distracted an opponent'', ''intentionally broke the rules of the game'', and ''criticized an opponent'' (all antisocial opponent).

Testing the hypothesized model. The next step involved testing the hypothesized structural model (Anderson & Gerbing, 1988). Thus, we tested a model where mastery climate influenced the four behaviours directly, performance climate influenced the two antisocial behaviours directly, and character-building competency influenced the four behaviours through moral disengagement. We also specified relationships between the three predictor variables, and between the two prosocial and two antisocial behaviours. This model had a good fit to the data: χ^2 (578) = 911.34; CFI = 0.924; RMSEA = 0.039; SRMR = 0.064; CAIC = −3095.46. However, the Wald test indicated that the paths from moral disengagement to prosocial team-mate behaviour, from mastery climate to prosocial opponent behaviour, and both climates to antisocial opponent behaviour were not significant. Removing these paths had no significant effect on model fit, thus we respecified the model without them.

The re-specified model had a good fit to the data [χ^2 (582) = 917.13; CFI = 0.924; RMSEA = 0.039;

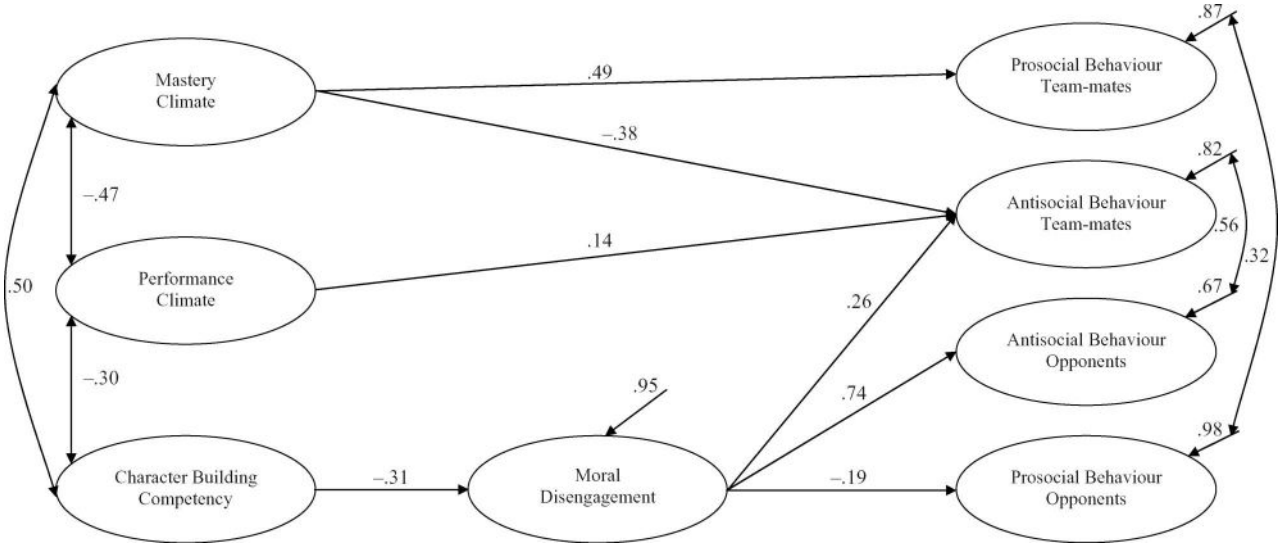

Figure 1. Final model of predictors of prosocial and antisocial behaviours. *Notes*: All paths are significant at the 0.05 level. Factor indicators are not shown for simplicity reasons.

SRMR = 0.064; CAIC = −3117.44] and the $\Delta\chi^2$ test showed no significant difference between the two models [$\Delta\chi^2$ (−4) = 5.68, $P > 0.05$]. However, as the re-specified model is more parsimonious, and the CAIC showed better fit of this model, this model was retained. As shown in Figure 1, mastery climate positively predicted prosocial and negatively predicted antisocial team-mate behaviours, whereas performance climate positively predicted antisocial team-mate behaviours. Coaching character-building competency predicted moral disengagement negatively, which, in turn, predicted antisocial team-mate behaviours positively, prosocial opponent behaviours negatively, and antisocial opponent behaviours positively.

Testing mediation. The role of moral disengagement in mediating the effects of perceived coaching character-building competency on prosocial and antisocial

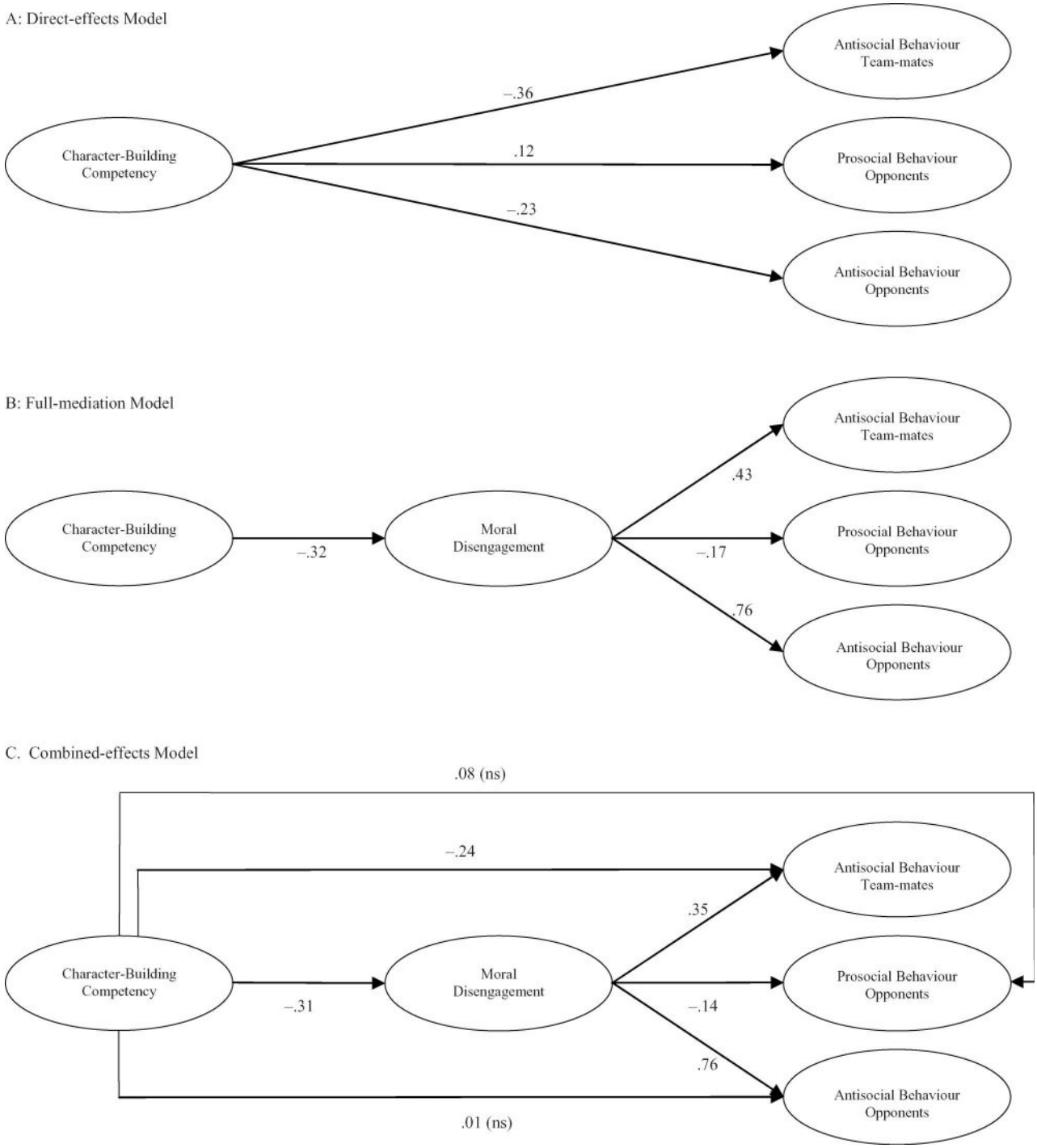

Figure 2. Models examined in mediation testing. ns = non significant. *Note*: Factor indicators are not shown for simplicity reasons.

behaviours was examined following the procedures recommended by Holmbeck (1997) which are based on the proposals of Baron and Kenny (1986). First, three models, presented in Figure 2, were tested to examine how well they fit the data. The first was a *direct-effects* model (Figure 2A) with direct paths from character-building competency to the three behaviours. The aim of testing this model was to determine whether the predictor variable *directly* influenced the outcome variables. This model had an acceptable fit: χ^2 (87) = 214.92; CFI = 0.932; RMSEA = 0.063; SRMR = 0.111. The second was a *full-mediation* model with paths from character-building competency to moral disengagement, and from moral disengagement to the behaviours (Figure 2B). The aim of testing this model was to determine whether the predictor variable affected the mediator, and whether the mediator affected the outcome variables. This model had a good fit: χ^2 (226) = 492.35; CFI = 0.913; RMSEA = 0.056; SRMR = 0.080. The third model was a *combined-effects* model that included all paths from Steps 1 and 2 (Figure 2C). This model also had a good fit: χ^2 (223) = 478.05; CFI = 0.917; RMSEA = 0.055; SRMR = 0.074.

Next, we compared the fit indices of the full-mediation and direct-effects models using the $\Delta\chi^2$ test. This is equivalent to examining the effects of the predictor on the outcome variable in the presence of the mediator (see Baron & Kenny, 1986). Mediation is supported if there is no significant difference between the full-mediation and combined-effects models (Holmbeck, 1997). The $\Delta\chi^2$ test showed that the combined-effects model had a better fit than the full-mediation model [$\Delta\chi^2$ $(-3) = -13.56$, $P < 0.01$], indicating that full mediation does *not* exist in all relationships.

Finally, we examined the path coefficients from character-building competency to the three behaviours in the combined- and direct-effects models, to determine which effects were mediated. If, in the combined-effects model, the direct path coefficient from character-building competency to a behaviour is non-significant, full mediation of this effect exists. If the path remains significant but is reduced in magnitude compared with the corresponding path in the direct-effects model, partial mediation exists. In the combined-effects model (Figure 2C), the paths between character-building competency and prosocial and antisocial opponent behaviours were non-significant, suggesting that moral disengagement *fully* mediated these relationships. The path from character-building competency to antisocial team-mate behaviours remained significant but was reduced in strength (-0.12) compared with the same path in the direct-effects model (Figure 2A), suggesting that moral disengagement *partially* mediated this relationship.

Testing model invariance. The invariance of the final model across the sports of hockey and netball was examined using multi-sample structural equation modelling; the models tested were selected based on the recommendations of Byrne (2006) for testing the equivalence of causal models. Specifically, Byrne (2006) recommends testing a series of models with sequentially enforced invariance constraints on model parameters across groups. Constrained models were examined in two ways. First, we tested for a significant difference in fit between *models*, by calculating ΔCFI, which indicates the magnitude of change in the CFI from one model to another; a magnitude of change that is less than -0.01 indicates no significant difference between two models (Cheung & Rensvold, 2002). Second, we examined the invariance of *individual constraints*, by inspecting the Lagrange multiplier (LM) test results. Constraints were considered variant if they resulted in an increase in χ^2 of $\geq$5.0/d.f. The multi-sample analyses were conducted in five steps and results are presented in Table II.

First, we tested *baseline* model fit for netball and hockey players separately. Model fit was good for both groups. Second, we tested for *configural invariance*, which exists when all items are indicators of the same factors in all groups. To this end, the model was tested for invariance across the two groups simulta-

Table II. Summary of fit indices for multi-sample analyses.

Model	d.f.	χ^2	CFI	SRMR	RMSEA	CAIC
Baseline netball	582	803.40	0.899	0.088	0.046	−2794.39
Baseline hockey	582	755.67	0.914	0.072	0.039	−2907.04
Configural invariance	1164	1562.36	0.906	0.080	0.043	−6512.94
Metric invariance	1192	1609.68	0.901	0.085	0.043	−6659.86
ECVC	1198	1620.17	0.900	0.096	0.043	−6691.00
Structural equivalence	1204	1608.12	0.905	0.094	0.042	−6744.67

Note: d.f. = degrees of freedom; χ^2 = Satorra-Bentler scaled chi-square; CFI = robust comparative fit index; SRMR = standardized root mean square residual; RMSEA = robust root mean square error of approximation; CAIC = consistent Akaike information criterion; ECVC = equivalence of construct variance and covariance.

neously without placing any constraints. This model had a good fit, demonstrating configural invariance. The fit indices obtained for the configural invariance model were compared with the more-constrained models tested later (see Byrne, 2006).

Third, we examined *metric invariance* to determine whether factor loadings were equivalent across groups. We did this by constraining all factor loadings to be equal across groups and testing metric invariance (a) at the *construct* level by inspecting the reduction in overall model fit, and (b) at the *item* level by examining the results of the LM test. Construct-level metric invariance was demonstrated by a ΔCFI of -0.005 between the configural and construct-level metric invariance models. The LM test results suggested that the factor loadings for two moral disengagement items were non-invariant across the two sports (A player should not be blamed for injuring an opponent if the coach reinforces such behaviour: $\Delta\chi^2 = 12.95$, $P < 0.01$; Players that get mistreated have usually done something to deserve it: $\Delta\chi^2 = 7.69$, $P < 0.01$). These results indicated *partial* metric invariance in the model (see Byrne, Shavelson, & Mûthen, 1989).

Fourth, we tested for the *equivalence of construct variance and covariance* across the two sports. This model determines whether the variances and covariances of the latent variables are equivalent across groups. The ΔCFI of this model compared with the configural invariance model was -0.006, demonstrating the equivalence of construct variance and covariance across the two sports. However, the LM test indicated that the factor covariance between mastery climate and character-building competency was non-invariant across groups ($\Delta\chi^2 = 12.99$, $P < 0.01$). Within-group factor correlations indicated a stronger relationship between mastery climate and character-building competency in netball players ($r = 0.71$, $P < 0.05$) than in hockey players ($r = 0.31$, $P < 0.05$). Finally, we tested for *structural equivalence* by constraining causal paths to be equal across groups. This model determines whether the proposed causal model is invariant across groups. The ΔCFI compared with the configural invariance model was -0.001, indicating structural equivalence. Overall, these analyses demonstrated that the measurement and structural models are largely invariant across netball and hockey players.

Discussion

Prosocial and antisocial sport behaviours can have important implications for the quality of participants' sport experience. Although several researchers have examined these behaviours, research has primarily focused on acts directed towards opponents (e.g. Boardley et al., 2008; Kavussanu, 2006; Sage et al., 2006). Prosocial and antisocial behaviours have recently been distinguished based on their recipient (Kavussanu & Boardley, 2009). The current study examined social and personal influences on these behaviours.

Social influences and athletes' behaviours

The first aim of the study was to examine the effects of perceived motivational climate and coaching character-building competency on prosocial and antisocial behaviours in field hockey and netball. Athletes' perceptions of mastery motivational climate predicted positively prosocial and negatively antisocial behaviour towards team-mates. Thus, athletes who perceived a team environment that promoted effort and improvement and an important role for all players were more likely to encourage and congratulate their team-mates and less likely to criticize and verbally abuse them.

The effects of mastery climate on team-mate behaviours were moderate to strong. Effects of similar strength on prosocial behaviours have previously been identified (Kavussanu, 2006; Sage et al., 2008). However, the effects of mastery climate on *antisocial* team-mate behaviours were considerably stronger than those reported in studies examining antisocial opponent behaviours (Kavussanu, 2006; Sage et al., 2006). Thus, the current findings suggest that mastery climate may have greater implications for antisocial behaviours directed towards team-mates than opponents. This may be because mastery climate refers to the social environment in teams, thus it is a *team* variable that is more likely to affect within-team behaviour.

Perceptions of a mastery climate did not predict antisocial behaviour towards opponents. A study examining similar issues in football also found that mastery climate did not predict antisocial behaviour towards opponents beyond the prediction afforded by performance climate (e.g. Kavussanu, 2006). In other studies, the link between mastery climate and antisocial behaviour has been weak (e.g. Sage & Kavussanu, 2008). Mastery climate is a team variable that may be more likely to have implications for within-team rather than for between-team behaviour.

Contrary to our hypothesis and past research (e.g. Kavussanu, 2006; Sage & Kavussanu, 2008), perceptions of a mastery climate did not predict prosocial behaviour towards opponents. This may be due to differences in the measures employed. Specifically, past research assessed both helping (e.g. helping an opponent off the floor) and praising (e.g. congratulated an opponent for good play) behaviours, whereas we examined *only* helping behaviours. Other studies that have measured similar

variables have reported similar findings to ours. For example, Miller et al. (2004) found no meaningful association between mastery climate and the respect for opponents dimension of sportspersonship, while Gano-Overway and colleagues (Gano-Overway, Guivernau, Magyar, Waldron, & Ewing, 2005) reported only a small positive correlation between these two variables. Respect for opponent is the propensity to engage in such behaviours as helping an opponent after a fall and lending equipment to an opponent, which are similar to the prosocial behaviours towards opponents examined in the present study. In contrast, mastery climate evidenced moderately strong links with the respect for social conventions dimension of sportspersonship (Miller et al., 2004) and a composite variable that included this dimension (Gano-Overway et al., 2005). Some of the items used to measure this dimension refer to praising behaviours (e.g. congratulating an opponent after a loss). Taken together with past research, our findings suggest that mastery climate may have stronger implications for praising than for helping prosocial behaviours.

In line with our hypothesis, performance climate positively predicted antisocial behaviours towards team-mates. Athletes who perceived a team environment characterized by unequal recognition and intra-team rivalry were more likely to engage in behaviours such as criticizing and verbally abusing team-mates. Thus, creating a performance climate may have implications for the amount of antisocial conduct that occurs between team-mates. This finding is consistent with the fact that the motivational climate is concerned mostly with the environment created within teams.

The hypothesis that performance climate would positively predict antisocial opponent behaviour was not supported. Although there was a weak-to-modest factor correlation ($r = 0.21$) between these two variables, performance climate did not predict antisocial opponent behaviour in model testing, a finding inconsistent with the medium-size scale correlations reported in previous research (Kavussanu, 2006; Sage & Kavussanu, 2008). The different age of study participants may explain the discrepancy in the study findings. Specifically, most of our participants were adults, whereas participants in the studies of Kavussanu (2006) and Sage and Kavussanu (2008) were adolescents. Perhaps performance motivational climate is more strongly related to antisocial behaviour in adolescent than adult players. Indeed, research has identified medium-size correlations between performance climate and moral functioning (indexed by judgement, intention, and behaviour) in adolescent footballers (Miller, Roberts, & Ommundsen, 2005), but a very weak relationship between these two variables in adult basketball players (Kavussanu, Roberts, & Ntoumanis, 2002).

Consistent with our hypotheses, athletes perceiving their coach as competent in character-building were more likely to behave prosocially towards opponents and less likely to behave antisocially towards both team-mates and opponents. These findings support the tenets of the coaching-efficacy model that coaches with higher character-building efficacy should have players that demonstrate a greater number of sportspersonlike behaviours and commit a lower number of fouls resulting in penalties during competition (Feltz et al., 1999). Although we measured athletes' perceptions of coaching character-building competency rather than coaches' efficacy, we used the same items utilised to measure coaching efficacy but assessed the coach from the perspective of the athlete. This is consistent with contemporary views on coaching effectiveness (e.g. Horn, 2002; Myers et al., 2006) that coaching behaviours exert their effects on athlete variables through athletes' perceptions.

Character-building competency had no effect on prosocial team-mate behaviours such as encouraging and congratulating team-mates and giving them constructive feedback. These behaviours are different from the prosocial opponent behaviours in that they are not a response to another individual who is in obvious need for help, but they are initiated by the athlete. Such behaviours may be motivated by their perceived effect on variables such as team cohesion, which has been associated with team success (Carron, Colman, Wheeler, & Stevens, 2002); thus, they may benefit the actor. Character-building competency, which involves coaches' ability to instil an attitude of fair play, moral character, respect for others, and good sportspersonship, may have implications only for prosocial behaviours for which the need of the other person is explicitly expressed as in the case of opponents who need help.

The second aim of this study was to determine whether the effects of character-building competency on prosocial and antisocial behaviour are mediated by moral disengagement. These effects were mediated fully for the two opponent behaviours and partially for the antisocial team-mate behaviour. Thus, players who perceived their coach as competent in instilling an attitude of moral character, fair play, and respect for others were less likely to morally disengage. These players were in turn less likely to behave antisocially towards opponents and team-mates and more likely to act prosocially towards their opponents. These findings support the previously identified link between moral disengagement and prosocial and antisocial behaviour in team sport (Boardley & Kavussanu, 2007), and extend this work by identifying an aspect of the coaching environment

as a potential influence on moral disengagement. Our findings suggest that the coach may be an influential figure in deterring the use of moral disengagement in the sport context with subsequent effects for the players' behaviours.

In addition to the effect mediated by moral disengagement, athletes' perceptions of their coach's character-building competency had a direct effect on antisocial team-mate behaviours. However, in the full model, which included perceived mastery climate, this direct effect was not observed. Perceived coaching character-building competency and mastery climate had a moderately strong positive relationship. This suggests that athletes may, in part, base their perceptions of coaches' character-building competency on coaching behaviours that also form perceptions of a mastery climate.

Invariance testing

The final purpose of the current study was to examine the invariance of the final model in hockey and netball. Our findings revealed that all but two factor loadings were invariant across the two groups, signifying *partial* metric invariance (see Byrne et al., 1989). This occurs when the non-invariant items constitute only a small portion of the measurement model; in such cases, cross-group testing is still valid (Byrne, 2006). The only non-invariant aspect of the structural model was the higher factor covariance between perceptions of a mastery climate and character-building competency in netball players compared with hockey players. Based on this finding, it is possible that netball players may base their perceptions of their coach's character-building competency more on behaviours that also contribute to their perceptions of a mastery climate, resulting in a stronger relationship between these two constructs.

Implications for coaches

Based on the results of the current study we can suggest some practical implications for coaches. Specifically, the differential prediction of the two aspects (i.e. motivational climate and character-building competency) of the coaching environment highlights the importance of considering different aspects of coaching behaviour depending on the type of athlete behaviour coaches wish to influence. First, hockey and netball coaches could consider changing the motivational climate when attempting to promote desirable intra-team behaviour. For example, by highlighting every player's contribution, coaches could ensure that all players feel that they contribute to the team in some important way; by administering positive effort-based feedback, coaches could help players feel good when they improve and try their best. At the same time, coaches should not give all of their attention to the stars of the team and not focus their players' attention on outplaying team-mates. Finally, coaches should ensure that they do not promote moral disengagement in athletes if they want to impact positively on inter-team conduct.

Study limitations and future directions

This study revealed several interesting findings in relation to social and personal influences on sport behaviours. However, when interpreting the study findings it is important to keep in mind that the data were cross-sectional. We tested the hypothesized relationships using structural equation modelling and showed that the final model was consistent with the data, but due to the cross-sectional nature of our data we cannot make assertions regarding the direction of causality. Future research should employ quasi-experimental designs to test the direction of causality in our model. We also found that the model was largely invariant across netball and hockey. However, all netball players were females, and most hockey players were males. Thus, the results of invariance testing may have been influenced by sex. Future research should test the hypothesized model with more balanced samples. Finally, we used only netball and hockey players, thus our findings can be generalized only to similar populations. Future research should investigate the hypothesized model in different sports. Researchers could also examine the role of emotions such as guilt and shame in controlling morally relevant behaviour in sport.

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