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The Prosocial and Antisocial Behavior in Sport Scale

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This research aimed to (a) develop a measure of prosocial and antisocial behavior in sport, (b) examine its invariance across sex and sport, and (c) provide evidence for its discriminant and concurrent validity. We conducted two studies. In study 1, team sport athletes ($N = 1,213$) recruited from 103 teams completed questionnaires assessing demographics and prosocial and antisocial behaviors in sport. Factor analyses revealed two factors representing prosocial behavior and two factors representing antisocial behavior. The model had a very good fit to the data and showed configural, metric, and scalar invariance across sex and sport. The final scale consisted of 20 items. In Study 2, team-sport athletes ($N = 106$) completed the scale and measures of empathy and goal orientation. Analyses provided support for the discriminant and concurrent validity of the scale. In conclusion, the new scale can be used to measure prosocial and antisocial behaviors in team sport.

Keywords: multisample, morality, team sport

A decade ago, Bredemeier and Shields (1998), in concluding a comprehensive review of the literature on moral assessment in sport psychology, remarked that “the agenda for researchers who investigate sport morality is large and challenging” (p. 273). As part of that agenda, they identified an urgent need to develop reliable and valid measures to assess the moral dimensions of sport experience. Ten years later, this need remains urgent: Little progress has been made in moral assessment in sport psychology, yet researchers’ interest in sport morality has burgeoned over the last 10 years (see Kavussanu, 2007). One aspect of sport morality that is of particular need for sound measurement is behavior. As scholars (Bandura, 1991; Blasi, 1980; Bredemeier & Shields, 1998) have repeatedly emphasized, ultimately, it is behavior that matters. The purpose of the current research was to develop a reliable and valid instrument that assesses morally relevant social behavior in sport.

In developing this instrument, we were guided by the social cognitive theory of moral thought and action (Bandura, 1991), which focuses on overt *behavior*. According to Bandura (1991), individuals use multidimensional rules or standards

to determine whether behavior is reprehensible, for example, the consequences of the action, the perceived personal motivators for the conduct, and whether it is directed at other people. In dealing with moral dilemmas, individuals must integrate the morally relevant information in the specific situations that confront them to determine whether behavior is reprehensible (Bandura, 1991). In Bandura's (1991) view, in judging behavior, the consequences of the act for others rather than the motives of the actor should be the overriding consideration. Presumed intent (i.e., one's motives) also plays a role in the social labeling of behavior, but "intention is never used as the decisive definer of conduct" (Bandura, 1991, p. 68).

Bandura (1999) has also highlighted the dual aspects of morality: proactive and inhibitive. Proactive morality is manifested in the power to behave humanely, whereas inhibitive morality is expressed in the power to refrain from behaving inhumanely. In this view of morality, "people do good things as well as refrain from doing bad things" (Bandura, 1999, p. 194). Thus, high levels of morality are evident when one engages in positive social behaviors and refrains from engaging in negative social acts.

To date, the vast majority of studies examining morally relevant behavior in sport have focused on inhibitive morality by investigating aggressive or other forms of negative social behavior, such as pushing or provoking an opposing player. In some studies, researchers have obtained coach ratings regarding these behaviors (e.g., Bredemeier & Shields, 1984). One limitation of coach ratings is that they can be influenced by various factors, such as level of personal interaction and similarity of values between coaches and players (Bredemeier & Shields, 1998). Employing multiple observers has been recommended (Bredemeier & Shields, 1998) but not used to date in research examining moral issues in sport.

A very popular method employed in several recent studies is presenting athletes with scenarios describing hypothetical situations likely to occur during a game and asking them to indicate how often they engaged in such behaviors (e.g., Kavussanu & Roberts, 2001) or the likelihood they would engage in the described behavior if they were in that hypothetical situation (e.g., Stephens & Bredemeier, 1996). Although such scenarios portray situations taken from real sport contexts, they are highly specific and do not allow examination of a wide range of behaviors. Because athletes may not have engaged in the specific acts described in the scenarios, the measures may not have fully assessed the type of behavior they intended to measure. Thus, it is important to examine a *wide* range of behaviors to more fully understand the social-moral conduct occurring in sport (see Kavussanu, 2006).

Other research has exclusively focused on *observed* aggressive behavior. Aggressive behavior has been defined as voluntary behavior that has the intent to cause psychological or physical injury, and, according to Shields and Bredemeier (1995), it can be conceptualized and investigated as a moral issue. Observed aggressive behavior has been investigated in several sport studies by videotaping games and coding the frequency of behaviors in predefined categories (e.g., Jones, Bray, & Olivier, 2005). This is a relatively objective way to measure behavior; however, it is not a practical method when one wishes to assess the behavior of a large number of participants.

Finally, one study has examined *poor* sport or sportspersonship behaviors, that is, sport acts that carry moral connotations because of their association with issues of respect and fairness (Shields, LaVoi, Bredemeier, & Power, 2007). In this study, participants were asked to indicate how often, in the current season, they engaged in poor sport behaviors directed toward opponents, teammates, and officials. Only one item (i.e., made fun of a teammate who was less skilled) assessed behavior toward teammates. Sampling a greater number of acts toward teammates should more fully describe the social conduct taking place in sport.

Recently, positive as well as negative social behaviors have been examined, thereby considering both proactive and inhibitive morality. The terms *prosocial behavior* and *antisocial behavior* have been used to refer to these two morality dimensions (Kavussanu, Seal, & Phillips, 2006; Sage, Kavussanu, & Duda, 2006). Prosocial behavior has been defined as voluntary behavior intended to help or benefit another individual (Eisenberg & Fabes, 1998), and an example in sport is helping a player off the floor. Antisocial behavior has been defined as voluntary behavior intended to harm or disadvantage another individual (Kavussanu et al., 2006; Sage et al., 2006), and examples in sport are trying to injure an opponent and faking an injury. These definitions were also used in the current research.

A few studies have investigated reported prosocial and antisocial behaviors in soccer by asking players to indicate how often they engaged in such behaviors over the course of a season (Kavussanu, 2006; Sage & Kavussanu, 2007a; Sage et al., 2006). Principal components analysis revealed two factors representing prosocial and antisocial behaviors (Kavussanu, 2006; Sage et al., 2006). Confirmatory factor analysis in an expanded version of the scale indicated that the hypothesized two-factor structure had an acceptable fit to the data (Sage & Kavussanu, 2007a). Content validity was established for both the original and the expanded version of the instrument, but no specific names were given to these measures. Finally, a consistent finding of this work was the low correlations ($r = -.07$ to $-.10$) between the two types of behaviors, suggesting that both prosocial and antisocial behaviors need to be examined in order to gain a better appreciation of the social conduct that takes place in sport.

Observed prosocial and antisocial behaviors during one match (per team) and their link with reported acts during a season have also been examined in adolescent male soccer teams (Kavussanu et al., 2006). Observed antisocial behaviors were more frequent and more diverse than prosocial ones. In addition, they were positively and strongly correlated with their respective reported acts, a very promising finding given that situational factors specific to the match may have influenced the observed behaviors. The relationship between observed and reported prosocial behaviors was modest, a finding attributed to the narrow range in the frequency of recorded behaviors (Kavussanu et al., 2006). Finally, prosocial and antisocial behaviors have been observed in an experimentally manipulated competitive setting (Sage & Kavussanu, 2007b).

Although the field studies examining prosocial and antisocial behaviors have enhanced our understanding of the social conduct that takes place in sport, they have some limitations. First, all studies have used soccer players and some of the behaviors examined were specific to soccer (e.g., diving in order to fool the referee). Thus, the findings can only be generalized to soccer and the instrument can

only be used in soccer. Second, the alpha coefficient of the prosocial behavior scale has not reached conventional acceptability criteria, thus highlighting the need for an internally consistent measure of prosocial behavior in sport. Finally, behaviors toward teammates have received very little attention, with only one or two items assessing prosocial and antisocial (i.e., poor) sport behavior (e.g., Sage & Kavussanu, 2007a; Shields et al., 2007). However, such acts occur in sport and are worthy of investigation.

Currently, a reliable and valid instrument that measures a wide range of prosocial and antisocial behaviors in team sport does not exist. The development of such an instrument should make an important contribution to the literature because it will allow research on social behaviors in different sports and thereby produce more generalizable findings. The instrument will also enable researchers to examine the social-moral conduct taking place in sport from a holistic perspective because prosocial and antisocial behaviors toward teammates and opponents could be investigated. Prosocial and antisocial behaviors as defined in this study are morally relevant acts because they fall within the moral domain. This domain comprises actions that have consequences for others' rights and well-being (see Turiel, 1983). Prosocial and antisocial behaviors can have positive and negative consequences, respectively, for athletes' physical and psychological well-being, and therefore merit investigation.

The first purpose of this research was to develop a measure of prosocial and antisocial behaviors in sport. To this end, we recruited participants from soccer, rugby, hockey, basketball, and netball because these sports (a) are contact sports (i.e., participants can come in physical contact with the opponent during play) and therefore have the potential to raise moral issues; (b) are team sports, with opportunities for social interaction with other players and the potential for prosocial and antisocial behaviors to occur; (c) have similar playing conditions, enabling the identification of *common* behaviors; and (d) are the most popular team sports in England, where the research took place—thus, behaviors occurring in these sports affect many individuals. To capture a wide range of the social conduct occurring in these sports, we sought to identify prosocial and antisocial behaviors directed toward teammates and opponents.

A second purpose was to examine the measurement invariance of the scale across sex and sport type. Measurement invariance concerns the degree to which instrument items have the same meaning in members of different groups (Cheung & Rensvold, 2002) and is important when different groups are compared. If measurement invariance does not exist, differences between groups cannot be interpreted unambiguously (Cheung & Rensvold, 2002) because they may be due to different psychometric responses to the scale items rather than differences on the constructs of interest. The two grouping variables most common in sport are sex and sport type; thus, we examined the measurement invariance of the scale across these two sets of groups. The first two purposes were examined in Study 1, described next. A third purpose, addressed mainly in Study 2, was to provide further evidence for the construct validity of the scale by examining concurrent and discriminant validity.

Study 1

Method

Preliminary Scale Development. The first purpose of the study was to develop a measure of prosocial and antisocial behavior in sport. Unless otherwise stated, the term *behavior* in this research refers to *reported* rather than actual behavior. The items, referring to the behaviors included in this study, were developed in several stages. First, active coaches ($N = 12$) and players ($N = 25$) from the five sports were given the definitions of prosocial and antisocial behaviors presented herein, and asked to identify as many such behaviors as possible toward teammates and opponents, that they had observed in their sport. Based on discussions with seven sport science students, active in at least one of the five sports, redundant and infrequent behaviors were removed, and the list was reduced to 68 behaviors.

Next, this list was pilot-tested with a sample ($N = 29$) of university athletes from the five sports. Participants were asked to indicate how often they had engaged in each behavior during the season and responded on a scale that included options of *never* (1), *rarely* (2), *sometimes* (3), *often* (4), and *very often* (5). These data were used to select behaviors that occurred relatively often but not too often ($2 < M < 4.5$) and to eliminate redundant items (see Clark & Watson, 1995). As a result of this process, 43 items were retained.

Finally, the content validity of the 43 items was examined. Content validity pertains to whether items are characteristic of the domain they are intended to measure and is typically assessed through expert opinion (Kline, 2005). The items were evaluated by six sport psychology professionals, who were asked to rate how representative each item was of the respective behavior definition on a scale ranging from -3 (*not at all representative*) to $+3$ (*very representative*). Nine items with median and mean values below 2 were removed at this stage. Three items (argued with a teammate, argued with an opponent, faked an injury) that had a median of 2, but a mean of 1.86, 1.86, and 1.71, respectively, were retained because their lower means were due to either one or two extreme ratings. A total of 34 items referring to prosocial behaviors toward teammates ($n = 7$) and opponents ($n = 4$), and antisocial behaviors toward teammates ($n = 6$) and opponents ($n = 17$) were used in the main study.

Participants

Participants were male ($n = 658$) and female ($n = 555$) athletes competing in soccer ($n = 307$), netball ($n = 179$), hockey ($n = 350$), rugby ($n = 204$), or basketball ($n = 173$). At the time of data collection, they ranged in age from 12 to 64 years ($M = 21.97$, $SD = 5.47$) and had played their main sport competitively for an average of 10.40 years ($SD = 5.89$). A heterogeneous sample in terms of sex, age, and sport was recruited to maximize variability in the data, an important consideration when developing a new scale (Clark & Watson, 1995).

Measure

Prosocial and Antisocial Behavior in Sport. Prosocial and antisocial behaviors were measured using the 34 items described above. Participants were asked to report how often they had engaged in each behavior during the current season on a scale anchored by 1 (*never*) and 5 (*very often*).

Procedure

After receiving approval from the Ethics Committee, the head coaches of 103 teams were contacted and asked for their athletes' participation in the study. All coaches agreed to their athletes' participation. Research assistants distributed questionnaires to the athletes either before or after a training session. Participants were informed that the study examined sport behaviors, honesty in responses was vital, participation was voluntary, and responses would be used only for research purposes and would be kept strictly confidential. Athletes signed an informed consent form before completing the questionnaire, which they were asked to complete with their main competitive sport in mind. Data collection started three months into the season and took place over a 3.5-month period.

Results

Missing Data and Item Analysis

Only 0.13% of the possible data points were missing, and missing data were assumed to be missing at random. This assumption holds that the probability of a missing value on a variable is unrelated to the values of that variable; it also means that missingness is systematically related to measured values of other variables in the data set (see Enders, 2006). The expectation maximization algorithm was used to impute missing values. With regard to item analysis, no items had severely non-normal distributions. Four items with several values outside the .15–.50 interitem correlation range were eliminated (see Clark & Watson, 1995), leaving 30 items for the main analyses.

Factor Structure and Reliability of the Scale

The factor structure of the scale was examined using exploratory factor analysis (EFA) followed by confirmatory factor analysis (CFA). We randomly split the sample into three, conducted EFA in each subsample, examined the stability of factors across subsamples, and performed CFA, in all three subsamples (Fabrigar, Wegener, MacCallum, & Strahan, 1999); the solution identified at this stage was used for an additional analysis with the full sample. All factor analyses were conducted in EQS 6.1 using the polychoric correlation matrix, which is recommended when ordered-categorical data (like ours, owing to the low number of response options in the scale) are analyzed (Jöreskog, 1994).

Exploratory Factor Analysis. Exploratory factor analysis was performed on the 30 items using adjusted principle components analysis and oblimin rotation. Factors with eigenvalue greater than 1 were extracted. Primary loadings of .40 and

above were considered interpretable, whereas secondary loadings of .32 and above were viewed as cross-loadings. Six factors with eigenvalue greater than 1 were extracted in each subsample. In the first subsample, eigenvalues ranged from 1.06 to 8.82, and the factors accounted for 64% of the variance of the 30 items. In the second subsample, eigenvalues ranged from 1.03 to 9.81, and the factors accounted for 66% of the variance. In the third subsample, eigenvalues ranged from 1.01 to 8.72, and the factors accounted for 67% of the variance.

In all three subsamples, four stable factors (i.e., consistently emerging in the three subsamples) with the same items loading on them were identified: two factors represented prosocial behavior and two represented antisocial behavior. A fifth factor represented antisocial *cheating* opponent behaviors (i.e., exaggerated the severity of a foul, faked an injury, tried to get an opponent penalized by an official) but was not stable across the three subsamples and was therefore not further considered. The sixth factor consisted of different items in each subsample (i.e., helped a teammate off the floor, helped an injured teammate, admitted touching the ball last, elbowed an opponent), which were eliminated from further analysis. Three more items (i.e., wasted time, blamed a teammate for your mistake, asked officials to stop play for an injured teammate) were eliminated at this stage as a result of inconsistent loadings across the three subsamples. A total of 20 items were retained and used in subsequent EFAs.¹

Exploratory factor analysis performed on these items in each subsample revealed four factors with no cross-loadings: the first factor (eight items) represented antisocial behavior toward opponents; the second (four items) represented prosocial behavior toward teammates; the third (three items) represented prosocial behavior toward opponents; and the fourth (five items) represented antisocial behavior toward teammates. In Subsample 1, the four factors explained 64% of the variance, eigenvalues ranged from 1.18 to 6.45, and loadings ranged from .53 to .79; in Subsample 2, the factors explained 66% of the variance, eigenvalues ranged from 1.12 to 7.21, and loadings ranged from .52 to .86; in Subsample 3, the factors explained 62% variance, eigenvalues ranged from 1.33 to 6.31, and loadings ranged from .50 to .77.

Confirmatory Factor Analysis. The four-factor, 20-item model identified in EFA was examined using CFA and the least squares method in the three subsamples as well as in the entire sample. The robust solution was interpreted in all analyses because it is more trustworthy when a correlation matrix is used (Bentler & Wu, 2002). The model had a very good fit² in Subsample 1, $\chi^2(164) = 519.57$, $p < .001$, CFI = .946, RMSEA = .073, SRMR = .067; Subsample 2, $\chi^2(164) = 471.67$, $p < .001$, CFI = .961, RMSEA = .068, SRMR = .062; Subsample 3, $\chi^2(164) = 542.83$, $p < .001$, CFI = .938, RMSEA = .076, SRMR = .070; and the entire sample, $\chi^2(164) = 1111.29$, $p < .001$, CFI = .951, RMSEA = .069, SRMR = .059. Table 1 presents the items, standardized factor loadings, and error variances of the model tested in the entire sample. These items formed the Prosocial and Antisocial Behavior in Sport Scale (PABSS).

Correlations between factors ranged from weak to strong. Antisocial behavior toward opponents was positively related to antisocial behavior toward teammates ($r = .74$) and prosocial behavior toward opponents ($r = .19$) and negatively linked to prosocial behavior toward teammates ($r = -.08$). Antisocial behavior

Table 1 Items, Factor Loadings (FL), and Error Variances (EV) for Final 20-item Model ($N = 1,213$)

Item	Code	<i>M</i>	<i>SD</i>	FL	EV
1. Encouraged a teammate	PT	4.34	0.82	.82	.57
2. Congratulated a teammate for good play	PT	4.27	0.84	.80	.60
3. Gave positive feedback to a teammate	PT	4.11	0.82	.73	.68
4. Gave constructive feedback to a teammate	PT	3.76	0.96	.57	.82
5. Helped an injured opponent	PO	2.88	1.05	.89	.46
6. Asked to stop play when an opponent was injured	PO	2.91	1.08	.70	.71
7. Helped an opponent off the floor	PO	3.11	1.04	.60	.80
8. Verbally abused a teammate	AT	1.64	0.91	.86	.52
9. Swore at a teammate	AT	1.98	1.11	.80	.60
10. Argued with a teammate	AT	2.13	1.02	.78	.62
11. Criticized a teammate	AT	2.02	0.94	.73	.69
12. Showed frustration at a teammate's poor play	AT	2.74	0.97	.62	.78
13. Tried to injure an opponent	AO	1.70	0.97	.75	.66
14. Tried to wind up an opponent ^a	AO	2.75	1.16	.73	.69
15. Deliberately fouled an opponent	AO	2.43	1.09	.71	.70
16. Intentionally distracted an opponent	AO	2.49	1.14	.70	.71
17. Retaliated after a bad foul	AO	2.39	1.06	.69	.72
18. Intentionally broke the rules of the game	AO	2.12	1.02	.69	.73
19. Physically intimidated an opponent	AO	2.30	1.10	.63	.77
20. Criticized an opponent	AO	2.86	1.07	.60	.80

Note. AO = antisocial opponent; AT = antisocial teammate; PO = prosocial opponent; PT = prosocial teammate; actual range of all items was 1–5.

^aWinding up an opponent means *physically or verbally* taunting him/her to cause distraction or provoke a punishable reaction.

toward teammates was related positively to prosocial behavior toward opponents ($r = .30$) and negatively to prosocial behavior toward teammates ($r = -.18$), whereas the two prosocial behaviors were positively related ($r = .32$).

Descriptive Statistics and Reliability. Descriptive statistics of the PABSS items and internal consistency of the subscales were computed using the entire sample. On average, athletes reported engaging “rarely” to “sometimes” in antisocial behaviors and “sometimes” to “often” in prosocial behaviors (see Table 1). Alpha coefficients showed good-to-very-good levels of internal consistency and were .86 for antisocial opponent behavior, .83 for antisocial teammate behavior, and .74 for prosocial teammate and opponent behavior.

Measurement Invariance

The second purpose of this study was to examine the measurement invariance of the scale across sex and sport. Different aspects of invariance can be tested depending on the research question (Cheung & Rensvold, 2002). As we were interested in construct validity and whether the scale was appropriate for making comparisons between groups, we tested three aspects of invariance relevant to these issues (Byrne, 2006): (a) *configural invariance*, which exists when the items of a scale are indicators of the same factors in different groups; (b) *metric invariance*, which is present when all factor loadings are equal across groups; and (c) *scalar invariance*, which exists when the intercepts of the items that form a latent construct are invariant across groups. Tests of metric and scalar invariance address differential item functioning (DIF), which occurs when individuals with equivalent levels on a latent variable but dissimilar group membership respond differently to an indicator of that latent variable (Chan, 2000). Detecting DIF is important when study participants belong to different groups as well as when comparing different groups.

We tested these aspects of invariance across sex and sport using multisample CFA and least squares estimation. Before invariance testing, we estimated baseline model fit separately for each group (see Byrne, 2006). To examine the fit of the baseline models and to test for configural and metric invariance, we used the polychoric correlation matrix, treating the data as categorical. To test for scalar invariance, as well as for invariance of latent means described later, we used the mean and covariance structures strategy and treated the data as continuous.³

First, we tested for configural invariance by examining the fit of a model in which only the pattern of free and fixed parameters was constrained to be the same across groups. Next, we tested for metric invariance by comparing the fit of the metric invariance model with the fit of the configural invariance model, which was the least-constrained model (Byrne, 2006), using ΔCFI ; this refers to the change in CFI when invariance constraints are imposed on a model. When these constraints result in a change equal to or less than $-.01$, measurement invariance between models is indicated (Cheung & Rensvold, 2002). Finally, we tested for scalar invariance by comparing the fit of the scalar invariance model to the fit of a second configural invariance model, in which the data were treated as continuous, again using ΔCFI . This second configural invariance model was necessary to allow comparison with the scalar invariance model, in which the data were also treated as continuous. Results of these analyses are presented in Table 2.

Table 2 Fit Indices for Multisample Sex and Sport Analyses

Model	df	χ^2	CFI	SRMR	RMSEA ^a
Sex					
Baseline males	164	635.98	.948	.059	.066
Baseline females	164	656.67	.933	.070	.074
Configural invariance ^b	328	1293.87	.941	.065	.070
Metric invariance	344	1285.54	.942	.067	.067
Configural invariance ^c	328	1150.34	.941	.058	.064
Scalar invariance	364	3125.87	.949	.061	.061
Factor means invariance	360	1203.98	.949	.061	.061
Sport					
Baseline soccer	164	382.62	.939	.066	.066
Baseline netball	164	383.86	.937	.082	.087
Baseline rugby	164	280.68	.964	.067	.059
Baseline hockey	164	431.93	.946	.068	.068
Baseline basketball	164	392.30	.924	.085	.090
Configural invariance ^b	820	1881.36	.943	.074	.073
Metric invariance	884	1991.87	.940	.080	.072
Configural invariance ^c	820	1745.59	.935	.070	.068
Scalar invariance	964	4014.02	.940	.081	.067
Factor means invariance ^d	948	2210.53	.939	.081	.067

Note. χ^2 = Satorra–Bentler scaled chi-square; CFI = robust comparative fit index; SRMR = standardized root mean square residual; RMSEA = root mean square error of approximation.

^aFor scalar and factor means invariance models RMSEA values are based on covariance matrix.

^bData were treated as categorical.

^cData were treated as continuous.

^dThis is the first of the four models testing invariance of sport factor means. Fit indices of the other three models tested were almost identical to those of the first model

Invariance Testing Across Sex. Good-to-very-good fit was achieved for all models. Configural invariance was demonstrated by the good fit indices of the first configural invariance model. Metric invariance was shown by a ΔCFI of .001 between the first configural and the metric invariance models, whereas scalar invariance was shown by a ΔCFI of .008 between the second configural and the scalar invariance models. To examine whether males and females differed on the four behaviors, we tested for *equivalence of construct means*, which is present when the mean values of the latent constructs are equivalent across groups. This was examined by fixing the item intercepts to equivalence across the two groups and the factor intercepts of males to zero (to act as the reference group) and determining whether factor intercepts for females were significantly different from those of males. Females' factor means were lower for antisocial opponent (–.50), antisocial teammate (–.53), and prosocial opponent (–.09) behaviors, and higher for prosocial teammate (.18) behaviors. In all cases, $p < .05$.

Invariance Testing Across Sport. All models achieved good-to-excellent model fit. Configural invariance was shown by the good fit of the first configural invariance model; metric invariance was shown by a ΔCFI of –.003 between the first configural and the metric invariance models; and scalar invariance was shown by a ΔCFI of .005 between the second configural and the scalar invariance models.

Finally, the equivalence of construct means was examined in four models each using a different sport as the reference group. As in the equivalent analysis across sex, item intercepts were constrained to invariance across the different groups. In Model 1 (see Table 2), compared with basketball players (i.e., the reference group), soccer (.53), hockey (.08), and rugby (.22) players were higher in antisocial opponent behavior; soccer players were higher in antisocial teammate (.60) and prosocial opponent (.35), and lower in prosocial teammate (–.20) behaviors; netball players were lower in antisocial teammate (–.09), and higher in prosocial opponent (.10) behaviors; and rugby players were lower in prosocial (–.23) and antisocial (–.14) teammate behaviors. In Model 2, compared with soccer players, hockey, netball, and rugby players were lower in antisocial opponent (–.44, –.50, –.30), antisocial teammate (–.64, –.69, –.74), and prosocial opponent (–.37, –.25, –.34), behaviors, and hockey and netball players were higher in prosocial teammate behavior (.17, .18). In Model 3, compared with hockey players, rugby players were higher in antisocial opponent and lower in antisocial and prosocial teammate (.14, –.10, –.21) behaviors and netball players were lower in antisocial opponent and higher in prosocial opponent (–.06, .13) behaviors. Finally, in the fourth model, compared with netball players, rugby players were higher in antisocial opponent behavior (.20), and lower in prosocial opponent (–.10) and teammate (–.22) behaviors. In all cases, $p < .05$.

Study 2

In Study 2, we examined discriminant and concurrent validity of the scale. Discriminant validity entails the evaluation of measures against each other, is evident when a set of variables presumed to measure different constructs are not *too highly* interrelated (Kline, 2005), and was examined by considering the relationships among the PABSS subscales identified in both studies. Concurrent validity is concerned with whether a measure is related to an external standard (or

criterion) when data are collected at the same point in time (Kline, 2005). Concurrent validity was investigated by examining whether the behaviors were related to three variables that have been consistently linked to prosocial and aggressive acts in past research. These were empathy, task orientation, and ego orientation.

Empathy refers to the responses of one individual to the observed experiences of another and involves both cognitive and affective components (Davis, 1983). Two empathy components linked to moral variables in past research are perspective taking (i.e., the tendency to adopt the psychological point of view of others) and empathic concern (i.e., the tendency to experience feelings of sympathy, compassion, and concern for unfortunate others). Individuals high in empathy are more likely to attend to others' needs and feelings and therefore more likely to behave prosocially and refrain from behaving aggressively toward others (see Eisenberg, Spinrad, & Sadovsky, 2006). In empirical research, empathy has been positively linked to prosocial behavior (Eisenberg & Miller, 1987) and negatively related to aggression (Carlo, Roesch, & Melby, 1998; Miller & Eisenberg, 1988). In the current study, concurrent validity would be established if empathy is associated positively with prosocial behaviors and negatively with antisocial behaviors.

The other two variables examined in relation to the four behaviors are task orientation (i.e., the tendency to define success using self-referenced criteria) and ego orientation (i.e., the tendency to define success using other-referenced criteria) described by Nicholls (1989). Individuals high in task orientation feel successful when they improve, whereas those high in ego orientation tend to experience success when they outperform others. Owing to the criteria they tend to use to evaluate success, task-oriented people are more likely to play by the rules and want to experience a fair competition, whereas ego-oriented individuals are less likely to have a concern about justice and fairness and the welfare of others (Nicholls, 1989). Task orientation has been positively linked to morally relevant variables such as sportspersonship and prosocial behavior, whereas ego orientation has been positively associated with antisocial behavior (see Kavussanu, 2006, 2007). We expected similar relationships in this study.

Method

Participants. A total of 106 athletes ($n_{\text{males}} = 48$, $n_{\text{females}} = 58$) ranging in age from 18 to 25 years (M age = 19.61, $SD = 1.07$) participated in the study. Athletes' main team sport was soccer ($n = 41$), rugby ($n = 17$), hockey ($n = 24$), basketball ($n = 5$), or netball ($n = 19$); at the time of data collection, they had competed in their main team sport for an average of 8.67 ($SD = 3.74$) years. The level of competition ranged from club to national.

Measures

Prosocial and Antisocial Behavior in Sport. Prosocial and antisocial sport behaviors were measured using the 20-item PABSS developed in Study 1. Participants were asked to report on a scale anchored by 1 (*never*) and 5 (*very often*) how

often they engaged in the behaviors during the season. Confirmatory factor analysis indicated a good fit of the model to the data, $\chi^2(164) = 241.05$, $p < .001$, CFI = .920, RMSEA = .066, SRMR = .083. Factor loadings ranged from .42 to .84.

Empathy. The perspective taking (e.g., before criticizing somebody, I try to imagine how I would feel if I were in their place) and empathic concern (e.g., I am often quite touched by things that I see happen) subscales of the Interpersonal Reactivity Index (Davis, 1980), each consisting of seven items, were used to measure empathy. Participants were asked to indicate how well a number of statements describe them, and responses were made on a Likert scale with anchors of 1 (*does not describe me well*) and 5 (*describes me very well*). Because the two empathy components are theoretically related (Davis, 1983) and were also moderately correlated in this study, $r(106) = .39$, $p < .01$, responses were averaged to form an overall empathy score. This combined scale has been used in past research and has shown high internal reliability, with an alpha coefficient of .82 (Carlo et al., 1998).

Goal Orientation. Task and ego goal orientations were measured using the Perception of Success Questionnaire (POSQ; Roberts, Treasure, & Balague, 1998). The stem "When playing my main team sport I feel most successful when . . ." was used followed by two six-item subscales measuring task (e.g., "I show clear personal improvement") and ego (e.g., "I beat other people") orientation. Participants responded on a Likert scale anchored by 1 (*strongly disagree*) and 5 (*strongly agree*). The average of each subscale was used as a score of each goal orientation. The POSQ has shown high internal consistency, with alpha coefficients of .88 for each subscale (e.g., Roberts et al., 1998).

Procedure

After the study was approved by the Ethics Committee, participants were recruited from two undergraduate sport and exercise science classes. Questionnaires were administered by one of the investigators at the beginning of the class. Participants were informed about the purpose of the study, it was explained that all responses would be kept anonymous and confidential and used only for research purposes, that participation was voluntary, and that participants could withdraw at any time. All students present in the class agreed to take part in the study, signed an informed consent form, and completed the measures described above.

Results

Descriptive Statistics and Scale Reliability

Descriptive statistics and alpha coefficients for all variables are presented in Table 3. On average, participants reported engaging "often" in prosocial teammate behaviors, "sometimes" in prosocial opponent behaviors, and "rarely" in the two antisocial behaviors. Compared with females, males reported higher frequency of all behaviors, particularly of antisocial behaviors. Finally, all scales had good-to-very-good levels of internal consistency.

Table 3 Descriptive Statistics, Alpha Coefficients, and Subscale Correlations for All Study 2 Variables (*N* = 106)

Variable	1	2	3	4	5	6	7	8	9
1. PB Teammate	(.73)								
2. PB Opponent	.18	(.76)							
3. AB Teammate	-.04	.04	(.79)						
4. AB Opponent	.05	.18	.46**	(.84)					
5. Empathy	.02	.19*	-.33**	-.35**	(.83)				
6. Task orientation	.30**	.18	-.12	-.11	.19	(.85)			
7. Ego orientation	.14	-.08	.19	.32**	-.34**	.05	(.86)		
8. Sport experience	.14	.01	.17	.23*	-.20*	.05	.29**	—	
9. Sex	-.19*	-.15	-.39**	-.41**	.26**	.04	-.23*	-.38**	—
<i>M</i>	4.17	2.81	2.06	2.33	3.44	4.32	3.81	8.67	1.55
<i>SD</i>	0.48	0.73	0.64	0.65	0.48	0.51	0.66	3.74	0.50
Range	2.75–5.00	1.00–4.33	1.00–3.80	1.00–4.38	2.00–4.43	2.33–5.00	2.00–5.00	0–17.00	1.00–2.00

Note. PB = prosocial behavior; AB = antisocial behavior; sex was coded as 1 for male and 2 for female. Alpha coefficients appear in parentheses along the diagonal.
p* < .05; *p* < .01.

Construct Validity

The purpose of Study 2 was to provide more evidence for the construct validity of the PABSS by examining discriminant and concurrent validity. Discriminant validity was examined by evaluating the subscale correlations among the four behaviors. However, because the factor correlations from Study 1 were also available and more reliable, we considered these correlations as well. Subscale correlations among the four behaviors can be found in Table 3. As can be seen in this table, correlations ranged from |.04| to |.46| indicating high levels of discriminant validity for prosocial and antisocial behaviors. Factor correlations in Study 1 ranged from |.08| to |.74| (see Study 1 results).

As stated earlier, concurrent validity was examined by computing the correlations between behaviors and empathy, task orientation, and ego orientation. These correlations are presented in Table 3. Empathy was related positively to prosocial opponent behavior, and negatively to antisocial teammate and opponent behaviors; correlations were small to moderate. Empathy was unrelated to prosocial teammate behavior. Small-to-moderate positive relationships were also observed between task orientation and prosocial behavior toward teammates and opponents and between ego orientation and antisocial behavior toward teammates and opponents. Overall, these results support the concurrent validity of the scale.

Discussion

Research on sport morality has proliferated in the past ten years (see Kavussanu, 2007). Yet, little progress has been made in describing morally relevant sport *behaviors* from a holistic perspective that considers prosocial and antisocial behaviors toward teammates and opponents and developing reliable and valid instruments to measure these behaviors. The present study developed a measure of prosocial and antisocial behavior in sport, investigated its suitability for use with both sexes and different team sports, and provided evidence for its discriminant and concurrent validity.

The Structure of Prosocial and Antisocial Behavior in Sport

An important consideration in developing our instrument was to identify the *dimensions* of prosocial and antisocial behavior in sport, which then served as subscales for the new scale (see Floyd & Widaman, 1995). Factor analyses revealed four stable factors: two representing prosocial behavior and two representing antisocial behavior. This distinction between prosocial and antisocial behavior is consistent with Bandura's (1999) view that morality has two dimensions: proactive and inhibitive. Other scholars have also referred to the two aspects of morality by describing a positive dimension pertaining to prosocial behaviors and a negative or inhibitory dimension that concerns actions that could result in negative consequences to others (e.g., Tisak, Tisak, & Goldstein, 2006). Our findings showed that the two dimensions of morality are clearly evident in sport.

The two types of prosocial behavior reflected acts directed toward teammates or opponents; thus, they differed on the recipient of the behavior. They also were *qualitatively* different. Specifically, besides having positive consequences for the

recipient, behaviors such as congratulating a teammate for good play can also facilitate achievement. These behaviors are beneficial for the entire team (including the actor) because they can enhance individual players' motivation and subsequent performance. Thus, teammate behaviors *may*, in part, be motivated by selfish reasons. In contrast, behaviors such as helping an opponent off the floor are *helping* behaviors that have no implications for team achievement. Athletes do not benefit from engaging in these behaviors. Thus, these acts are more likely to be motivated by unselfish concern for another person. Although we did not examine the motives of the behaviors, the motives underlying teammate and opponent behaviors may be distinct.

This is the first study to make an explicit distinction between teammate and opponent prosocial behaviors. Although items referring to such acts have been examined as part of a single prosocial behavior dimension (e.g., Kavussanu, 2006; Sage et al., 2006), our work suggests that prosocial teammate and opponent behaviors are best described as two distinct dimensions. Different types of prosocial behavior have also been reported in nonsport studies. For example, Carlo and Randall (2002) have described six prosocial tendencies (i.e., altruism, compliant, emotional, public, anonymous, and dire), while Grusec (1991) coded five types of spontaneous prosocial behavior (i.e., praise, reassuring, helping, giving or sharing, and showing concern or consideration). Some of these types (i.e., praise, reassuring, and helping) resemble the prosocial behaviors described in this study.

The two types of antisocial behavior also reflected acts directed toward teammates or opponents. Teammate behaviors were exclusively verbal (e.g., verbally abusing a teammate), whereas opponent behaviors consisted of both verbal (e.g., criticizing an opponent) and physical (e.g., retaliating after a bad foul) acts. Although teammate items have been included in global measures of negative social behavior (e.g., Shields et al., 2007), this is the first study to describe a distinct dimension of such conduct. These behaviors have potentially negative consequences for the psychological well-being of the recipient, particularly for those participants who are sensitive to others' criticism. The diversity (i.e., verbal and physical) in antisocial opponent behaviors is consistent with soccer studies in which verbal and physical opponent behaviors formed a single dimension (e.g., Kavussanu, 2006; Sage et al., 2006). Perhaps a general trait underlies these behaviors, thus causing individuals who engage in verbal antisocial acts toward their opponents to also engage in physical such acts.

There was also evidence for the presence of one other factor, which included cheating behaviors such as faking an injury and exaggerating the severity of a foul. Although such acts were reported by athletes, the factor was not stable, and was therefore excluded from the final model. Several other frequently occurring behaviors (e.g., helping a teammate off the floor) were also not included in the final scale because they did not load on only one factor, which is an important criterion for selecting items for a scale (Fabrigar et al., 1999). Thus, although the PABSS measures a wide range of prosocial and antisocial sport behaviors, it includes only items that formed stable dimensions of the sampled social conduct.

In this research, we used two criteria to identify behaviors so as to ensure that they are morally relevant. First, behaviors were *voluntary*, that is, not accidental. This was important because behavior can be morally relevant only when it is per-

formed under volitional control (see Blasi, 1980). Second, the identified behaviors had potential consequences for the well-being of the recipient, an important consideration when determining whether behavior falls within the moral domain (Tisak et al., 2006; Turiel, 1983). However, one's reasons or motives for performing the behaviors were not considered. The importance of understanding the individual's *reasons* for acting in labeling one's behavior as moral has been extensively discussed in the literature (Eisenberg et al., 2006; Shields & Bredemeier, 1995). As we have not examined these motives, we use the terms *prosocial behavior* and *antisocial behavior* to refer to the acts measured in this study, but believe that these behaviors are morally relevant, owing to their potential consequences for the well-being of the recipient (see Turiel, 1983).

Measurement Invariance

The second purpose of this research was to examine the measurement invariance of the scale across sex and sport. Configural invariance was established, indicating that the factors consisted of the same items across these groups. Metric invariance was also demonstrated, indicating that the strength of the relationship between the observed variables and their underlying constructs was equivalent across sex and sport. Finally, scalar invariance was also established for both sex and sport type. This finding indicates that males and females do not differ from each other systematically on the magnitude of their responses; this is also the case for athletes participating in different sports. Thus, the PABSS is suitable for research testing substantive hypotheses involving athletes of either sex and from any of the five sports tested.

Discriminant and Concurrent Validity

The third purpose of this research was to examine the discriminant and concurrent validity of the PABSS. Evidence for the former was provided by the correlations among the four behaviors, which in both studies ranged from weak to strong, but not too strong, suggesting that the constructs are sufficiently distinct (Kline, 2005). In both studies, the two prosocial behaviors were modestly and positively related, the two antisocial behaviors were strongly and positively related, and the two teammate behaviors were weakly and negatively related.

A counterintuitive finding was the positive correlation between prosocial and antisocial opponent behaviors. This could be explained by considering the content of the two subscales. Specifically, some antisocial items referred to acts that had the potential for physical injury, whereas prosocial items referred to helping behaviors. Perhaps helping a player toward whom one has acted antisocially is the norm in some sports. In a recent study, an athlete stated that, "A bad loser is someone who doesn't apologize, or doesn't help the opponent to get up after breaking a rule" (Long, Pantaléon, Bruant, & d'Arripe-Longueville, 2006, p. 342). This quote illustrates the type of behavior that may be expected in some sports (i.e., helping the opponent after breaking a rule), which could explain the counterintuitive correlation between these two types of behaviors.

With respect to the concurrent validity of the scale, empathy was related positively to prosocial opponent behavior and negatively to the two antisocial

behaviors. This supports the concurrent validity of the scale because numerous studies have reported that empathy promotes prosocial (Eisenberg & Miller, 1987) and inhibits antisocial (Miller & Eisenberg, 1988) acts. However, empathy was not related to prosocial teammate behavior. These behaviors differ from the opponent acts in that they are more likely to be motivated, in part, by selfish reasons. In past research, a type of prosocial behaviors conducted in front of others (i.e., public) has been described and hypothesized to be motivated, in part, by a desire to gain the approval and respect of others (Carlo & Randall, 2002), that is, for egocentric reasons. These acts have been *negatively* related to empathy. Thus, empathy may not have positive implications for behaviors motivated by selfish reasons.

A modest correlation was found between task orientation and prosocial teammate behavior, whereas the association with prosocial opponent behavior was weak. Task orientation has been positively linked to prosocial behavior in past research (e.g., Kavussanu, 2006; Sage & Kavussanu, 2007a). Ego orientation evidenced small-to-moderate correlations with the two antisocial behaviors, a finding consistent with the numerous studies that have reported a link between ego orientation and low levels of moral functioning in sport (see Kavussanu, 2007). Overall, the relationships found in this study support the concurrent validity of the PABSS.

Limitations of the Study and Directions for Future Research

Although we developed a valid and reliable instrument to measure prosocial and antisocial behavior in sport, our work has some limitations, which must be kept in mind when using the scale. First, the measure was constructed based on data from five team sports; thus, it should be used only in these sports. Before using the instrument in other sports, evidence for the validity and reliability of the scale in those sports is needed. Second, although we identified two dimensions of prosocial and antisocial behavior, each of them may be defined by more specific factors, forming a multidimensional hierarchical construct; furthermore, other dimensions, not identified in the current study, may exist. Future research should further develop the present scale by describing other dimensions of prosocial and antisocial behaviors directed toward teammates and opponents. Third, the reliabilities of the two prosocial behaviors were not very high, ranging from .73 to .76 in the two studies. Future research should include more items in these scales to increase their internal consistency.

Fourth, participants were nested within teams; thus, the data could also have been analyzed using multilevel modeling. This analysis may have provided more accurate parameter estimates, standard errors, and associated tests of significance, and would have allowed us to examine variance at the team level. Future research should use multilevel modeling to analyze the PABSS data and determine the extent to which there are systematic differences between teams on the four scales. Fifth, although we provided evidence for reliability and many aspects of construct validity, the scale should be more fully validated. Future research should use

direct observation and coach and peer ratings to determine whether the behaviors reported by the athletes are the same, and occur at the same frequency, as those observed by others. Researchers should also examine whether participants change their responses to the scale as a result of an experimental intervention aimed to promote prosocial and reduce antisocial behaviors in sport. Finally, research should investigate whether the four behaviors are related to moral disengagement (Bandura, 1991), a construct that has been recently applied to sport (Boardley & Kavussanu, 2007).

Conclusion

This research represents an important response to the call of Bredemeier and Shields (1998) for developing valid and reliable measures of the moral dimensions of the sport experience. In line with the view that “in moral accounting, action is the bottom line” (Shields & Bredemeier, 1995, p. 81), we developed a measure of sport behaviors that have moral connotations (see Shields et al., 2007). This instrument fills a gap in the literature and will allow scholars to examine research questions regarding morally relevant behavior in sport.

Notes

1. We also conducted a series of CFAs on the original 30 items specifying a four-factor model, using the entire sample, to determine whether this approach would result in similar items being selected as those chosen through EFA. Items with high factor loadings and low standardized residuals were selected. The results were largely similar to those attained through the EFA approach: each factor included the same items chosen through EFA; the antisocial opponent factor had two additional items (i.e., intentionally wasted time and exaggerated the severity of a foul), while the antisocial teammate factor had one additional item (i.e., blamed a teammate for your mistake). This 23-item model had a very good fit, $\chi^2(224) = 1446.27$, $p < .001$, CFI = .952, RMSEA = .067, SRMR = .059, and factor loadings ranged from .53 to .89 ($M = .70$). Factor correlations were identical to those of the 20-item model, with the exception of three correlations that were slightly different (difference range = .01–.03).

2. Although the χ^2 was significant in all cases indicating lack of fit, this statistic is highly dependent on sample size and is typically significant in large samples like ours. The remaining fit indices (CFI, RMSEA, and SRMR) demonstrated very good model fit. These fit indices are less sensitive to distribution and sample size. In addition, RMSEA is not affected by estimation method at large sample sizes, and SRMR is sensitive to model misspecification (Hu & Bentler, 1998). Owing to these properties, SRMR, RMSEA, and CFI have been recommended for use by Hu and Bentler (1998).

3. The data were treated as continuous when testing scalar and factor means invariance because mean and covariance analysis with categorical data are not possible in EQS (Peter Bentler, personal communication, February 2, 2008).

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