

Disentangling the relations between social identity and prosocial and antisocial behavior in competitive youth sport

Bruner, Mark W.; Boardley, Ian; Benson, Alex; Wilson, Kathleen; Root, Zachary; Turnnidge, Jennifer; Sutcliffe, Jordan ; Côté, Jean

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Disentangling the Relations between Social Identity and Prosocial and Antisocial Behavior in
Competitive Youth Sport

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Abstract

The social identities formed through membership on extracurricular activity groups may contribute to the frequency with which youth engage in prosocial and antisocial behavior. However, researchers have yet to disentangle the individual- and group-level processes social identification effects operate through; sex and perceived norms may also moderate such effects. Thus, we investigated the hierarchical and conditional relations between three dimensions of social identity (i.e., ingroup ties, cognitive centrality, ingroup affect) and prosocial and antisocial behavior in youth ice hockey players ($N=376$; 33% female). Multilevel analyses demonstrated antisocial teammate and opponent behavior were predicted by cognitive centrality at the team level. Further, prosocial teammate behavior was predicted by cognitive centrality and ingroup ties at the individual-level. Also, perceived norms for prosocial teammate behavior moderated the relations between ingroup ties, cognitive centrality, and ingroup affect and prosocial teammate behaviour. Finally, sex moderated the relations between cognitive centrality/ingroup affect and antisocial opponent behavior. This work demonstrates the multilevel and conditional nature of how social identity dimensions relate to youth prosocial and antisocial behavior.

Keywords: group dynamics, team identification, personal development, physical activity

1 Introduction

2 The onset of adolescence is marked by rapidly growing bodies and a search for personal identity
3 (Tanti, Stukas, Halloran, & Foddy, 2011). Erickson (1963) discusses this stage of identity development as
4 a time of identity versus role confusion. To help youth cope with this confusion, adolescents often
5 identify with peer groups to develop their identities (Brown & Lohr, 1987; Pfeifer & Peake, 2012). This
6 process may be attributed to an increased frequency of face-to-face contact and digital communication
7 with peers and a decreased frequency of interactions with family (Rideout, 2012). Adolescents may help
8 one another through this difficult time by forming cliques and stereotyping members of the ‘ingroup’ and
9 ‘outgroup’ (Erickson, 1963). Indeed, forming one’s self-concept based on the identity associated with
10 other groups - social identity - has a rich history in the social psychology literature (see Hornsey, 2008;
11 Rees, Haslam, Coffee, & Lavalley, 2015, for reviews).

12 Early research in the area of social identity by Tajfel and colleagues (1971) reported that even a
13 minimal association with a group based on seemingly trivial criteria (i.e., coin flip) impacted the behavior
14 of individuals towards ‘ingroup’ and ‘outgroup’ members. Tajfel’s work supported classic field research
15 such as the Robbers Cave Experiment (Sherif, Harvey, White, Hood, & Sherif, 1961). Here, youth
16 campers were found to be more prosocial (e.g., encouragement and support toward group members
17 learning to swim) toward ingroup than outgroup members and more antisocial (e.g., vulgar, derogatory
18 remarks, intimidation and physical aggression) toward outgroup than ingroup members. In the years since
19 these formative studies, substantial empirical research in laboratory and field settings and across a range
20 of domains shows that social identification processes influence our behaviors toward others. For example,
21 field research by Nezlek and Smith (2005) examined daily social interactions between Greek university
22 fraternity and sorority members and non-members. Nezlek and Smith (2005), found outgroup members
23 reported less positive interactions (e.g., felt less respected) when interacting with those in the ingroup.
24 Both empirical and theoretical (Penner, Dovidio, Pilavin, & Schroeder, 2005; Tidwell, 2005) accounts
25 converge on the idea that social identity can be a motivational force for good whilst also potentially
26 promoting harmful conduct toward members outside the group.

1 **Prosocial and Antisocial Behavior During Adolescence**

2 Adolescence is identified as a critical period marked by increased sensitivity to peers' social
3 behavior (van Hoorn, van Dijk, Meuwese, Rieffe, & Crone, 2016), meaning peers can be a powerful
4 source of influence during adolescence (for reviews see: Brechwald & Prinstein, 2011; Veenstra, Dijkstra,
5 Steglich, & Van Zalk, et al., 2013). In line with social learning theory (Bandura, 1986), adolescents can
6 learn to act prosocially and/or antisocially by observing valued peers and/or peer reinforcement of such
7 behaviors (Van Hoorn et al., 2016). In the current study, we refer to prosocial behaviors as voluntary acts
8 intended to help or benefit another individual or group of individuals (Eisenberg & Fabes, 1998) and
9 antisocial behaviors as acts intended to harm or disadvantage another individual or group of individuals
10 (Sage, Kavussanu, & Duda, 2006). Although prosocial and antisocial behaviors appear to be at opposite
11 ends of a spectrum, they are in fact conceptually distinct (Krueger, Hicks, & McGue, 2001), representing
12 the dual aspects of morality proposed by Bandura (1999). Prior research has documented the relations
13 between participation in a wide range of extracurricular activities (e.g., school clubs, performing arts,
14 organized sport) and developmental outcomes, including prosocial and antisocial behavior (e.g., Eccles,
15 Barber, Stone, & Hunt, 2003; Fredericks & Eccles, 2006). Despite evidence documenting complex
16 associations between participation in extracurricular activities and prosocial and antisocial behavior,
17 limited research has investigated how the social identities youth form due to membership in the
18 extracurricular activities shape their behavior toward others.

19 Sport teams constitute a popular, influential peer group and therefore can serve as an important
20 developmental context to investigate links between social identity and prosocial and antisocial behavior
21 (Sussman, Pokhrel, Ashmore, & Brown, 2007). Youth are drawn to sport teams as they provide
22 opportunities for interpersonal interaction and a sense of belonging during a time when there is an
23 increased need for interaction and intimacy with peers (Allen, 2003; Baumeister & Leary, 1995; Wagner,
24 1996). Social groups such as sport teams can thus form an important component of youth's self-concept
25 as they continue to establish their own personal identities (Newman & Newman, 2001). Youth sport
26 teams, moreover, are characterized by a high degree of social interaction, goal-oriented activities, and

1 afford opportunities to both cooperate and compete with individuals similar in age. Consequently, sport
2 provides a powerful naturalistic setting to examine the relations between social identity and prosocial and
3 antisocial behavior.

4 As a basis for examining the consequences of social identification processes in sport, Bruner,
5 Boardley, and Côté (2014) introduced and applied Cameron's (2004) multidimensional conceptual model
6 of social identity to a sport setting. This model includes: (a) ingroup ties - perceptions of similarity,
7 bonding and belongingness with other group members, (b) cognitive centrality - the importance of being a
8 group member and (c) ingroup affect - the positivity of feelings associated with group membership.¹
9 Bruner, Boardley et al. al. (2014) demonstrated a positive link between ingroup affect and the frequency
10 of prosocial behavior toward teammates in high-school team sport athletes; however, athletes' sense of
11 belonging to a group (i.e., ingroup ties) was positively associated with antisocial behavior toward team
12 members and the opposition (Bruner, Boardley et al., 2014). In a follow-up narrative study, stronger
13 perceptions of social identity (ingroup ties, cognitive centrality, ingroup affect) within a family-oriented
14 team narrative were linked with increases and decreases, respectively, in prosocial and antisocial behavior
15 (Bruner, Boardley, Allen et al., 2017).

16 In addition to the emerging empirical evidence linking social identity and prosocial and antisocial
17 behavior, there is theoretical and further empirical support that the dimensions of social identity may
18 differentially relate to youths' prosocial and antisocial behavior. Consistent with social identity theory
19 (Tajfel & Turner, 1979) and the previously reviewed literature, youth with greater emotional investment
20 with a group (i.e., ingroup affect) may engage in prosocial behavior toward teammates to enhance self-
21 worth (Bruner, Boardley, Forrest, et al., 2017). Further, social cognitive theory (Bandura, 1991) identifies
22 affect as a regulator of prosocial and antisocial behavior. Specifically, prosocial behavior toward

¹We adhere to Cameron's (2004) conceptualization of ingroup affect, which focuses on the general positive emotions attached to group membership. This is akin to the higher-order construct of positive affect, as represented in the PANAS-X (Watson & Clark, 1999). We revisit this issue in the discussion by elaborating on how a more nuanced view of ingroup affect may invigorate novel research questions.

1 teammates may be motivated by the positive emotions (e.g., pride derived from group membership) that
2 would be anticipated to result from engaging in such positive social behavior (Bruner, Boardley, Forrest,
3 et al., 2017).

4 People are motivated to maintain a positive self-concept (Tajfel, 1981). When attending to this
5 motive, individuals gravitate towards or disassociate from specific groups through their actions toward
6 ingroup and outgroup members (Tajfel, 1970). In youth settings, the cognitive centrality or salience of
7 team membership may be associated with prosocial behavior toward team members as a means to
8 enhance an adolescent's self-concept (Brechtwald & Prinstein, 2011) and behaviorally differentiate
9 treatment of ingroup and outgroup members to signal the importance of the group to ingroup members
10 (Rees et al., 2015).

11 In addition to the previously discussed tenets of social identity theory, research suggests that
12 interpersonal helping and harming are in part a function of relationships between group members
13 (Venkataramani & Dalal, 2007). Ingroup ties has consistently been positively associated with prosocial
14 behavior toward group members (e.g., Goette, Huffman, & Meier, 2012). However, less desirable
15 associations between ingroup ties and antisocial behavior have also been found. Specifically, ingroup ties
16 has been linked with antisocial behavior toward both outgroup (Goldman, Giles, & Hogg, 2014; Ostrov,
17 Murray-Close, Godleski, & Hart, 2013) and ingroup (Bruner, Boardley, et al., 2014) members. These
18 later findings align with research in an organizational context highlighting how in a group setting that is
19 highly interdependent to accomplish a task (similar to a sport team), group members may be more likely
20 to be engage in antisocial behavior toward one another (Robinson & O'Leary-Kelly, 1998).

21 A limitation of the extant research investigating the dimensions of social identity and prosocial
22 and antisocial behavior which may be hindering our understanding of the findings, is the absence of a
23 hierarchical approach to account for the potential team and individual level of the effects. Undertaking a
24 hierarchical approach may be fruitful for disentangling the relations between the dimensions of social
25 identity (ingroup ties, cognitive centrality, ingroup affect) and prosocial and antisocial behavior toward
26 teammates and opponents.

1 **Sex and Perceived Norms as Moderators**

2 The previous section highlights how the cognitive and affective processes captured by distinct
3 dimensions of social identity may help explain adolescents' prosocial and antisocial behavior at the
4 individual- and group-level. However, socio-cultural factors (e.g., expectations associated with sex roles)
5 may moderate such relations as empirical findings suggest sex differences in prosocial and antisocial
6 behaviors during adolescence (Coie & Dodge, 1998; Eisenberg, Fabes, & Spinrad, 2006). For instance,
7 more frequent direct aggressive behaviors (e.g., physical aggression) are generally found with boys than
8 with girls (e.g., Card, Stucky, Sawalani, & Little, 2008; Carlo et al., 2014; Coie & Dodge, 1998). Sex
9 differences have also been reported in the sport literature, indicating that males engage more frequently
10 than females in antisocial teammate and opponent behavior (Kavussanu & Boardley, 2009; Kavussanu,
11 Stamp, Slade, & Ring, 2009; Sage & Kavussanu, 2007). Given these differences in frequency of
12 antisocial behavior across the sexes, it is possible sex may interact with social identity in relation to
13 antisocial behavior. Specifically, young athletes' sensitivity to – and attempts to conform with– cultural
14 and societal sex-role expectations may modify social identity – antisocial behavior relations (see Tyler &
15 Blader, 2001). Thus, a strong social identity could motivate aggressive behaviors toward opponents in
16 young male athletes whilst attenuating them in young female athletes.

17 Research findings relating to sex differences in prosocial behavior are less consistent than those
18 for antisocial behavior (Eisenberg & Fabes, 1998; Eisenberg, Cumberland, Guthrie, Murphy, Sheppard,
19 & 2005). Although females tend to demonstrate more frequent prosocial behavior than males during
20 adolescence (Eisenberg et al., 2005; Eisenberg & Fabes, 1998), some studies have reported no sex
21 differences (Eagly, 2009) whilst others have found males to be more prosocial than females (Eagly &
22 Crowley, 1986). Similarly, research findings in sport settings relating to sex differences in prosocial
23 behavior have been inconsistent. For example, in an experimental study involving table soccer, females
24 displayed more prosocial behavior than males (Sage & Kavussanu, 2007). However, a more recent
25 observation study in soccer found males and females did not differ in prosocial behaviors (Kavussanu,
26 Stamp, Slade, & Ring, 2009). Thus, given the contrasting findings relating to sex differences in prosocial

1 behavior, sex may not moderate relations between the three dimensions of social identity and prosocial
2 behavior.

3 Perceived norms² may also be an important moderator, representing the behavioral standards that
4 become expected of group members through the reinforcement of acceptable and unacceptable behaviors
5 (Rimal & Lapinski, 2015). A consistent finding in the literature is the overall strength of the effects of
6 perceived norms on adolescent behavior choices (Eisenberg, Neumark-Sztainer, Story, & Perry, 2005;
7 Maxwell, 2002). As an example, youth who believed that many of their friends were involved in bullying
8 and cyberbullying were themselves more likely to report cyberbullying (Hinduja & Patchin, 2013). To
9 date, perceived norms in sport have been examined as a source of social influence that may impact
10 athletes' prosocial and antisocial behavior because they allow members to validate their opinions,
11 attitudes, and behaviors against group behavioral standards (e.g., Shields, Bredemeier, LaVoi, & Power,
12 2005; Shields, LaVoi, Bredemeier, & Power, 2007; Tucker & Parks, 2001). Outside of sport, youth in
13 high misconduct school-related peer groups characterized by a negative interactional style engaged in
14 more frequent individual misconduct (Ellis, Zarbatany, Chen, Kinal, & Boyko, in press). Given that
15 perceived norms reflect an individual's understanding of prototypical group behaviors (Hogg, 2006), the
16 effects of social identity on prosocial and antisocial behavior may be influenced by the norms prevalent in
17 the group. That is, if an individual strongly identifies with a group in which they perceive it to be

²It is important to distinguish between *collective descriptive norms* and *perceived descriptive norms*. Collective descriptive norms refer to the actual behavioral patterns enacted by members of a social group, which can be assessed through systematically documenting group member behaviors. Importantly, a behavior that is widely enacted by group members is not necessarily readily perceived and cognitively encoded by all group members (Lapinski & Rimal, 2005). On the other hand, perceived descriptive norms refer to how individuals construe the social behaviors of other group members (e.g., Cialdini, Reno, & Kallgren, 1990). In the context of this study, we conceptualize and focus on norms as each person's interpretation of the social environment in which they are embedded—hereafter referred to as perceived norms.

1 normative to engage in frequent prosocial behavior toward teammates and antisocial behavior toward
2 opponents, then this individual may be more likely to correspondingly engage more frequently in such
3 behaviors to align with the perceived norms. Supporting this theoretical proposition, the relation between
4 perceived antisocial norms toward teammates (i.e., antisocial practice norms, exclusionary social norms)
5 and athletes' personally reported ingroup antisocial behaviors was amplified among athletes who reported
6 a stronger social identity (ingroup ties, cognitive centrality, ingroup affect) (Benson, Bruner, & Eys,
7 2017). Given that these findings solely focused on antisocial behavior toward team members, research is
8 needed that investigates the interactive role of social identity and perceived norms on prosocial and
9 antisocial behavior toward teammates and opponents.

10 **The Current Study**

11 The first purpose of this study was to investigate the individual- and group-level relations
12 between social identity and prosocial and antisocial behavior in youth sport. The second purpose was to
13 investigate if the effects of social identity on prosocial and antisocial behavior were moderated by sex and
14 perceived norms. Based on the tenets of social identity theory (Tajfel & Turner, 1979) and social
15 cognitive theory (Bandura, 1991), as well as contemporary research investigating how affective and
16 cognitive processes contribute to youth behavior, we formulated the following hypotheses.

17 First, we expected prosocial behavior toward teammates would be positively predicted by ingroup
18 ties (Hypothesis 1a), cognitive centrality (Hypothesis 1b) and ingroup affect (Hypothesis 1c). Next, we
19 hypothesized that ingroup ties would positively predict antisocial behavior toward opponents
20 (Hypotheses 2a) and teammates (Hypotheses 2b). Further, we postulated that Hypotheses 1 and 2 would
21 hold at both the individual and group level. At present, the empirical evidence to formulate specific
22 hypotheses in relation to social identity and prosocial opponent behaviour is limited and exploratory.
23 Then, it was hypothesized that social identity (ingroup ties, cognitive centrality, ingroup affect) would be
24 positively associated with antisocial opponent behavior among males, but be negatively associated with
25 such behavior among females (Hypothesis 3). As it pertains to perceived norms, it was expected that the
26 relations between all three dimensions of social identity (ingroup ties, cognitive centrality, ingroup affect)

1 and prosocial behaviors toward teammates would strengthen as a function of perceived norms for such
2 behavior (Hypothesis 4). Similarly, the relations between the three dimensions of social identity (ingroup
3 ties, cognitive centrality, ingroup affect) and antisocial opponent behavior would strengthen as a function
4 of perceived norms for antisocial opponent behavior (Hypothesis 5) and the relations between the three
5 dimensions of social identity (ingroup ties, cognitive centrality, ingroup affect) and antisocial teammate
6 behaviour would strengthen as a function of perceived norms for antisocial teammate behavior
7 (Hypothesis 6).

8 **Method**

9 **Participants**

10 In total, 376 male and female youth ($M_{\text{age}} = 13.71$ years; $SD = 1.26$; 66.76% male) from
11 28 competitive ice hockey teams ($k = 6, n = 87$ peewee³; $k = 14, n = 182$ bantam; $k = 8, n = 107$ midget) in
12 Canada volunteered to participate in this study. Competitive youth ice hockey was selected due to the
13 physical, aggressive nature of the team sport with multiple moral behavior opportunities for interactions
14 and contact with teammates and the opponent (Shapcott, Bloom, & Loughead, 2007; Smith, 1979).
15 Assertive and aggressive acts such as sticking, elbowing, and roughing constitute common but illegal
16 parts of the male and female game (e.g., Vanier, Bloom, & Loughead, 2005). In some instances illegal
17 aggressive acts against opponents may gain an advantage with the intent to hurt the opposition (Shapcott
18 et al., 2007). Given the frequent situations that involve moral dilemmas with the potential for both
19 positive and negative behaviors, combined with the popularity of the game among youth in North
20 America (Canada: 455, 000 youth [U20]; USA: 309, 748 youth [U20] and worldwide (e.g., Russia: 87,
21 730 youth [U20]; International Ice Hockey Federation, 2016), the sport appeared to represent an
22 information rich context to conduct the study. Nineteen teams were male and nine were female. At the

³ k represents the number of teams for each category and n represents the number of participants. Peewee ranges from 11 to 12 year olds, Bantam ranges from 13 to 14 year olds, and Midget ranges from 15 to 17 years old.

1 Peewee level there were three male teams and three female teams; at the Bantam level, there were ten
2 male teams and four female teams; and at the Midget level, there were six male teams and two female
3 teams. Teams ranged in size from 8-17 athletes ($M = 14.43$; $SD = 2.35$). Participants had an average 8.93
4 ($SD = 1.92$) years of experience in hockey.

5 **Procedure**

6 Prior to conducting the study, ethical approval was obtained from the lead author's Institution
7 Ethics Review Board. Coaches from hockey associations in North-Eastern and Central Ontario were
8 invited to participate in the study through presentations at coaching meetings and email correspondence
9 with coaches. Youth athletes were recruited from teams of interested coaches. Informed consent was then
10 obtained from the parents of the participants. Participants completed a questionnaire prior to, or after, a
11 scheduled practice in the middle of the regular season. Regular seasons were six to seven months in
12 length.

13 **Measures**

14 *Social Identity*

15 The youth athletes completed the Social Identity questionnaire adapted for sport (Bruner, Eys, Evans, &
16 Wilson, 2015; Cameron, 2004) in the middle of the regular season to evaluate the three dimensions of
17 social identity (ingroup ties, cognitive centrality, ingroup affect). The items were answered using a 7-
18 point scale anchored by 1 (*strongly disagree*) and 7 (*strongly agree*), with four items per subscale. An
19 example ingroup ties item is "I have a lot in common with other members in this team." An example
20 cognitive centrality item is "In general, being a team member is an important part of my self-image." An
21 example ingroup affect item is "Generally, I feel good when I think about myself as a team member". The
22 internal consistency of the social identity subscales was acceptable ($\alpha = .86, .81, \text{ and } .83$ for ingroup ties,
23 cognitive centrality, and ingroup affect, respectively). Confirmatory factor analysis based on the
24 hypothesized three factor structure demonstrated good model fit, $\chi^2(51) = 100.12, p < 0.001, RMSEA =$
25 $.049, 95\% \text{ CI } [.035, .063], CFI = .972, TLI = .963, SRMR = .036$, with factors loading ranging from .72
26 to .87 for ingroup ties, .69 to .75 for cognitive centrality, and .52 to .88 for ingroup affect.

1 ***Prosocial and Antisocial Behavior in Sport***

2 Participants also completed the Prosocial and Antisocial Behavior in Sport Scale (PABSS; Kavussanu &
3 Boardley, 2009) in the middle of the regular season to evaluate their prosocial and antisocial behavior in
4 sport. The PABSS has 20 items that represent four subscales assessing four types of behavior. Items were
5 answered using a 5-point scale, anchored by 1 (*never*) and 5 (*very often*). For each of the four multi-item
6 scales, the items were averaged to create scale scores. Participants were asked to think about their
7 experiences while playing for their team this season and indicate how often they had engaged in each
8 behavior this season. The items were preceded by “While playing for my team this season, I...”.
9 Evidence supporting the construct validity and reliability of the measure with samples representing youth
10 has been reported (Boardley & Kavussanu, 2009; 2010; Bruner et al., 2014; Kavussanu & Boardley,
11 2009).

12 *Prosocial Behavior Toward Teammates*. The first subscale included four items. A sample item is “Gave
13 positive feedback to a teammate”. The internal consistency of the Prosocial Behavior toward Teammates
14 scale was acceptable ($\alpha = .68$).

15 *Prosocial Behavior Toward Opponents*. The second subscale included 3 items. A sample item is “Helped
16 an injured opponent”. The internal consistency of the Prosocial Behavior toward Opponents scale was
17 acceptable ($\alpha = .74$).

18 *Antisocial Behavior Toward Teammates*. The third subscale has five items. A sample item is “Verbally
19 abused a teammate”. The internal consistency of the Antisocial Behavior toward Teammates scale was
20 acceptable ($\alpha = .70$).

21 *Antisocial Behavior Toward Opponents*. The fourth subscale included 8 items. A sample item included is
22 “Tried to injure an opponent”. The internal consistency of Antisocial Behavior toward Opponents was
23 acceptable ($\alpha = .88$).

24 ***Perceived Norms for Prosocial and Antisocial Behavior in Sport***

25 The wording of the 20 item PABSS (Kavussanu & Boardley, 2009) was modified to assess
26 perceived team norms for prosocial and antisocial behaviors. Specifically, the original PABSS asks the

1 athletes to reflect on how often the athlete engaged in a list of prosocial and antisocial behaviors during
2 this season. This was changed to how often the team engaged in these behaviors this season. The wording
3 of the sentence stem was changed from “While playing for my team *this season, I...*” to “While playing
4 for my team *this season, my teammates...*”. The internal consistency of the norms subscales for the four
5 types of moral behavior was acceptable ($.75 \leq \alpha \leq .91$).

6 **Data Analysis**

7 All analyses were conducted using Mplus 7.4 (Muthén & Muthén, 2012). Multilevel modeling
8 was used because it permits researchers to model relations at both the group- and individual-level with
9 nested data. In the current study, young athletes were nested within their respective competitive-youth-
10 ice-hockey teams such that athletes’ perceptions of their group environment could not be assumed to be
11 independent. A strength of multilevel analysis is the ability to partition variance into within-and between-
12 group components (Tabachnick & Fidell, 2007). As such, the unit of analysis was at both the individual-
13 and group-levels.

14 Assumptions for the multilevel models including normality, independence, and variance of the
15 individual- and group-level residuals were evaluated for each model of the prosocial and antisocial
16 behavior subscales. To determine if there was group-level variance in prosocial and antisocial behavior, a
17 null unconditional model was run for each of the outcome variables (prosocial teammate behavior,
18 prosocial opponent behavior, antisocial teammate behavior, antisocial opponent behavior). Next, models
19 were specified with the three dimensions of social identity (ingroup ties, cognitive centrality, ingroup
20 affect) entered as fixed effects at the individual-level (Level 1) centered around each team’s mean (i.e.,
21 group mean centered). Perceived norms were also included as a Level 1 variable and centered around the
22 team. Group mean centering provides a cleaner estimate of individual-level regression coefficients,
23 which was our focal area of interest (Enders & Tofighi, 2007). At the group level, the team means for
24 social identity, perceived norms, age, and sex were entered as fixed effects. Age was entered as a
25 covariate as previous research has indicated a relation between age and antisocial behavior during
26 adolescence (e.g., Kavussanu, Seal, & Phillips, 2006). We first tested our main analyses with random

1 Assumptions of multilevel analysis were met for all the variables. Although there were minor
2 violations in the normality of the residuals, we used a sandwich estimator (i.e., MLR) to compute
3 standard errors robust to non-normality (Muthén & Muthén, 2012). Descriptive statistics and correlations
4 are presented in Table 1. Intraclass correlations for the four dependent variables were 0.06 (prosocial
5 teammate behavior), 0.12 (prosocial opponent behavior), 0.27 (antisocial teammate behavior), and 0.28
6 (antisocial opponent behavior). These findings indicate that between 6% and 28% of the variability in the
7 scores are attributable to between-team variability (p 's $<.01$). Consistent with the nested nature of these
8 data, athletes who were on the same team shared some similarity in their frequency of prosocial and
9 antisocial behavior. However, the strength of the associations did not significantly differ between teams
10 (i.e., lack of variability in the slopes across teams).

11 **The Individual- and Group-level Effects of Social Identity on Prosocial and Antisocial Behavior**

12 Table 2 displays the results for the four models constructed to test the individual- and group-level
13 effects of social identity on prosocial and antisocial behavior. As hypothesized (Hypotheses 1a and 1b), at
14 the individual level, perceptions of ingroup ties ($b = 0.11, p < .01$) and cognitive centrality ($b = 0.09, p <$
15 $.01$) positively predicted prosocial behavior toward teammates. However, the expected relation between
16 ingroup affect and prosocial behavior toward teammates was not observed (Hypothesis 1c). Also in
17 contrast to expectations, ingroup ties was not associated with antisocial behavior toward opponents
18 (Hypothesis 2a) and teammates (Hypothesis 2b), nor were the other two dimensions of social identity. At
19 the individual level, perceived norms positively predicted prosocial behavior toward teammates ($b = 0.32,$
20 $p < .01$), antisocial behavior toward teammates ($b = 0.45, p < .01$), and antisocial behavior toward
21 opponents ($b = 0.56, p <.01$). At the group level, although we found the hypothesized positive relation
22 between cognitive centrality and antisocial behavior toward opponents ($b = 0.43, p < .05$), there was also
23 an unanticipated positive relation between cognitive centrality and antisocial behavior toward teammates
24 ($b = 0.22, p < .05$). Also at the group level, ingroup ties negatively predicted prosocial behavior toward
25 opponents ($b = -0.59 p < .05$); and group norms positively predicted antisocial behaviour toward

1 teammates ($b = 0.66, p < .01$), and antisocial behaviour toward opponents ($b = .760, p < .01$). Age was a
2 significant group level predictor of antisocial behavior toward teammates ($b = 0.05, p < .01$).

3 **Moderators of Social Identity on Prosocial and Antisocial Behavior**

4 Consistent with the third hypothesis that social identity would differentially predict antisocial
5 behaviors toward opponents for males and females, moderated multiple regression analyses revealed that
6 sex interacted with cognitive centrality ($b = 0.08, SE = 0.03, p = .001$) and ingroup affect ($b = 0.12, SE =$
7 $0.06, p = .03$) in relation to antisocial behavior toward opponents. Simple slopes analysis revealed that for
8 males, cognitive centrality did not significantly predict antisocial behavior toward opponents ($b = 0.02,$
9 $SE = 0.04, p = .559$) whereas for females it negatively predicted such behavior ($b = -0.14, SE = 0.03, p <$
10 $.001$; see Figure 1). Although the simple slopes were not significant for the interaction between sex and
11 ingroup affect, they were in the expected direction (females, $b = -0.14, SE = 0.09, p = .137$; males, $b =$
12 $0.11, SE = 0.07, p = .097$). Ingroup ties did not significantly interact with sex in predicting antisocial
13 behavior toward opponents.

14 As expected, perceived norms for prosocial behavior toward teammates moderated the relations
15 between all three dimensions of social identity [ingroup ties, ($b = 0.13, p < 0.01$), cognitive centrality ($b =$
16 $0.09, p = .009$), and ingroup affect ($b = 0.001, p < .01$)] and prosocial behavior toward teammates
17 (Hypothesis 4). The decomposition of simple slopes revealed ingroup ties positively predicted prosocial
18 teammate behaviour at lower ($b = 0.09, SE = 0.04, p = 0.02$), average ($b = 0.17, SE = 0.03, p < .001$), and
19 higher ($b = 0.26, SE = 0.05, p < .001$) levels of perceived norms (see Figure 2). Likewise, cognitive
20 centrality positively predicted prosocial teammate behaviour at lower ($b = 0.06, SE = 0.03, p = .025$),
21 average ($b = 0.12, SE = 0.02, p < .001$), and higher ($b = 0.19, SE = 0.04, p < .001$) levels of perceived
22 norms (see Figure 2). Finally, ingroup affect positively predicted prosocial teammate behaviour at
23 average ($b = 0.18, SE = 0.04, p < .001$), and higher ($b = 0.33, SE = 0.07, p < .001$) levels of perceived
24 norms (see Figure 2). There was no relation at lower levels of perceived norms ($b = 0.03, SE = 0.05, p$
25 $= .579$). None of the dimensions of social identity interacted with perceived norms for antisocial behavior

1 toward opponents and teammates, respectively, in predicting antisocial behavior toward opponents
2 (Hypothesis 5) and teammates (Hypothesis 6), respectively.

3 **Sensitivity Analyses**

4 The overall pattern of the results was similar when not including age as a covariate (i.e., support
5 or lack of support for key predictions). However, due to previous work documenting a relation between
6 age and antisocial behavior during adolescence (Kavussanu et al., 2009), we retained age as a covariate
7 for the final models. Re-running the main analyses without perceived norms revealed at the individual
8 level, perceptions of ingroup ties ($b = 0.15, p < .01$) and cognitive centrality ($b = 0.10, p < .01$) positively
9 predicted prosocial behavior toward teammates. Also at the individual level, perceptions of ingroup affect
10 ($b = -0.20, p < .01$) negatively predicted antisocial behavior towards teammates. At the group level,
11 ingroup affect positively predicted prosocial behavior toward teammates ($b = 0.85, p < .01$) and
12 negatively predicted antisocial behavior toward teammates ($b = -1.80, p < .01$) and opponents ($b = -2.82,$
13 $p < .01$). At the group level, ingroup ties negatively predicted prosocial behavior toward opponents ($b = -$
14 $0.23, p < .01$) and positively predicted antisocial behavior toward teammates ($b = 0.72, p < .01$) and
15 opponents ($b = 0.83, p < .01$).

16 **Discussion**

17 Empirical evidence has consistently demonstrated the powerful influence of peers on behavior
18 (for reviews see: Brechwald & Prinstein, 2011; Veenstra et al., 2013). During adolescence, youth seek out
19 peer groups as they provide a central part of a youth's self-concept as they spend less time with family
20 and establish their own personal identity (Newman & Newman, 2001; Sussman et al. 2007; Wagner,
21 1996). Sport teams represent a popular, influential peer group for youth development (Bruner, Eys,
22 Wilson, & Côté, 2014). An individual's sense of membership on a sport team - social identity - has the
23 potential to be a powerful determinant of sport-related behavior (Rees et al., 2015). The primary purpose
24 of this study was to investigate the group- and individual-level effects of social identity on prosocial and
25 antisocial behavior in competitive youth ice hockey. Multilevel analyses demonstrated that at the
26 individual level, perceptions of ingroup ties and cognitive centrality positively predicted prosocial

1 behavior toward teammates. Interestingly, at the group level, cognitive centrality positively predicted
2 antisocial behavior towards teammates and opponents and ingroup ties negatively predicted prosocial
3 behaviour toward opponents. A secondary purpose was to investigate the role of sex and team norms as
4 moderators of the social identity-prosocial/antisocial behavior relations. Sex moderated the relation
5 between antisocial behavior toward opponents and cognitive centrality and ingroup affect. Perceived
6 norms moderated the relations between cognitive centrality, ingroup ties, and ingroup affect and prosocial
7 behaviour toward teammates.

8 **Relations between Social Identity and Prosocial and Antisocial Behavior**

9 The current findings illustrate the distinct ways in which social identification processes that occur
10 at the individual- and group-level may influence prosocial and antisocial behavior. Consistent with our
11 hypotheses related to how social identity may govern more prosocial interactions among teammates
12 (Hypotheses 1a-b), the findings revealed the potentially adaptive nature of social identity; both ingroup
13 ties and cognitive centrality positively predicted prosocial teammate behavior. Generally, the study
14 findings support preliminary evidence indicating social identity to largely be associated with prosocial
15 behavior in a facilitative, adaptive manner (Bruner et al., 2014, Bruner, Boardley, Allen et al., 2017). The
16 findings also supplement individual outcomes associated with enhanced social identity in sport, such as
17 increased self-worth, commitment, and positive youth development (Bruner, Balish et al., 2017; Martin,
18 Balderson, Hawkins, Wilson, & Bruner, 2017).

19 The complexity of the social identity –antisocial behavior relations emerged at the group level as
20 stronger team perceptions of cognitive centrality were associated with increased frequency in antisocial
21 behavior toward teammates and opponents. The current findings align with other research identifying the
22 potential maladaptive relationship between social identity (ingroup ties) and antisocial opponent behavior
23 in youth sport (Bruner et al., 2014). The collective cognitive mechanism underlying the antisocial
24 behavior toward opponents may be driven in part by the need to demonstrate and/or gain status to team
25 members (e.g., Goldman et al., 2014; Merrilees et al., 2013; Sherif et al., 1961). As it pertains to
26 understanding why cognitive centrality at the group level was positively associated with antisocial acts

1 toward teammates, youth may engage in antisocial behavior toward teammates in a competitive,
2 performance-oriented, highly invested team environment such as competitive youth ice hockey in which
3 strongly identifying athletes have been found to ‘self-police’ teammates’ efforts and performance (Bruner
4 et al., 2017). Athletes on a team with strong collective cognitive centrality may have greater comfort with
5 their teammates and be more willing to challenge teammates’ efforts and behaviors through antisocial
6 behaviors (e.g., criticizing a teammate’s poor play). However, this possible explanation for the observed
7 relations between antisocial behaviors towards teammates and social identity awaits confirmation through
8 further research.

9 Stronger team perceptions of ingroup ties at the group level were associated with less frequent
10 prosocial opponent behavior. Prosocial opponent behavior by definition requires overtly doing an action
11 that benefits an opponent (e.g., helping him/her from the floor). It is possible that when there is strong
12 bonding at the group level then there is a tendency across the group to engage less frequently in behaviors
13 that could be construed as going against the ingroup. This finding supports the hierarchical approach
14 taken in this study to investigating the relation between social identity and prosocial and antisocial
15 behavior. Previous research may have missed this relationship as the statistical analyses used did not
16 account for the data hierarchy present (i.e., differentiate between group and individual effects; Bruner, et
17 al., 2014).

18 Three surprising findings were the lack of emergence of ingroup affect as a significant, positive
19 predictor of prosocial teammate behavior (Hypothesis 1a) and ingroup ties as a significant, positive
20 predictor of antisocial behavior toward opponents (Hypothesis 2a) and teammates (Hypothesis 2b). One
21 possible explanation to account for these nonsignificant findings may be the inclusion of norms for
22 prosocial and antisocial behavior as a predictor. In revisiting the sensitivity analysis data, when perceived
23 norms were not included in the main effects models, ingroup affect and ingroup ties were significant
24 Level 2 predictors of prosocial teammate behavior and antisocial behavior toward opponents and
25 teammates, respectively. Thus, it is possible that team norms may be accounting for the meaningful
26 shared variance in predicting the prosocial and antisocial behavior. As described earlier, norms guide

1 what specific behaviors people do, because the behaviors represent the behavioral standards that are
2 expected of group members (Rimal & Lapinski, 2015). There is a clear distinction in social identity
3 motivating people to *want to behave like a prototypical group member*, whereas norms guide *what their*
4 *behavior* should look like if they want to be a prototypical group member (Hogg, 2006). However, it is
5 unclear conceptually and empirically at which level of social identity would be needed to motivate
6 behavior. Perhaps once a reasonable level of social identity is established for a team, norms become more
7 salient in governing what people should be like to be a prototypical member. This awaits further research.

8 **Moderators of Social Identity on Prosocial and Antisocial Behavior**

9 A secondary purpose of the study was to investigate potential moderators (sex and perceived team
10 norms) of the social identity-prosocial/antisocial behavior relation. We found moderating effects related
11 to how individual-level perceptions of social identity predicted prosocial behaviors toward teammates and
12 antisocial behaviors toward opponents. This is perhaps not surprising when considering that these are the
13 two aspects of moral behavior with the most direct theoretical and empirical links to social identity theory
14 (i.e., how people positively treat ingroup members, how people act against outgroup members; see Table
15 2). Partial support was obtained for our third hypothesis pertaining to sex as a moderator of the social
16 identity-antisocial opponent behaviour relation. As expected, females who identified strongly with the
17 sport team reported lower frequencies of antisocial behavior toward opponents. In contrast, among males,
18 there was no relation between perceptions of social identity and antisocial behavior toward opponents.
19 The more adaptive findings toward the opposition for females may be attributed to cultural norms
20 indicating that females may inhibit their anger for fear of being regarded as inappropriately aggressive
21 (Glomb et al., 1997) or less socially appropriate (Smith et al., 1989) by ingroup members.

22 Partial support was also found for the fourth hypothesis, as perceived norms for prosocial
23 behavior toward teammates amplified the relation between social identity and prosocial behavior toward
24 teammates. This finding aligns with social identity theory as perceived norms reflect an individual's
25 construal of the prototypical behavior of group members (Hogg, 2006). If prosocial ingroup behavior
26 norms are perceived to be prevalent in the group, identifying group members may act more prosocially

1 toward each other. The results build on previous research positively linking ingroup affect with prosocial
2 teammate behavior in youth sport (Bruner, Boardley et al., 2014) and previous social identity research
3 outside sport demonstrating the interactive effects of social identity and perceived norms on individual
4 behaviors (e.g., exercise, sun-screen application, recycling; Terry & Hogg, 1996; Terry, Hogg, & White,
5 1999).

6 The present study demonstrated the potentially salient role of perceived norms for prosocial
7 behavior toward teammates in youth sport. This finding addresses calls from scholars for greater
8 understanding of the norms and prosocial behaviors around ‘being a good sport’ (Shields et al., 2005).
9 The potentially important role of norms for prosocial teammate behavior is particularly meaningful at a
10 time in which cruel and detrimental verbal and physical antisocial behavior of peers to each other (e.g.,
11 bullying) is increasingly visible in the media and in research (e.g., Evans, Adler, MacDonald, & Côté,
12 2016). Coaches and practitioners should view the present findings as support for the importance of
13 fostering social identity in conjunction with prosocial norms to promote group settings in which
14 adolescent athletes will interact positively with one another.

15 Specific to a sport setting, recent work by Benson and colleagues (2017) found social identity and
16 antisocial behavior norms to interact and significantly predict antisocial behavior toward teammates.
17 However, the present study did not find a significant interaction between social identity, perceived norms,
18 and antisocial behavior toward teammates and opponents (Hypotheses 5 and 6). An explanation for the
19 absence of the findings may pertain to the perceptual (indirect) assessment of the prosocial and antisocial
20 norms and behavior. Recent peer research has revealed that individual characteristics (e.g., ones
21 involvement in behavior) and the characteristics of an adolescent’s social network may affect perceptions
22 of peer delinquent behavior (Boman, Young, Baldwin, Meldrum, 2014; Young, Barnes, Meldrum,
23 Weerman, 2011). Furthermore, during the self-reporting of the behaviors of others, cognitive bias and
24 mistakes may occur leading to ‘misperceptions’ about reality (Young & Weerman, 2013). Some comfort
25 can be gained in knowing that greater amount of time spent together as peers may enhance the accuracy
26 of perceptions of peer behavior (Young et al. 2011). Competitive youth sport teams in which athletes

1 spend a significant amount of time together would meet this supposition. Nonetheless, a more direct
2 social network approach should be considered for future research investigating group norms and prosocial
3 and antisocial behavior.

4 **Limitations and Future Directions**

5 It is important to acknowledge the limitations of the study and discuss avenues for future
6 research. The cross-sectional and correlational nature of the findings is a limitation. Longitudinal studies
7 involving multiple assessment points throughout the season may provide insight into the mixed individual
8 and team-level findings (i.e., increased team perceptions of cognitive centrality being adaptive in nature
9 while team levels of cognitive centrality were associated with maladaptive teammate behavior). A
10 limitation of the measurement subscale of ingroup affect used in the study is the absence of identifying
11 specific aspects of positive affect (e.g., joviality, self-assurance, pride). In their review on emotion, van
12 Kleef and Fischer (2015) discuss how groups shape emotion and emotions shape groups. Van Kleef and
13 Fischer highlight the inherently emotional nature of group life and how the role of emotion in social
14 collectives such as groups remains poorly understood. To further our understanding of the relationships
15 between ingroup affect and prosocial behavior, it may be beneficial to delve deeper into investigating the
16 various aspects of affect in relation to prosocial and antisocial behavior in youth sport, as well as youth
17 development more generally. Further, it may be beneficial to utilize innovative methodologies (e.g.,
18 stimulated recall; Houge Mackenzie & Kerr, 2012) and examine mechanisms (e.g., moral emotional
19 attributions; Malti & Krettenauer, 2013) contributing to the role of ingroup affect on prosocial teammate
20 behavior. Conducting such research would address calls for further research in the area (Barsade &
21 Gibson, 2012).

22 Another limitation was the assessment of the prosocial and antisocial behaviors towards
23 teammates and opponents was limited to the competition environment. To better understand how young
24 athletes' social identities shape their prosocial and antisocial behaviors toward teammates, other salient
25 natural environments (e.g., locker room, social team settings) need to be considered. The use of
26 monitoring methods to capture the interactions and experiences of athletes may be beneficial to gain

1 deeper insight into how the social context influences individual moral behaviors. The use of observation
2 methodologies beyond paper and pencil surveys may also dissuade social desirability bias and provide
3 greater understanding about the role of sex and age in the relations between social identity and prosocial
4 and antisocial behavior during adolescent identity and moral development. For example, among high
5 identifying athletes, more frequent antisocial behaviors toward opponents were reported among older
6 athletes than younger athletes.

7 An avenue of future research is to investigate the influences of the coaching staff through
8 modeling and discussing the importance of engaging in prosocial behaviors in a sports setting (see Carlo,
9 McGinley, Hayes, Batenhorst, & Wilkinson, 2007 for a discussion of various techniques adults can use
10 that may encourage prosocial actions). Finally, a fruitful avenue of research may involve unpacking the
11 mechanisms used by adolescents to justify the antisocial behavior (i.e., moral disengagement) to explain
12 the conditional nature of the social identity-prosocial/antisocial behavior relation. This line of inquiry may
13 provide insight into the rationalizations youth provide for acting antisocially toward teammates and
14 opponents, as well as address a recent call from stimulated recall findings with a similar population
15 reporting sex differences in prosocial and antisocial behavior (Bruner, Boardley, Forrest et al., 2017).

16 **Conclusion**

17 Peers can strongly shape an adolescent's self-perceptions and intergroup behaviors (Tanti et al.,
18 2011). Our research contributes to this area of research by providing further insight into the conditions
19 under which peers are a more (or less) salient source of social influence on the prosocial and antisocial
20 behavior of youth. Using competitive youth sport teams as a naturalistic group setting for studying peer
21 influence, the present study highlights how individual and team perceptions of social identity are related
22 to youth prosocial and antisocial behavior. The differential multilevel effects seen in the current study, in
23 particular for the predictions of antisocial behaviors toward athletes in relation to cognitive centrality,
24 reinforces the need to consider both the individual and group when investigating social identity and
25 prosocial and antisocial behavior in youth sport. Further, identifying the moderating roles of sex and
26 norms provides insight into the relations between social identity and prosocial and antisocial behavior.

1 Collectively the findings support the contention by developmental scholars that “peers may exert either a
2 positive or negative influence on adolescent development, depending on the characteristics of the peer
3 group” (Fredricks & Eccles, 2005, p. 509). Studying the conditional relations between social identity and
4 prosocial and antisocial behavior in the developmental context of sport teams lends support to the broader
5 idea that peer groups are a potent source of social influence (Sussman et al., 2007). Further research
6 examining social identity-prosocial/antisocial behavior relations in youth developmental contexts, such as
7 sport, will guide efforts to create or strengthen meaningful social identities for adolescents in order to
8 promote their development (Tanti et al., 2011).

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Table 1.

Descriptive and Bivariate Statistics

	<i>M</i>	<i>SD</i>	α	1	2	3	5	6	7	8	9	10	11	12	13
1. IGT	5.70	0.96	0.86	--											
2. CC	5.31	1.08	0.81	.48**	--										
3. IGA	5.06	0.60	0.83	.55**	.43**	--									
5. PROT	3.99	0.61	0.68	.33**	.31**	.29**	--								
6. PROO	1.96	0.98	0.74	-.02	.10*	.129*	.18**	--							
7. ANTT	1.81	0.74	0.70	-.16**	-.15**	-.28**	-.03	-.03	--						
8. ANTO	2.37	0.88	0.87	-.02	-.11*	-.12*	-.08	-.11*	.59**	--					
9. NrmPROT	3.96	0.68	0.75	.32**	.22**	.35**	.46**	.05	-.25**	-.15**	--				
10. NrmPROO	1.47	0.71	0.77	.03	.08	.11*	.08	.63**	-.07	-.10	.04	--			
11. NrmANTT	2.24	0.93	0.87	-.14	-.10	-.29**	-.03	-.05	.69**	.45**	-.33**	.05	--		
12. NrmANTO	2.67	0.94	0.91	-.04	-.13*	-.19**	-.02	-.16**	.56**	.70**	-.21**	-.09	.74**	--	
13. Age	13.71	1.60		0.04	-.14**	-.12*	-.08	-.16**	.33**	.33**	-.06	-.08	.32**	.37**	--

Note. IGT = Ingroup Ties, CC = Cognitive Centrality, IGA = Ingroup Affect, SI = Social Identity, PROT = Prosocial Behavior Towards Teammates, PROO = Prosocial Behavior Towards Opponents, ANTT = Antisocial Behavior Towards Teammates, ANTO = Antisocial Behavior Towards Opponents, NrmPROT = Prosocial Behavior Towards Teammates Norms, NrmPROO = Prosocial Behavior Towards Opponents Norms, NrmANTT = Antisocial Behavior Towards Teammates Norms, NrmANTO = Antisocial Behavior Towards Opponents Norms.

* $p < 0.05$ level (2-tailed). ** $p < 0.01$ level (2-tailed).

Table 2.

Ingroup Ties, Cognitive Centrality, and Ingroup Affect Predicting Prosocial and Antisocial Behaviors Towards Teammates and Opponents

	PBT	PBO	ABT	ABO
	Coefficient (SE)	Coefficient (SE)	Coefficient (SE)	Coefficient (SE)
Fixed effects (Level 1)				
IGT	0.11 (0.04)*	-0.08 (0.05)	-0.49 (0.04)	-0.01 (0.06)
CC	0.09 (0.03)**	0.04 (0.04)	-0.03 (0.03)	-0.05 (0.04)
IGA	0.01 (0.05)	0.11 (0.09)	-0.07 (0.08)	0.07 (0.06)
NRM	0.32 (0.05)**	0.82 (0.09)**	0.45 (0.51)**	0.56 (0.05)**
Fixed effects (Level 2)				
IGT mean	-0.06 (0.11)	-0.59 (0.29)*	-0.01 (0.12)	-0.01 (0.20)
CC mean	-0.04 (0.12)	0.16 (0.32)	0.22 (.11)*	0.43 (0.21)*
IGA mean	0.13 (0.34)	0.96 (0.80)	-0.11 (0.21)	-0.49 (0.47)
Sex	-0.05 (0.04)	-0.09 (0.08)	0.01 (0.03)	-0.01 (0.06)
NRM	0.32 (0.17)	-0.11 (0.24)	0.66 (0.08)**	0.76 (0.17)**
Age	-0.02 (0.03)	-0.02 (0.06)	0.05 (0.02)**	0.04 (0.04)
Random effects				
Intercept	2.17 (1.23)	0.38 (2.32)	-0.93 (0.78)	0.05 (1.43)
Level 1 (r)	0.26	0.54	0.26	0.37
Level 2 (u ₀)	0.00	0.05	0.00	0.00
Intraclass correlation	.06	.12	.27	.28
Loglikelihood	-282.62	-428.40	-282.56	-348.41

Note: IGT = Ingroup ties, CC = Cognitive Centrality, IGA = Ingroup Affect, PBT = Prosocial behavior towards teammates, PBO = Prosocial behavior towards opponents, ABT = Antisocial behavior toward teammates, ABO = Antisocial behavior towards opponents, NRM = Norms related to the respective prosocial or antisocial outcome variable.

p* <.05. *p* <.001.

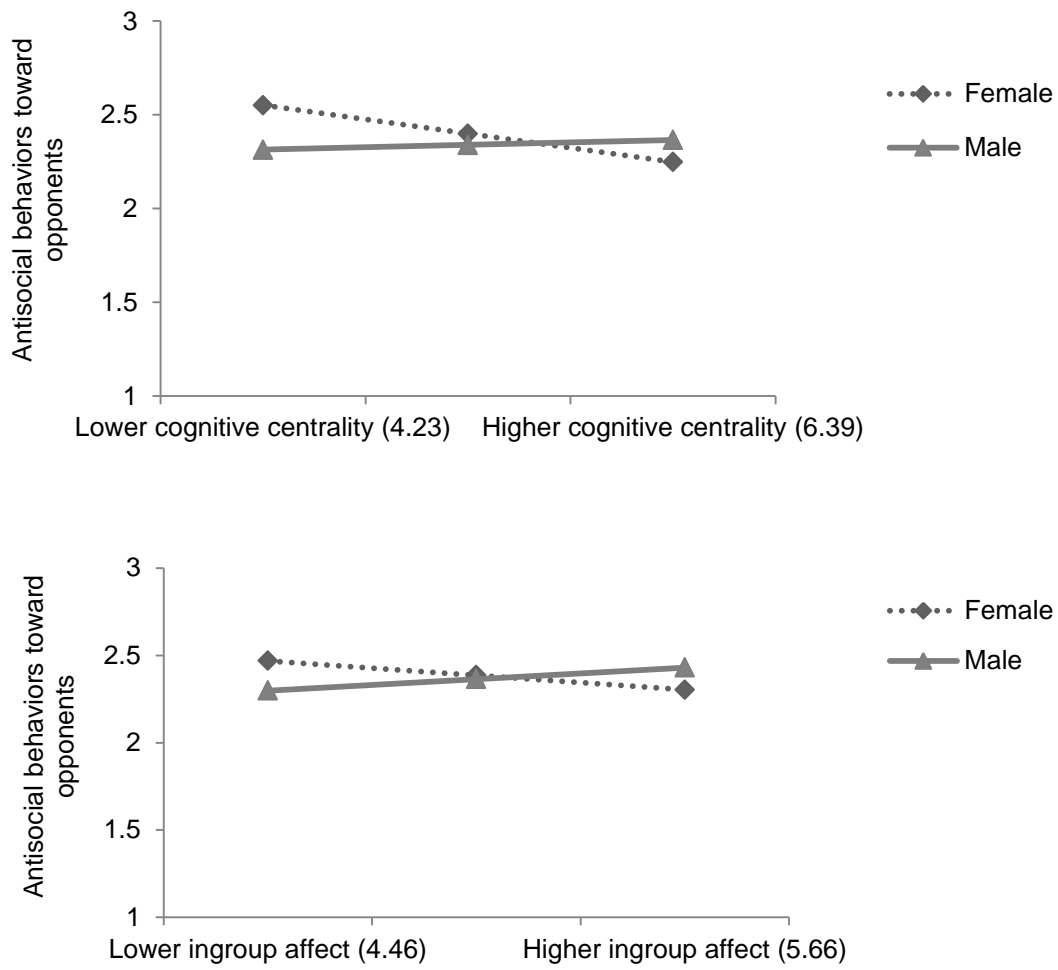


Figure 1. Interactions between social identity and sex as a predictor of antisocial behaviors toward opponents (5-point scale)

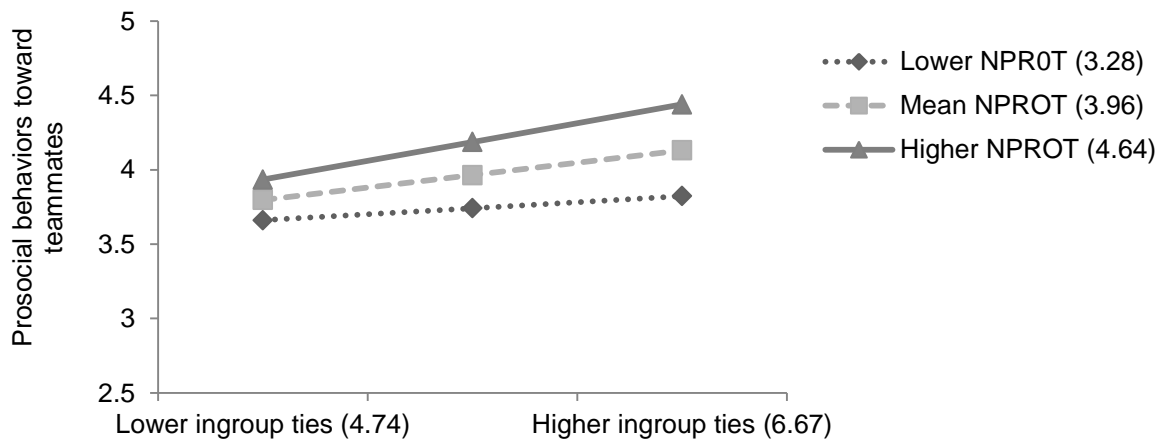
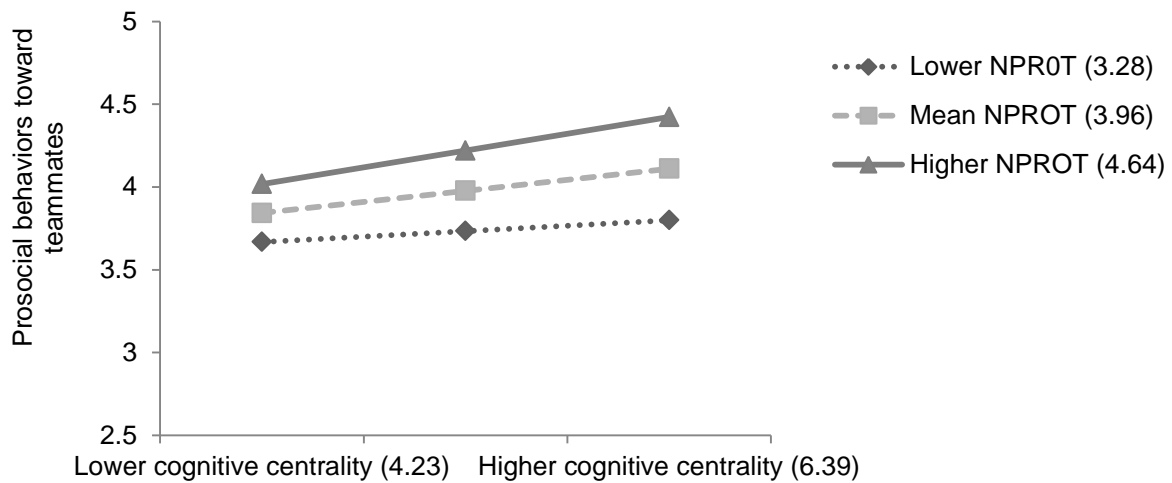
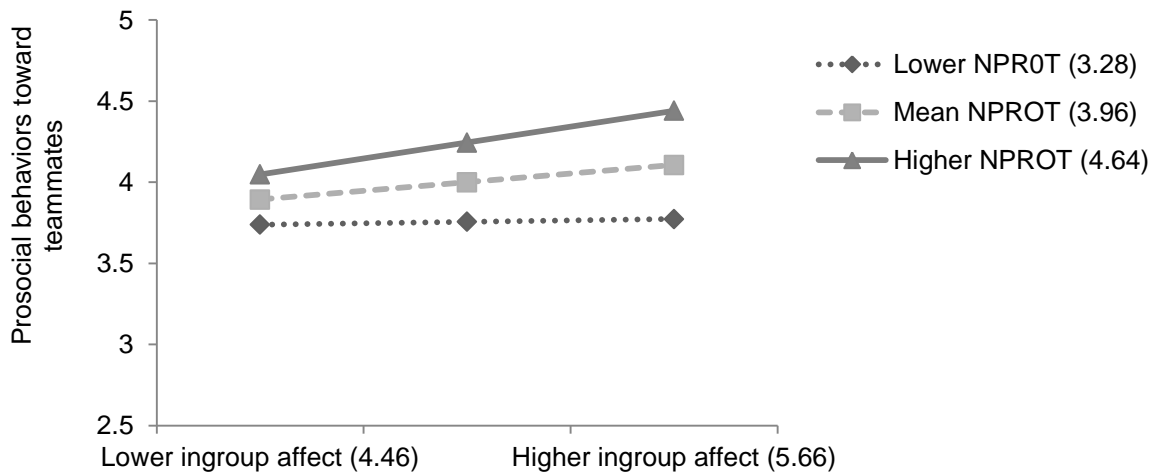


Figure 2. Interactions between social identity and perceived norms for prosocial behavior toward teammates as a predictor of prosocial behaviors toward teammates (5-point scale). NPROT = Norms for prosocial behaviors toward teammates.