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Brief report

Brief report: Patterns of prosocial behaviors in middle childhood predicting peer relations during early adolescence

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ABSTRACT

Introduction: Early adolescence is a developmental period in which peer victimization, bullying, relational aggression, and social exclusion are particularly prominent. As these behaviors have long-term implications for children, in this study, we investigated early variations of prosocial behaviors as one of the critical precedents that shape youth's subsequent peer relational outcomes. Specifically, we identified different profiles of prosocial behaviors in middle childhood (Grade 4) and related these profiles to peer relationships in early adolescence (Grade 6).
Method: Using longitudinal data from the NICHD Study of Early Child Care and Youth Development (N = 914; 52% girls), a three-step latent profile analysis was conducted on Grade 4 prosocial behaviors, which were then related to Grade 6 teacher- and student-rated peer relationships (e.g., relational aggression).
Results: Four patterns of prosocial behaviors emerged: low prosocial (18%), high prosocial (67%), primarily friendly (8%), and primarily kind (7%). These four patterns of prosocial behaviors were differentially related to later problematic peer relationships: Low prosocial youth demonstrated the most problematic peer relationships (*Mdiff* = 0.36-0.93, all p < .001). Primarily friendly (but not kind) youth displayed more general and relational aggression (*Mdiff* = 0.22, *SE* = 0.07, *p* = .002; and *Mdiff* = 0.18, *SE* = 0.06, *p* = .006, respectively).
Conclusion: Both low prosocial and primarily friendly youth are at risk for displaying peer-related problems; interventions that build prosocial behaviors in youth with a low prosocial or primarily friendly profile may help prevent problematic peer relationships at early adolescence.

Early adolescence is a developmental period in which peer victimization, bullying, relational aggression, and social exclusion are particularly prominent (Hanish & Guerra, 2004; Karriker-Jaffe, Foshee, Ennett, & Suchindran, 2008). When tracing the roots of early adolescent problematic peer relationships for prevention purposes, middle childhood prosocial behaviors have been identified to be one of the critical precedents that shape youth's subsequent social developmental outcomes (Eisenberg, Spinrad, & Knafo-Noam, 2015, pp. 1–47). To better understand these processes and to improve prevention focused interventions, the current study examines children's prosocial behaviors—defined as actions and voluntary behaviors geared toward benefiting another (Eisenberg. et al., 2015; Hastings, Zahn-Waxler, Robinson, Usher, & Bridges, 2000)—either as being protective or a risk for problematic peer relationships during early adolescence.

Children who have tendencies to engage in prosocial behaviors are shown to have a variety of competencies that reduce social

aggressive tendencies and other forms of maladjustment throughout middle and late adolescence, and support positive social and academic outcomes (Laible, Carlo, Davis, & Karahuta, 2016). According to the theory of socio-cognitive processes (Hoffman, 2000), prosocial behaviors of youth reflect an awareness of another person's needs, requiring maturity of youth's perspective-taking abilities. From childhood to adolescence, a gradual increase in perspective-taking skills contributes to adolescents' ability to decode others' emotional cues and to understand and sympathize with others' needs. The increase in perspective-taking capacity contributes to youth' prosocial actions and social competencies simultaneously (Eisenberg. et al., 2015). Prosocial youth are found to have high effortful control (i.e., a temperamental self-regulatory capacities) and are more socially responsible (Laible, Carlo, Murphy, Augustine, & Roesch, 2014), which allows them to properly conform to social norms, to regulate their own emotions, and to focus on others' needs (Eisenberg, 2000). Aligned with this framework, prior research found that prosocial youth are less likely to be involved in bullying, exhibit aggression, externalizing behaviors, and be a peer victim (Closson & Hymel, 2016; Laible et al., 2016; Perren & Alsaker, 2006). On the contrary, youth who exhibit few prosocial behaviors are more likely to engage in peer aggression or be targeted as the peer victim (Laible et al., 2016).

Findings from the aforementioned studies, in general, argues for favorable developmental outcomes of youth prosocial capacities, and that youth who exhibit high capacity across all prosocial behaviors may be most protected against problematic peer relationships (Carlo et al., 2014; Laible et al., 2016). Yet, some aspects of children's prosocial capacities, including perspective-taking ability and Theory of Mind—a child's understanding of other people's desires and intentions, have been shown to also predict less desirable peer interactions, such as manipulating peers through relationally aggressive means to gain social status (Sutton, Smith, & Swettenham, 1999a, 1999b). Thus, while some prosocial capacities may be highly promotive of positive peer relationships even in the absence of other prosocial capacities, it is likely that in most circumstances, prosocial capacities can be more or less desirable depending on how they jointly occur with a child's other prosocial capacities. For example, perspective-taking may be highly beneficial when a child's prosocial patterns also include cooperation and concern for others, but highly detrimental to forming positive peer relations when a profile does not include these other capacities (Baker, Jensen, Moeyaert, & Bordoff, 2018; Bosacki, 2015; Schneider, 1999).

1. Patterns of prosocial behaviors

Emerging research has examined between-person variability of prosocial behaviors to understand if potential subgroups or heterogeneity exist among prosocial behaviors (Berger, Batanova, & Cance, 2015; Newton, Thompson, & Goodman, 2016). The use of a person-centered approach (i.e., latent profile analysis) is suitable for this inquiry to identify subgroups that portray the heterogenous aspects of youth prosocial behaviors (Nylund, Muthen, & Asparouhov, 2007). However, much of this work has been conducted in early childhood with research during the stage of adolescence surprisingly lacking (Newton et al., 2016). In their work with toddlers, Newton et al. (2016) identified different profiles of prosocial behaviors; in addition to *low* and *moderate* prosocial groups, some children were high on specific helping tasks, but were not high across all helping conditions. Given evidence showing that prosocial capacities are quite stable and gradually increases across childhood to adolescence (Eisenberg & Fabes, 1998), we expected different profiles of prosocial behaviors also to be evident in middle childhood. It is also possible that the variability in patterns may get expanded and broadened with development as youth continue to accumulate varying experiences in and across multiple contexts, and to interact more sophisticatedly with contextual anchors such as gender roles, norms, and friendships (Eisenberg et al., 2015; Eisenberg & Fabes, 1998; Hay & Cook, 2007). To date, there is a dearth of person-centered studies of prosocial behaviors in middle childhood and adolescence. We found a single study (Berger et al., 2015) in which the authors examined profiles of an array of adolescent social competences, including prosocial behaviors and peer relations, but the prosocial behaviors were averaged and treated as a single indicator of social competence. The within-construct variation of prosocial behaviors was not examined.

In this study, we sought to (1) identify distinct profiles of prosocial behaviors in middle childhood (4th grade) and (2) examine how these profiles are associated with subsequent peer relationships in early adolescence (6th grade). We included teacher- and self-reports of adolescents' peer relationships because prior work suggests that multi-informants of peer relations provided unique, complementary perspectives and are each correlated to different core aspects of adolescents' adjustment (Graham, Bellmore, & Juvonen, 2003). We controlled for gender in the model assessing latent prosocial profiles predicting the distal outcomes of peer relationships because of prior research showing that high prosocial youth are more likely to be girls (Eisenberg & Fabes, 1998). We expected to see heterogeneity in children's prosocial capacities, and that youth who are consistently high on all prosocial behaviors would demonstrate the most positive peer relationships and youth consistently low on all prosocial capacities would be at greatest risk in terms of positive peer relationships; we also expected that youth who are partially high on some but not all prosocial capacities would have more or less favorable outcomes depending on which capacities were high and low.

2. Method

2.1. Participants

The longitudinal data were part of the NICHD Study of Early Child Care and Youth Development (SECCYD), a birth cohort of 1364 children recruited at 10 sites in the United States. Details on the procedures used to recruit families for this project can be found in NICHD Early Child Care Research Network (2005). There were 1100 families who reported data from Grade 2 through Grade 6. The current study focuses on 914 children who had teacher-report of prosocial behaviors at Grade 4 ($n = 914$, M age = 9.15, $SD = 0.32$, 49% girls; 78% White, 10% Black, 7% Hispanic, and 5% others). To assess if missing on teacher-report at Grade 4 had an impact on the outcomes, we examined whether students who had teacher report versus those who did not differed on any of Grade 6 outcomes

Table 1
Descriptive and correlations between the key variables.

Variables	1	2	3	4	5	6	7
1. 4th Teacher-Rated Prosocial Behavior[a]	–						
2. 6th Teacher-Rated Excluded by Peers Score	−0.21***	–					
3. 6th Teacher-Rated Aggressive with Peers Score	−0.38***	0.41***	–				
4. 6th Teacher-Rated Relational Aggressive with Peers Score	−0.21***	0.24***	0.66***	–			
5. 6th Teacher-Rated Peer Victimization Score	−0.21***	0.64***	0.53***	0.35***	–		
6. 6th Child-Rated Victimization Score	−0.05	0.27***	0.13***	0.093*	0.30***	–	
7. 6th Child-Rated Engagement in Bullying Behavior Score	−0.14***	0.006	0.20***	0.14***	0.062	0.32***	–
Score Range	0–2	0–2	0–2	0–2	0–2	0–4	0–4
Mean	1.50	0.33	0.30	0.28	0.17	1.73	1.38
SD	0.02	0.02	0.02	0.01	0.01	0.03	0.02
Missing %	0.3%	7.8%	7.3%	8.5%	7.5%	0.3%	0.3%
N[b]	914	839	847	836	845	914	914

Note. [a]4th teacher-rated prosocial behaviors was the scale composite scores. [b]The NICHD birth cohort of 1364 is the recruited sample from the hospital, and the study sample at 1 month has already dropped to 1250 infants (NICHD, 2005). There were 1100 families who reported data from 2nd through 6th grade. The current study focuses on 914 children who had teacher-report of prosocial behaviors at grade 4 ($n = 914$, M age = 9.15, SD = 0.32, 49% girls; 78% White, 10% Black, 7% Hispanic, and 5% others). We also tested if missing on teacher-report at grade 4 made impact on the outcomes and found that students who had teacher report versus those who did not did not differ on any of outcomes used in this study. *$p < .05$. **$p < .01$. ***$p < .001$.

used in this study and found no significant differences. The assessment (for those who were used for this study) took place in the spring of 4th grade (2001) and in the spring of 6th grade (2003). Each students' primary teacher in elementary school were asked to participate by completing one questionnaire booklet in January 2001 and in January 2003 about the study child's academic and social development. There were 873 unique teachers in 4th grade who were also the primary teachers who interacted frequently with the child participant.

2.2. Measures

The measures included teacher-rated prosocial behaviors and peer relationships, as well as adolescent self-reported peer relationships.

2.3. Prosocial behaviors at grade 4

Children's prosocial behaviors at Grade 4 were measured using the teacher-reported Child Behavior Scale (Ladd & Profilet, 1996). This scale includes nine items that examine children's prosocial behaviors. Respondents rated the child's behavior on a 3-point scale ranging from 0 (*not true*) to 2 (*often true*) for each item (e.g., *the child seemed concerned for others*). See appendix A for all the nine items (Alpha = .87). Each individual item was used in the LPA analysis and the averaged subscale mean of prosocial behaviors was used in the descriptive table (Table 1).

2.4. Peer-related problems at grade 6: teacher-report and self-report

Adolescents' *general aggression*, *social exclusion*, *relational aggression* and *peer victimization* were measured from Ladd's revision of the Child Behavior Scale (Ladd & Profilet, 1996). Teachers rated the 9-item aggression subscale, 4-item social exclusion subscale, and 4-item peer victimization scale, ranging from 0 (*not true of the child*) to 2 (*very true of the child*) on a 3-point scale. Sample items included "threatens other children" for aggression subscale, "peers avoid this child" for social exclusion subscale, "is picked on by other children" for peer victimization. Alphas for each subscale ranged from 0.87 to 0.96, and items were averaged within subscales to produce a mean score for each construct of peer relation.

Adolescents also self-reported bullying and victimization in 6th grade (Kochenderfer & Ladd, 1996). Adolescents rated the extent to which they were involved with bullying (4-items; "Do you pick on other kids at school?") and victimized by peers (4-items; "Do any of the kids at school pick on you?") using a 5-point Likert scale, ranging from 0 (*Never*) to 4 (*Always*). Alphas were 0.83 for self-reported bullying and 0.85 for peer victimization.

2.5. Data analysis plan

To address the first research aim, we conducted latent profile analysis (LPA) in Mplus 8.0 using full information maximum likelihood estimation with robust SEs, to identify the latent profiles among nine prosocial behaviors. Multiple fit indices (Asparouhov and Muthén, 2014; Masyn, 2013; Nylund-Gibson, Grimm, Quirk, & Furlong, 2014) were examined to determine the best solution of number of classes including the Bayesian Information Criterion (BIC), Akaike's Information Criterion (AIC), Consistent Akaike's Information Criterion (CAIC), sample-size adjusted BIC (SABIC), Lo-Mendell-Rubin adjusted Likelihood Ratio Test (LMR-aLRT), and

Table 2
Model fit indices for latent profile analyses.

Model	LogL	AIC	CAIC	BIC	saBIC	AWE	LMR-aLRT	cmP(k)
One-class	−7015.56	14067.12	14171.84	14153.84	14096.68	14330.56	909.65**	0.00
Two-class	−5289.95	10635.90	10798.80	10770.80	10510.32	11045.70	3401.33**	0.00
Three-class	−4995.72	10067.44	10288.52	10250.52	9897.01	10623.60	579.96	0.00
Four-class	−4448.13	8992.26	9271.52	9223.52	8776.98	9694.77	1081.94	1.00
Five-class	−4045.72	8207.44	8544.87	8486.87	7947.32	9056.31	795.10	0.00

the approximate correct model probability (cmP). Smaller AIC, BIC, ACAIC, and saBIC values indicate better fitting solutions (Collins & Lanza, 2010). Significant p values of LMR-aLRT indicates that the model with k-classes has better fit to the data than a model with k −1 classes. A cmP value closer to one indicates the actual probability of Model A being the correct model relative to a set of J models under consideration (Nylund, Asparouhov, & Muthén, 2007).

To address the second aim which examined whether 4th grade teacher-reported prosocial behavior profiles are associated with problematic relationships with peers at 6th grade, we used the three-step approach (Nylund-Gibson et al., 2014) and estimated in LPA for each prosocial profile the means for the 6th grade distal outcomes of both self- and teacher-reported aggression, social exclusion, bullying, and victimization. We then compared these means for statistically significant differences, while controlling for participants' gender. Wald Chi-Square Test was used to assess differences in distal means between pairs of profile membership. The number of participants who provided both 4th grade and 6th grade data were used in the follow-up Wald Chi-Square Test. The N for this group ranged between 836 and 911 (0–8% missingness) depending on the specific variable of interest at 6th grade. We compared those who did not have 6th grade data with those who did on key variables (e.g., gender, ethnicity, and prosocial patterns) used in this study and found these two groups did not differ across participant demographics or in prosocial profile membership: gender, *chi-square* (1) = 0.001, $p = 0.98$; ethnicity, *chi-square* (3) = 0.50, $p = 0.92$; prosocial pattern, *chi-square* (3) = 2.10, $p = 0.55$. All missing data were then handled by the full maximum likelihood method in Mplus (Enders, 2010).

3. Results

We reported descriptive statistics in Table 1. To determine the optimal number of prosocial patterns, we examined multiple fit indices (see Table 2) which showed the four-class solution as the best fit. Table 3 shows the descriptive differences in the nine prosocial indicators among the four prosocial patterns. The four-class pattern consisted of 67% ($n = 619$) of children rated as highly prosocial (labeled *high prosocial*). These children displayed high scores across all nine prosocial indicators (Table 3 and Fig. 1). Second, there were 18% ($n = 164$) rated as low in all prosocial behaviors (labeled *low prosocial*). There were two moderate prosocial classes with distinctly different profiles. Children in the *primarily kind* class (7%, $n = 62$) were rated as highly kind, who had higher prosocial behaviors than the *low prosocial* group (p < .001), except for friendliness (Table 3), and lower prosocial behaviors than the *high prosocial* group (p < .001), except for kindness. There were also 8% ($n = 69$) of children (labeled *primarily friendly*) who were rated as high in friendliness as the *high prosocial* group, and who had lower ratings than the *primarily kind* group on taking turns, listening to classmates, and being cooperative (p < .001). Consistent with prior research, girls compared to boys were more likely to be rated as *high prosocial* and less likely to be rated as *Low Prosocial, W*(3) = 76.71, $p < .001$.

We next estimated the mean 6th-grade peer outcomes for each latent prosocial profile. As described above, these models included gender as a covariate. To test for significant differences, we conducted a series of Wald tests to examine whether the mean peer outcomes in early adolescence significantly differed across children's prosocial profiles (Table 4). The omnibus test across the 6th

Table 3
Descriptive differences in grade 4th prosocial indicators by prosocial pattern membership.

Grade 4 prosocial indicators	Grade 4th prosocial pattern membership				
	Low prosocial	Primarily kind	Primarily friendly	High prosocial	Statistical significance
	M (SD)	M (SD)	M (SD)	M (SD)	$F_{(3, 899)} =$
Compromises in conflict	0.73 (.51)[a]	1.03 (.51)[b]	0.98 (.09)[b]	1.39 (.56)[c]	70.09***
Seems concerns	0.57 (.58)[a]	1.00 (.57)[b]	0.95 (.53)[b]	1.40 (.57)[c]	96.90***
Takes turns	1.20 (.53)[a]	1.66 (.54)[b]	1.31 (.70)[c]	1.89 (.32)[c]	139.67***
Kind toward peers	0.92 (.26)[a]	2.00 (.00)[b]	0.86 (.34)[c]	2.00 (.00)[b]	3220.14***
Listens to classmates	0.99 (.49)[a]	1.53 (.50)[b]	1.22 (.54)[c]	1.82 (.37)[d]	187.00***
Is cooperative with peers	0.98 (.42)[a]	1.48 (.53)[b]	1.25 (.61)[c]	1.83 (.40)[d]	181.59***
Friendly toward other children	0.93 (.25)[a]	0.94 (.25)[a]	2.00 (.00)[b]	2.00 (.00)[b]	4088.46***
Shows concern with moral issues	0.82 (.64)[a]	1.29 (.71)[b]	1.26 (.59)[b]	1.68 (.53)[c]	102.38***
Offers help/comfort other children	0.66 (.58)[a]	0.95 (.61)[b]	1.01 (.56)[b]	1.46 (.56)[c]	96.00***

Note. The means in each row that share the same subscripts are not significantly different from each other. The means that have different subscripts in the same row are significantly different at $p < .001$.
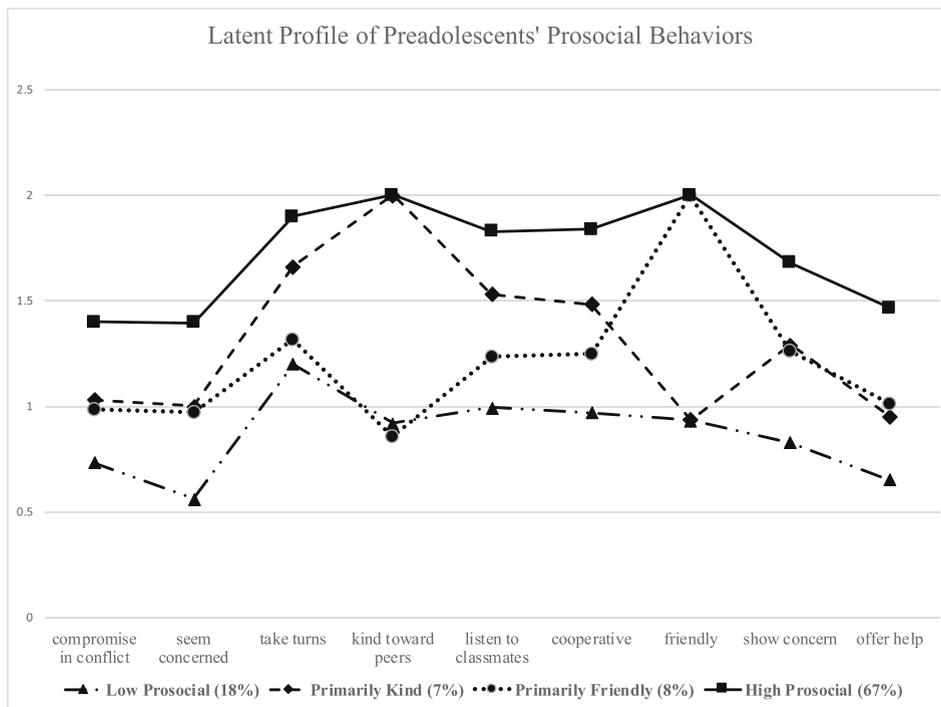***$p < .001$.

Fig. 1. Latent profiles of children's prosocial behaviors by teacher report at 4th grade.

Table 4
Means and Standard Deviations of grade 6th adolescents' peer relations by grade 4th prosocial pattern membership.

Grade 6th Adolescents' peer relations	Grade 4th prosocial pattern membership				
	Low prosocial	Primarily kind	Primarily friendly	High prosocial	Wald Chi-Square Test
	M (SD)	M (SD)	M (SD)	M (SD)	Chi-square(df)
TR Peer victimization	$0.36 (.04)_a$	$0.20 (.04)_b$	$0.22 (.04)_b$	$0.19 (.02)_b$	19.13(3)**
TR Socially excluded by peers	$0.60 (.06)_a$	$0.43 (.07)_{ab}$	$0.32 (.05)_b$	$0.32 (.04)_b$	26.13(3)***
TR Aggressive behaviors	$0.67 (.05)_a$	$0.40 (.07)_{bc}$	$0.49 (.07)_b$	$0.28 (.02)_c$	76.71(3)***
TR Relational aggression	$0.41 (.04)_a$	$0.27 (.05)_{bc}$	$0.35 (.07)_{ab}$	$0.17 (.02)_c$	37.74(3)***
SR Peer victimization	$0.93 (.07)_a$	$0.66 (.09)_b$	$0.65 (.09)_b$	$0.70 (.04)_b$	12.91(3)**
SR Bullying	$0.53 (.05)_a$	$0.44 (.08)_{ab}$	$0.35 (.06)_b$	$0.34 (.03)_b$	16.03(3)**

Note. SR = self-report and TR = teacher-report. The means that have different subscripts in each row are significantly different at $p < .001$, controlling for gender. The *dM* reported in the text is the mean differences between group.
**$p < .01$. ***$p < .001$.

grade peer social outcome indicators were all significant (Table 4). The follow-up pairwise comparisons (both Table 4 and Fig. 2) showed that children in the *Low Prosocial* group were significantly more at risk for experiencing both teacher- and self-reported victimization, social exclusion, and for displaying more general aggression, relational aggression, and bullying compared to youth of all other prosocial profiles. The *dM* in the parentheses represents the difference in means of an outcome between any given pair among the prosocial profiles.

Specifically, *primarily kind* children scored significantly lower than *low prosocial* youth in victimization ($dM = 0.16$, $SE = 0.05$ $p = .002$; $dM = 0.27$, $SE = 0.11$ $p = .012$; teacher- and self-report, respectively), general aggression ($dM = 0.27$, $SE = 0.08$ $p = .001$), and relational aggression ($dM = 0.14$, $SE = 0.06$ $p = .029$). Different from *high prosocial* and *primarily friendly* youth, they did not differ from *low prosocial* youth regarding social exclusion or bullying ($dM = 0.16$, $SE = 0.08$ $p = .06$; $dM = 0.08$, $SE = 0.09$ $p = .34$). However, these youth did not significantly differ from *high prosocial* youth nor did they differ from *primarily friendly* youth in any of the peer outcome indicators.

Primarily friendly children scored significantly lower than *low prosocial* youth in victimization ($dM = 0.13$, $SE = 0.05$ $p = .01$; $dM = 0.28$, $SE = 0.11$ $p = .01$; teacher- and self-report, respectively), general aggression ($dM = 0.17$, $SE = 0.08$ $p = .027$), socially exclusion ($dM = 0.27$, $SE = 0.07$ $p < .001$), and bullying ($dM = 0.18$, $SE = 0.07$ $p = .011$). However *primarily friendly* youth did not differ from *low prosocial* youth in relational aggression ($dM = 0.06$, $SE = 0.07$, $p = .417$). Notably, these youth also scored significantly higher than *high prosocial* youth in general aggression ($dM = 0.22$, $SE = 0.07$, $p = .002$) and relational aggression ($dM = 0.18$, $SE = 0.06$, $p = .006$). Finally, children in the *high prosocial* profile scored significantly lower than the *low prosocial* youth
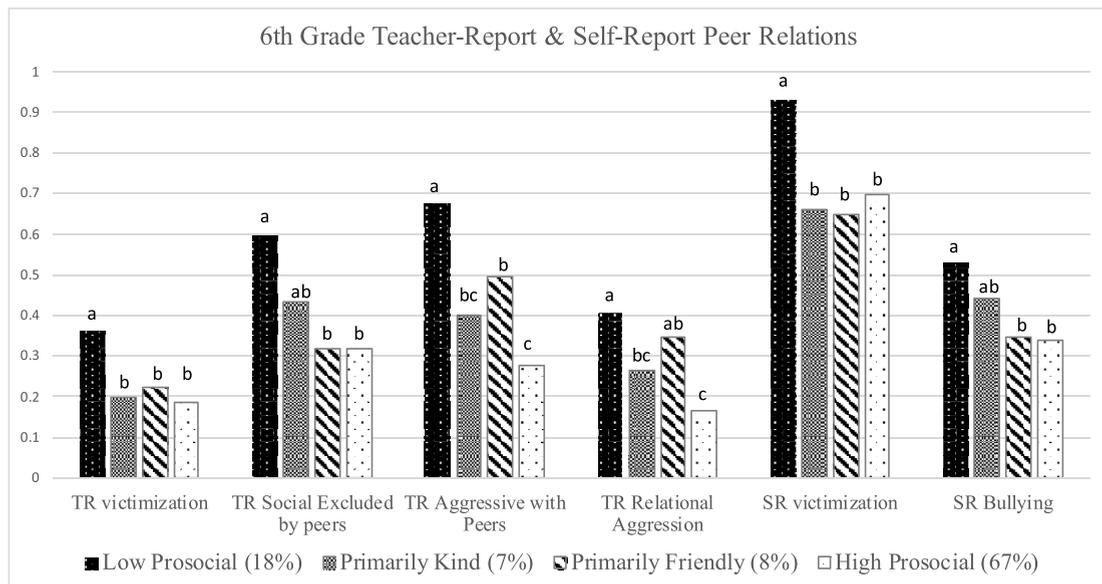
Fig. 2. Results of 6th grade peer relation mean differences across prosocial patterns. SR = self-report and TR = teacher-report. Adjusted mean controlling for gender with a different superscript letter denotes statistical significance.

in victimization ($dM = 0.17$, $SE = 0.04$, $p < .001$; $dM = 0.23$, $SE = 0.06$, $p = .001$; teacher- and self-report, respectively), social exclusion ($dM = 0.28$, $SE = 0.05$, $p < .001$), general aggression ($dM = 0.29$, $SE = 0.04$, $p = .001$), relational aggression ($dM = 0.23$, $SE = 0.04$, $p < .001$), and bullying ($dM = 0.18$, $SE = 0.04$, $p < .001$).

4. Discussion

These results suggest that youth vary in the level and types of specific prosocial behaviors in which they typically engage. This finding is consistent with prior work that has shown youth exhibit distinct patterns of social competences and prosocial capacities (Berger et al., 2015; Newton et al., 2016). Adding to previous research that showed prosocial behavior is a critical predictor of later peer relations (Carlo et al., 2014; Laible et al., 2016), our research also demonstrated that configurations or patterns of children's prosocial behaviors are critically important in shaping the different aspects of their later peer relations during adolescence. As expected, children who were consistently low on the nine indicators of prosocial behaviors had the most problematic peer relationships in early adolescence, and those who were high across all prosocial capacities had the least. Notably, children who were grouped into the *Primary Friendly* prosocial pattern (i.e., who were high on friendly, but moderate to low on the other prosocial traits) displayed significantly higher chances of engaging in general and relational aggression with peers across the two-year span. In contrast, youth in another moderate prosocial profile, the *primarily kind* group, were not at risk of displaying higher aggressive tendencies and functioned similarly to those in the *high prosocial* group despite being lower on the ability of showing concern, taking turns, listening, compromising in conflicts, and being cooperative with peers. The current pattern-centered approach allowed these two meaningful subgroups that were traditionally overlooked with variable-centered approaches to be identified.

Future research may need to study children who reflect a varied range of prosocial behaviors and abilities to understand the developmental mechanisms of how specific prosocial profiles evolve to later problematic peer relationships. It is intriguing to note that prosocial patterns are more predictive of teacher-rated but not self-reported peer relations in early adolescence. Graham et al. (2003) found similar significant divergence between whether adolescents view themselves versus whether others view them as a peer victim (r = 0.19). Note that in the current study, different teachers rated youth's prosocial behaviors from those who rated their peer relations. A significant longitudinal prediction, in this case, indicates the consistency in the observed social competencies of adolescents across time.

Our findings have implications for anti-bullying prevention and intervention programs. On the one hand, the findings stress the importance and the ubiquitous advantage of prevention programs targeting whole-school socio-emotional training (Yang, Bear, & May 2018) regardless of youth's profiles given an unanimously high constellation of prosocial capacities is related to the lowest risk of getting into later problematic peer relations. On the other hand, traditional socio-emotional training programs that only target low prosocial children may be overlooking other subsamples of children who also need supports. One of the two moderate profiles of prosocial behaviors (e.g., *primarily friendly* youth) in this study was shown to have unique associated risks (i.e., general and relational aggression) and may require more tailored approaches of intervention.

Preadolescence (i.e., middle childhood) is a critical period during which youth undergo rapid growth in brain development to support gains in social competencies. The social competence (e.g., prosocial capacities) they develop during this stage shapes the following pathways they take into their early adolescent peer relational life (Thelen, 2005). As such, the emerging patterns of

prosocial capacities during middle childhood can be conceptualized as a behavioral anchor, and used as a screening purpose for differentiated prevention programs that combat later problematic behaviors (O'Connell, Boat, & Warner, 2009). For this reason, this study chose to hone in on the variations of prosocial behaviors adolescents displayed at Grade 4 as a precedent for later peer relations rather than assessing changes in prosocial behaviors to predict later outcomes. Yet, we also recognize the importance of future research to assess changes in prosocial behaviors across the childhood and adolescent years since such an examination may address the underlying mechanisms leading to the onset of problematic peer relational behaviors.

Acknowledgement

Appendix A

Actual items of the teacher-rated prosocial behavior scale.

No.	Scale Item description
1.	The child seems concerned when other children are distressed
2.	The child takes turns with play materials
3.	The child is kind toward peers
4.	The child listens to classmates
5.	The child compromises in conflict with peers
6.	The child is cooperative with peers
7.	The child is friendly toward other children
8.	The child shows concern for moral issues (e.g., fairness, welfare of others)
9.	The child offers help or comfort when other children are upset

Appendix B. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.adolescence.2019.11.004.

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