Journal of Youth and Adolescence
https://doi.org/10.1007/s10964-024-02027-1

EMPIRICAL RESEARCH

Student's and Classmates' Prosocial Behavior predict Academic Engagement in Middle School

Nicole R. Brass[1] · ChenYu Hung[1] · Tayla Stephen[1] · Christi Bergin[1] · Chad Rose[1] · Sara Prewett[1]

Received: 5 December 2023 / Accepted: 25 May 2024

Abstract

Students' academic engagement is greatly informed by a classroom's social climate. However, more research is needed regarding how specific peer behavior, especially prosocial behavior, come to shape academic engagement. The present study investigated whether students' perceptions about their classmates' prosocial behavior were associated with their academic engagement (cognitive, behavioral, affective) across the school year. Indirect effects via increases in students' own prosocial behavior were examined. Participants were 905 middle school students from rural, low-income communities in the Midwestern United States (50% girls, 46% boys; $M_{age} = 12.94$ years). Students completed self-report surveys in the fall and spring of the 2022–2023 school year. Results revealed that students' perceptions of their classmates' prosocial behavior were positively associated with students' own prosocial behavior. Students' own prosocial behavior was positively associated with all three dimensions of engagement. The positive indirect effect of classmates' prosocial behavior on engagement through students' own prosocial behavior was significant. The findings highlight the importance of classmates' behavior on individuals' academic engagement and offer insights into classroom-based interventions aimed at improving collective behavior.

Keywords Prosocial behavior · Engagement · Middle school · Peers · Classrooms

Introduction

Might young adolescent students be more engaged in class when they perceive their classmates as prosocial? Much prior research suggests that peers can influence an individual's own behavior during early adolescence (Giletta et al., 2021), when youth spend substantial time with same-age peers (C. Lam et al., 2014) and when the opinions of one's peers carry significant weight (Brown & Larson, 2009). Whereas peer research used to primarily focus on the transmission of anti-social behaviors such as aggression or delinquency, more recent years have seen greater interest in peer influences of positive social behavior (Allen & Antonishak, 2008). One such line of research has found that students' perceptions of their classmates' prosocial behavior can influence their own prosocial behavior (Wentzel et al., 2007) and another line of research has found that students who are more prosocial may be more academically engaged (Brass et al., 2022), but the two lines of research have not been explicitly connected. The present study seeks to address this gap by confirming these prior findings and examining an indirect effect model whereby students' perceptions of their classmates' prosocial behavior relate to their academic engagement directly, and via their own prosocial behavior. Specifically, this study investigated how perceptions of classmates' prosocial behavior at the beginning of the school year predicted students' own cognitive, behavioral, and affective academic engagement at the end of the school year among rural, low-income middle school students.

Peers' Prosocial Behavior Shapes Individual Prosocial Behavior

In the present study, prosocial behavior was defined as any voluntary behavior intended to benefit others or promote harmonious relationships (Eisenberg et al., 2015). Prosocial behavior is an important indicator of social competence during early adolescence; when youth are prosocial, they also tend to be more popular among their peers (Logis et al., 2013), have high self-esteem (Fu et al., 2017), and exhibit less physical aggression and delinquent behavior (Padilla-

✉ Nicole R. Brass
nrbrass@missouri.edu

[1] University of Missouri, Columbia, MO, USA

Published online: 12 June 2024

Walker et al., 2018). Students' prosocial behavior in the classroom might include offering to help a classmate, cooperating in groups, expressing kindness, and giving praise and compliments to classmates (Bergin et al., 2003).

When students' classmates are more prosocial, their own prosocial behavior may increase. For example, in studies involving adolescents, classrooms with high rates of prosocial behavior predicted an increase in individual prosocial behavior across a single school year (Laninga-Wijnen et al., 2018) and several years later (Busching & Krahé, 2020). According to social learning theories, adolescents may adopt the behavior of their peers through processes like peer modeling and vicarious reinforcement (Bandura, 1986). During adolescence, the desire to behave in ways that align with peer norms is heightened (Brown & Larson, 2009). In prosocial classrooms, adolescents may learn prosocial behavior from peer models and conform to prosocial norms in order to feel a greater sense of belonging, gain acceptance from peers, and avoid rejection. For example, in one experimental study, adolescents increased their prosocial behavior when they were given cues that a peer group of online spectators approved of the behavior (i.e., gave a thumbs up). In contrast, when given cues that the spectators approved of antisocial behavior, the participants decreased their prosocial behavior (van Hoorn et al., 2016).

Youth's *perceptions* of their peers' behavior influences their own behavior (Farrell et al., 2017) regardless of whether their perceptions reflect the actual level of a behavior. For example, when youth perceive that their friends engage in high levels of prosocial behavior, they tend to increase their own prosocial behavior (Barry & Wentzel, 2006; Farrell et al., 2017). This effect is not limited to friends. Youth also align their behavior with their perceptions of the behaviors of peers who are classmates, even though the peers may not be identified as friends. In another study, when adolescents perceived that their classroom peers expected them to be prosocial, they tended to adopt more prosocial goals, and subsequently increased in their own prosocial behavior (Wentzel et al., 2007).

Youth's perceptions of their classmates' prosocial behavior can have consequences beyond their own prosocial behavior. In a study of over 5,000 sixth grade students, Schacter and Juvonen (2018) found that when students perceived that most of their peers at school were prosocial, they subsequently reported less social anxiety, less loneliness, and a greater sense of safety at school. In addition, high classroom levels of prosocial behavior have been found to be related to fewer instances of antisocial behavior among elementary students (O'Brennan et al., 2014) and adolescents (Hofmann & Müller, 2018). The social benefits of being in a classroom with a high concentration of prosocial peers can be especially powerful for students from disadvantaged backgrounds (Hoglund & Leadbeater, 2004). For instance, prosocial support from peers in the form of acceptance, offering comfort, and being kind can be an important protective factor against home adversity (Moses & Villodas, 2017). Furthermore, when youth are in classrooms where prosocial behavior is positively linked with popularity, they report lower levels of peer victimization and rejection, greater peer support, more positive feelings about school, and higher academic performance (Dijkstra & Gest, 2015). The present study builds on this work by examining how students' perceptions of their classmates' prosocial behavior are associated with their academic engagement.

Prosocial Behavior Predicts Academic Engagement

Students' classroom academic engagement refers to their active involvement in classroom learning activities (Fredricks et al., 2004). When students have high engagement in class, they also tend to have higher academic achievement (Ladd & Dinella, 2009), greater self-efficacy for learning (Reeve & Lee, 2014), and are at less risk of dropping out of school (M.-T. Wang & Fredricks, 2014). Classroom engagement is multidimensional, having cognitive, behavioral, and affective components (Fredricks et al., 2004; Z. Wang et al., 2014). *Cognitive engagement* refers to students' mental effort and use of self-regulated learning strategies like monitoring and planning. *Behavioral engagement* refers to students' participation, attention, and time spent doing academic activities. *Affective engagement* refers to positive emotions students feel during class such as interest, enthusiasm, and enjoyment.

Students' academic engagement tends to decline across the middle school years (Martin et al., 2015), perhaps resulting from a mismatch between students' developmental needs and the affordances of the middle school environment (i.e., stage-environment-fit theory; Eccles et al., 1993). Students' academic engagement also tends to decline between the beginning and end of the school year (Brass et al., 2019) perhaps, in part, reflecting declining interest or increased burnout (Pekrun et al., 2014). Thus, identifying both individual behaviors and features of classroom environments that can facilitate students' academic engagement in middle school is of critical importance.

Individual prosocial behavior predicts academic engagement

Much research has investigated the relations between students' *own* prosocial behavior and their academic engagement, finding that prosocial students tend to show high levels of engagement (Wentzel et al., 2004). Several theoretical explanations have been put forth to explain this association. One possible explanation is that prosocial behavior predicts cognitive self-regulation abilities such as

executive function, planning, and monitoring, and these abilities, in turn, are associated with increased academic engagement (Brass et al., 2022) or that these abilities underly both prosocial behavior and engagement (Wentzel, 1996). Another explanation is that students who hold prosocial goals also tend to hold academic goals in the classroom, and these synergistic goals may motivate greater effort in class (Bergin, 2020). A third explanation is that when youth are prosocial, they tend to have higher acceptance among their peers (Dijkstra & Gest, 2015) which can give students confidence and energy to engage in class (Connell & Wellborn, 1991). The present study builds on this work, by examining relations between students' own prosocial behavior and their cognitive, behavioral, and affective engagement, as much prior research tends to include only one or two dimensions of engagement.

Positive classroom climates characterized by prosocial behavior foster academic engagement

The present study is the first to examine how students' academic engagement is shaped by perceptions of their peers' prosocial behavior. However, there is a large body of related research suggesting that positive classroom climate, emotional support, and relatedness can foster students' engagement (A. Ryan et al., 2019). Conceptualizations of classroom emotional support, classroom climate, and relatedness typically include prosocial behavior to some degree (Thapa et al., 2013). For example, prosocial behavior such as helping, offering comfort to a peer in distress, and sharing supplies when needed are described as common ways peers can convey support (Wentzel et al., 2017) and fulfill an individual's needs for relatedness in the classroom (Hoglund & Leadbeater, 2004). Yet, classroom relatedness and emotional support often include constructs beyond prosocial behavior such as empathy, friendship, or social status. The present study contributes to the literature by specifically focusing on the effect of classmates' prosocial behavior on students' engagement. Such precision can provide conceptual clarity and can inform potential interventions.

The larger literature of relatedness, emotional support, and classroom climate can inform why classmates' prosocial behavior might foster individual's classroom academic engagement. Relatedness (i.e., that individuals feel cared for), along with a sense of autonomy (i.e., having control and choice), and competence (i.e., feeling capable and effective) are innate needs that, when fulfilled, promote optimal motivation according to self-determination theory (R. Ryan & Deci, 2017). Research has robustly shown the positive effects of relatedness among peers (Skinner et al., 2022) and a supportive classroom climate (M.-T. Wang et al., 2020) on all facets of students' academic engagement. In contrast, when relatedness is low or absent in the classroom, individuals tend to disengage from classroom activities (Ladd et al., 2008), and often have lower academic achievement (Bellmore, 2011). Research has found both direct (Mikami et al., 2017) and indirect relations between classroom relatedness and students' academic engagement. Regarding indirect relations, prior research has found that classroom relatedness can foster a greater sense of academic self-efficacy (Wentzel et al., 2017) or responsible goal pursuit (Wentzel et al., 2018), which in turn can promote engagement. Thus, the present study examined both direct and indirect effects of peers' prosocial behavior on students' academic engagement.

Role of Gender in Prosocial Behavior and Academic Engagement

Prior research finds that girls typically demonstrate higher levels of behavioral, cognitive, and affective engagement (Estell & Perdue, 2013). During early adolescence, girls tend to have stronger self-discipline to stay on task and regulate their attention compared to boys (Duckworth et al., 2015), perhaps giving girls an advantage in self-reports of engagement. Girls also tend to report more prosocial behavior in school settings among peers (Van der Graaff et al., 2018), perhaps reflecting differences in gender role socialization (Eagly, 2009). However, girls and boys tend to have similar patterns of associations *between* prosocial behavior (Dirks et al., 2018) or social support (S. Lam et al., 2012) and academic adjustment. Taken together, the related literature on gender differences and similarities suggested the need to explore gender in the present analyses.

Current Study

Whereas it is well-known that a positive peer climate can promote students' academic engagement, less is known about how perceptions of specific peer behavior, such as prosocial behavior, can affect multiple dimensions of individuals' engagement. The present study had three aims. First, to examine whether students' perceptions of their classmates' prosocial behavior at the beginning of the school year were associated with their own academic engagement (i.e., cognitive, behavioral, and affective) at the end of the school year. It was hypothesized that when students' perceived their classmates to be more prosocial, they would report higher engagement, in line with self-determination theory. Second, to examine whether the relation between perceptions of classmates' prosocial behavior and students' own academic engagement was indirectly associated through students' own prosocial behavior. It was hypothesized that positive indirect effects via students' own prosocial behavior would emerge, in line with social learning theory. Lastly, gender differences were explored.

Methods

Participants

Participants were 905 middle school students across 50 classrooms in mostly rural, low-income school districts in the Midwestern United States. This sample was about evenly split by gender (50% boys, 46% girls, 4% preferred not to answer) and mostly identified as White (74% White, 7% Black or African-American, 3% Asian, 1% Native American or Alaskan Native, 7% selected two or more racial groups, 2% selected "other," 7% preferred not to answer) and non-Hispanic (93% non-Hispanic, 7% Hispanic). Students were in either sixth grade (41%), seventh grade (24%), or eighth grade (35%).

Students were invited to participate in this study through their teachers (N = 16) who were participating in a year-long pilot intervention program intended to build middle school teachers' capacity to promote their students' prosocial behavior and a positive classroom climate. Students completed surveys about their experiences in a class with their teacher. The present study is not an evaluation of the teachers' intervention.

Procedure

At the beginning of the 2022–2023 school year (~September), the research team gave participating teachers information about the project and consent forms to be delivered to their students' families. Students who had consent from their parent or legal guardian (>95%) completed surveys in the fall (October 2022) and spring (May 2023), which are referred to as Time 1 and Time 2, respectively, from this point forward. Students completed surveys online via Qualtrics during quiet, independent, class time. Before beginning the surveys, students were asked to provide their assent. Teachers were provided with a script to remind students that their answers would be kept confidential, the survey was not a test with right or wrong answers, and that their participation was voluntary. Most students took approximately 15–20 min to complete the surveys. All data collection procedures were approved by the Institutional Review Board at The University of Missouri.

Measures

All survey measures were self-reported by students. All items were assessed using a 5-point scale (1 = never, 5 = everyday).

Perceptions of classmates' prosocial behavior

At Time 1, participants completed the 10-item Prosocial Behavior Scale (PBS; Bergin et al., 2011) while thinking about their classmates' prosocial behavior. All items followed the stem, "In this class, my classmates…" Example items included, "Comfort others in distress (like console and listen to others who feel down, help get others' mind off bad things, express sympathy, asks "Are you okay?")," and "Help others with school work (like explain things without cheating and give others tips)." This measure was reliable in the current sample at Time 1 ($\alpha = 0.93$).

Perceptions of students' own prosocial behavior

At both Times 1 and 2, the PBS (Bergin et al., 2011) was used to measure students' own prosocial behavior. Items were identical to the aforementioned classmate version with the exception of the lead-in stem, which read, "In this class, I…" This measure was reliable in the current sample at Time 1 ($\alpha = 0.92$) and Time 2 ($\alpha = 0.93$).

Academic engagement (cognitive, behavioral, affective)

To assess participants' academic engagement, they completed the *cognitive*, *behavioral*, and *affective* engagement subscales of the Classroom Engagement Inventory (CEI; Z. Wang et al., 2014) at Times 1 and 2. The *cognitive engagement* subscale consisted of eight items (e.g., "If I make a mistake, I try to figure out where I went wrong," "I ask myself some questions as I go along to make sure the work makes sense to me"). The *behavioral engagement* subscale consisted of five items (e.g., "I actively participate in class discussions," "I work with other students, and we learn from each other"). The *affective engagement* subscale consisted of five items (e.g., "In this class, I feel excited," "In this class, I feel interested"). At both Times 1 and 2, acceptable scale reliability was observed for cognitive engagement (Time 1 $\alpha = 0.81$, Time 2 $\alpha = 0.82$), behavioral engagement (Time 1 $\alpha = 0.78$, Time 2 $\alpha = 0.82$), and affective engagement (Time 1 $\alpha = 0.90$, Time 2 $\alpha = 0.94$).

Analysis Plan

All analyses were conducted using Mplus v. 8.4 software (Muthen & Muthen, 2017). First, descriptive statistics and bivariate correlations between all study variables were calculated. Gender differences were tested with t-tests with Cohen's *d* for effect size. Second, a single group path analysis was conducted to assess the direct and indirect effects of students' perceptions of their classmates' prosocial behavior at Time 1 on their cognitive, affective and behavioral engagement at Time 2 through their own prosocial behavior (Time 2). Time 1 levels of engagement and students' own prosocial behavior were accounted for. Analyses used a robust estimator (MLR) to handle the non-normal distribution of the data. Cluster-robust standard

Table 1 Descriptive statistics and correlations matrix for key study variables

Variables	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	*M*	*SD*	*Skewness*
Time 1 (Fall)											
1. Classmates' prosocial behavior	–								3.70	0.92	−0.65
2. Self prosocial behavior	0.65	–							3.93	0.86	−0.81
3. Cognitive engagement	0.34	0.43	–						3.87	0.78	−0.81
4. Affective engagement	0.46	0.51	0.43	–					3.70	1.08	−0.68
5. Behavioral engagement	0.47	0.49	0.60	0.56	–				3.81	0.88	−0.66
Time 2 (Spring)											
6. Self prosocial behavior	0.41	0.51	0.34	0.36	0.36	–			3.88	0.90	−0.77
7. Cognitive engagement	0.23	0.27	0.46	0.36	0.42	0.51	–		3.93	0.77	−0.94
8. Affective engagement	0.30	0.29	0.27	0.62	0.40	0.46	0.51	–	3.63	1.20	−0.66
9. Behavioral engagement	0.33	0.34	0.35	0.46	0.53	0.54	0.62	0.61	3.84	0.90	−0.79

Note. All correlations were significant at $p < 0.001$

errors were estimated to account for students being nested in classrooms with the TYPE = COMPLEX function in Mplus.

Indicators for model fit included the chi-square test, Tucker-Lewis index (TLI), comparative fit index (CFI), root-mean-square error of approximation (RMSEA), and standardized root mean square residual (SRMR). A non-significant chi-square, values of 0.95 or above for CFI and TLI (Hu & Bentler, 1999), and less than 0.05 for RMSEA and SRMR (Little, 2013) indicate good model fit. However, since the chi-square statistic can be sensitive to sample size (Cheung & Rensvold, 2002), greater emphasis was placed on the other fit indices.

Finally, a multiple group analysis was used to determine whether the proposed model varied between boys and girls. Two separate, yet identical, models for boys and girls were specified. Corresponding parameters across the two models were constrained to be equal. Due to the non-normal distribution among some variables, a Satorra-Bentler scaled (Satorra & Bentler, 2001) chi-square was used to determine whether each set of constraints significantly decreased model fit. Model constraints were retained if they did not significantly decrease model fit. Model constraints were removed if the model fit decreased and these parameters were allowed to vary freely between boys and girls.

Missing Data

At Time 1, 818 students completed surveys with 608 students taking surveys again at Time 2, yielding a 74% retention rate. At Time 2, 87 new students joined the sample, bringing the total sample to 905 unique individuals. Reasons for missingness included high mobility rates (in and out of the district) and some students took a semester-long class with their teacher and thus were only eligible to take the survey in the fall. This retention rate is similar to other studies with students from districts that primarily serve students from low-income backgrounds with high mobility (Rastogi & Juvonen, 2019). Full information maximum likelihood estimation (FIML) was used to avoid listwise deletion of participants with missing data (Cham et al., 2017).

Results

Descriptive Statistics and Correlations

Table 1 presents bivariate correlations, means, and standard deviations between Time 1 (fall) and Time 2 (spring) levels of cognitive, behavioral, and affective engagement, students' own prosocial behavior, as well as Time 1 levels of students' perceptions of their classmates' prosocial behavior. All study variables were positively correlated with relations ranging from moderate ($r = 0.23$) to strong ($r = 0.65$).

Independent samples t-tests revealed two statistically significant differences between boys and girls. Compared to boys, girls reported lower levels of behavioral engagement at Time 1($t(771) = 2.40$, $p = 0.016$, $d = 0.17$), and higher levels of their own prosocial behavior at Time 1($t(720) = -2.18$, $p = 0.029$, $d = 0.16$). Means were similar for boys and girls for cognitive engagement at Time 1 ($t(773) = -1.66$, $p = 0.10$, $d = 0.12$) and Time 2 ($t(660) = -0.93$, $p = 0.35$, $d = 0.07$), affective engagement at Time 1 ($t(776) = -0.003$, $p = 0.99$) and Time 2 ($t(659) = 0.18$, $p = 0.86$, $d = 0.01$), behavioral engagement at Time 2 ($t(653) = 1.75$, $p = 0.08$, $d = 0.14$), students' own prosocial behavior at Time 2 ($t(618) = -1.88$, $p = 0.06$, $d = 0.15$), and reports of classmates' prosocial behavior at Time 1 ($t(737) = 0.81$, $p = 0.42$, $d = 0.06$).

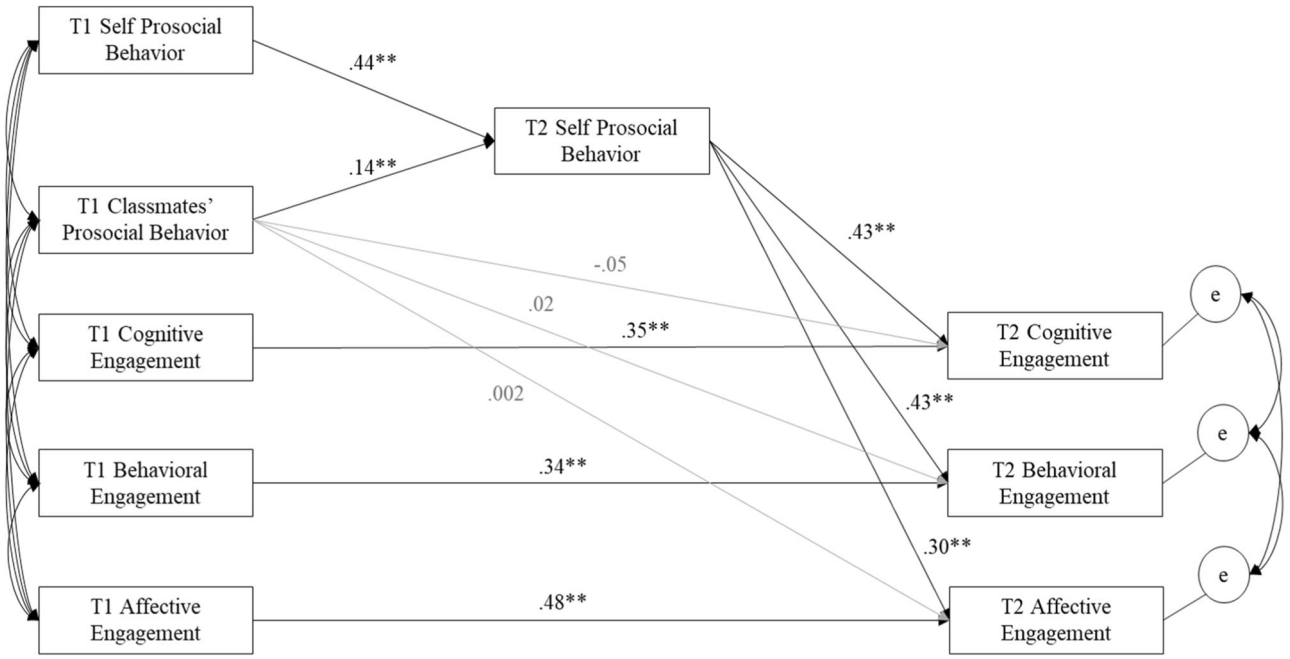

Fig. 1 Standardized, direct relations between classmates' prosocial behavior, self-prosocial behavior, and cognitive, affective, and behavioral classroom engagement. T1 refers to Time 1 (fall) and T2 refers to Time 2 (spring). Significant coefficients/paths are reported in black and non-significant coefficients/paths are reported in gray. Cluster robust standard errors were used to account for students being nested in classrooms. Exogenous variable correlation values and endogenous error correlation values are not depicted for parsimony. $^{*}p < 0.05$, $^{**}p < 0.01$

Direct and Indirect Effects Between Students' Perceptions of their Classmates' Prosocial Behavior and Academic Engagement

A single-group path model was estimated and most of the fit indices indicated acceptable model fit, [$\chi^2(12) = 55.03$, $p > 0.05$; RMSEA = 0.06, 90% CI [0.05, 0.08]; CFI = 0.96; TLI = 0.93; SRMR = 0.06]. Figure 1 displays a representation of this model with the standardized coefficients reported. As hypothesized, students' perceptions of their classmates' prosocial behavior at Time 1 were associated with perceptions of students' own prosocial behavior at Time 2 ($\beta = 0.14$, SE = 0.04). Students' own prosocial behavior at Time 2 was associated with greater cognitive ($\beta = 0.43$, SE = 0.05), behavioral ($\beta = 0.43$, SE = 0.04), and affective engagement ($\beta = 0.30$, SE = 0.05) at Time 2. Students' perceptions of their classmates' prosocial behavior at Time 1 were not directly associated with their cognitive ($\beta = -0.05$, SE = 0.05), behavioral ($\beta = 0.02$, SE = 0.05), or affective engagement ($\beta = 0.002$, SE = 0.05) at Time 2. Students' own prosocial behavior ($\beta = 0.44$, SE = 0.04), as well as their cognitive ($\beta = 0.35$, SE = 0.04), behavioral ($\beta = 0.34$, SE = 0.04), and affective engagement ($\beta = 0.48$, SE = 0.05) were moderately stable from Time 1 to Time 2.

Despite non-significant direct effects (Hayes, 2017), indirect effects between students' perceptions of their classmates' prosocial behavior and their engagement via students' own prosocial behavior were examined. In line with hypotheses, indirect effects via students' own prosocial behavior were statistically significant for associations between students' perceptions of their classmates' prosocial behavior and their Time 2 cognitive engagement ($\beta = 0.06$, SE = 0.02), affective engagement ($\beta = 0.04$, SE = 0.01), and behavioral engagement ($\beta = 0.06$, SE = 0.02). Altogether, these findings indicate that students' views of classmates' prosocial behavior in the fall are indirectly associated with their classroom engagement in the spring via students' own prosocial behavior in the spring.

Multigroup Models by Gender

Model fit was adequate for the model with all paths constrained to be equal between boys and girls, [$\chi^2(48) = 111.85$, $p > 0.05$; RMSEA = 0.06, 90% CI [0.04, 0.07]; CFI = 0.94; TLI = 0.94; SRMR = 0.08], and for the unconstrained model in which all paths were allowed to freely vary, [$\chi^2(24) = 76.62$, $p < 0.05$; RMSEA = 0.07, 95% CI [0.05, 0.09]; CFI = 0.95; TLI = 0.90; SRMR = 0.06]. The Satorra-Bentler scaled chi-square tests revealed marginally, statistically significant differences in model fit between the unconstrained model and the fully constrained model, [$\chi^2_{diff}(24) = 36.17$, $p = 0.053$]. This suggests that these associations were mostly similar for boys and girls.

However, since this analysis trended toward significance, a multigroup model was examined. These results can be found in Supplemental Fig. 1. Analyses revealed two paths that yielded weaker model fit when constrained to be equal among boys and girls. The coefficient of the autoregressive path from Time 1 behavioral engagement to Time 2 was stronger among girls ($\beta = 0.38$, SE = 0.04) than boys ($\beta = 0.27$, SE = 0.06), and the correlation between students' report of their own prosocial behavior and their classmates' prosocial behavior at Time 1 was stronger among boys ($\beta = 0.73$, SE = 0.04) than girls ($\beta = 0.58$, SE = 0.04). Altogether, the main analyses suggest that perceptions of students' classmates' prosocial behavior indirectly predicted their academic engagement via improvements in their own prosocial behavior for both boys and girls.

Discussion

Students' perceptions of their peers' behavior can influence their own behavior during early adolescence, for better or worse (Farrell et al., 2017). Academic engagement is an important marker of educational success (M.-T. Wang & Fredricks, 2014) that is malleable to peer influence (A. Ryan et al., 2019). Although prior research has documented the positive association between a supportive peer climate and student engagement (M.-T. Wang et al., 2020), less is known about how specific peer behavior come to shape dimensions of engagement over time. The present study examined how middle school students' perceptions of their classmates' prosocial behavior at the beginning of the school year were associated with their own cognitive, behavioral, and affective engagement in the classroom at the end of the school year. Findings revealed significant, positive indirect effects between students' views of their classmates' prosocial behavior and their engagement via their own prosocial behavior.

Associations between Classmates' Prosocial Behavior, Students' Own Prosocial Behavior, and Academic Engagement

There are three major findings of this study. First, students' perception of their classmates' prosocial behavior at the beginning of the school year was positively associated with reports of their own prosocial behavior in the spring. This provides support for a "positive contagion" effect (Giletta et al., 2021); that is, students' observations of more frequent prosocial behavior among peers corresponded with their own greater frequency of prosocial behavior (Busching & Krahé, 2020). This finding also supports Social Learning Theory (Bandura, 1986), which posits that individuals learn social behaviors by observing and emulating the actions of others. This process is particularly salient during adolescence, as middle-schoolers are strongly motivated by their desire for social acceptance (LaFontana & Cillessen, 2010). This supports prior research suggesting that individual students become more prosocial when immersed in prosocial classrooms, and suggests that prosocial behavior may be malleable (Bergin, 2018).

Second, students' own prosocial behavior was positively associated with their cognitive, behavioral, and affective engagement in the spring. This supports prior research suggesting that prosocial students tend to have greater academic engagement in the classroom (e.g., Wentzel et al., 2004). The present study contributed to the literature in that three distinct, but related facets of engagement were measured, whereas prior work tends to focus on one or two facets. Students' behavioral, cognitive, and affective engagement together represent a more complete picture of students' active involvement in class (Fredricks et al., 2004). Independently, each dimension of engagement is linked with important outcomes like greater achievement and lower delinquency (M.-T. Wang & Fredricks, 2014).

It is encouraging that the present study found prosocial behavior to be positively associated with each of these three important dimensions of engagement. Cognitive engagement may be supported by prosocial students tending to hold synergistic academic and prosocial goals (Bergin, 2020), having strong metacognitive skills such as planning and goal-setting, having the capacity to effectively self-regulate their emotions, and displaying conscientious personality traits (Memmott-Elison et al., 2020). Behavioral engagement and sustained attention during class may be supported by prosocial students cooperating, working well in groups, and being respectful of the classroom academic environment (El Mallah, 2020; Wentzel, 1996). Finally, affective engagement may be supported by prosocial students experiencing greater peer acceptance and relatedness (Wentzel & Caldwell, 1997) and the positive emotions associated with helping and cooperating (Tashjian et al., 2021). Happy, excited students are likely to learn more (Bergin, 2018) and work productively on classroom tasks (Valiente et al., 2010) which fosters enthusiasm and enjoyment of learning.

Third, students' perceptions of their classmates' prosocial behavior were indirectly related to students' academic engagement by way of students' own prosocial behavior. While students' perceptions of their classmates' prosocial behavior in the fall were concurrently related to classroom engagement, they were not directly related to their reports of classroom engagement in the spring. Much prior research finds that positive classroom climates facilitate students' ability to engage with their schoolwork (M.-T. Wang et al., 2020). Students' perceptions of their classmates' prosocial

behaviors—such as their willingness to help others, express care for one another, and ensure everyone feels included – contribute to a positive classroom climate (Thapa et al., 2013). Thus, it is surprising that students' perceptions of their classmates' prosocial behavior did not directly predict their classroom academic engagement. It may be that the direct effects were not strong enough to extend across the school year. For instance, the behavior of one's friends or high-status individuals may be more directly influential on students' behavior into the spring (Logis et al., 2013) than the behavior of classmates in general. Additional research that includes multiple indicators of classroom climate simultaneously is needed to ascertain which aspects are the most influential on students' classroom engagement longitudinally.

Similar Patterns for Boys and Girls

Unlike much prior research (Estell & Perdue, 2013), the present findings did not reveal robust gender differences in academic engagement. In the fall and spring, girls and boys reported similar levels of cognitive and affective engagement, but surprisingly, boys reported greater behavioral engagement than girls in the fall. There exists a small body of work which has also found that girls and boys can have similar levels of engagement (King, 2016), perhaps reflecting that in some classrooms, especially those characterized by high social support (S. Lam et al., 2012), gender differences tend to dissipate. Lending credence to this idea, the mean of students' reports of their classmates' prosocial behavior in the fall (an important indicator of classroom social support), was high on average ($M = 3.70$ out of 5) and skewed negatively, suggesting that many students perceived high levels of support in their classroom. This may have facilitated classroom environments less prone to gender differences, though more research is needed to examine this phenomenon empirically.

As expected, girls reported higher levels of their own prosocial behavior in the fall, which aligns with prior research (e.g., Van der Graaff et al., 2018). Yet, boys and girls perceived similar levels of prosocial behavior among their classmates. Peer reports are not subject to social desirability bias like self-reports of prosocial behavior (El Mallah, 2020), so it is possible that peer reports represent a shared view of the classroom that is less prone to bias. Boys tend to report less prosocial behavior being directed toward them compared to girls (e.g., they receive less emotional support from peers; Estell & Perdue, 2013). However, the measure of classmates' prosocial behavior used in the present study asked students to report on the prosocial behaviors they observed in general (i.e., My classmates comfort others in distress), rather than prosocial behavior directed towards them personally (i.e., My classmates comfort me when I am in distress). Additional empirical work is needed to examine these nuances in prosocial measurement.

Moreover, in the present study, relations *between* perceptions of classmates' prosocial behavior, individual prosocial behavior, and engagement were mostly similar for boys and girls. These results align with the previous literature, suggesting that girls and boys tend to have similar patterns of associations between prosocial behavior (Dirks et al., 2018) or social support (S. Lam et al., 2012) and adjustment outcomes, despite mean level differences. Further research is needed to explore which contexts allow boys and girls to reap similar benefits from being in a prosocial classroom.

Study Limitations

Although the present study has the advantage of measurement at two time points, all measures are based on student self-report. The data may be subject to shared method variance that inflates the relationship between variables. In addition, the data do not allow us to rule out a "rose-colored glasses" effect (Nelson & Crick, 1999). That is, students who are more prosocial tend to perceive classmates as more prosocial and themselves as more engaged. Furthermore, both engagement and prosocial behavior are socially desirable. Self-reports of prosocial behavior tend to be higher compared to teacher report or observation (El Mallah, 2020). The participating middle school students may have presented themselves in a more socially acceptable or favorable light rather than reporting their true thoughts, behaviors, or attitudes. In future work, the data limitations could be mitigated by using teacher or independent observer ratings.

A second limitation concerns an inability to test for longitudinal mediation since this study used data from only two timepoints. In order to test the explanatory role of students' own prosocial behavior, future work should collect an additional timepoint of data in the middle of the school year. Such an analysis would allow for more robust conclusions about the directionality of the associations between prosocial behavior and engagement across the school year.

A third limitation concerns the generalizability of the present findings. The current sample was mostly White students from low-income, rural backgrounds. The patterns observed in this study may not apply to other samples or a broader population, as prosocial behavior may be influenced by cultural, demographic, and contextual factors (Carlo & Padilla-Walker, 2020). To enhance the external validity of findings, future research could include more diverse and representative samples, spanning various ethnic, socioeconomic, and geographic groups.

A fourth limitation is that the present measurement of prosocial behavior did not differentiate by the target of prosocial behavior (e.g., friend vs. less familiar peer) or type of prosocial behavior (e.g., offering emotional support vs. instrumental support). Prior research suggests that these dimensions may have unique implications for student outcomes at school (Padilla-Walker & Carlo, 2014). For instance, some work suggests that offering instrumental help to a friend may have positive consequences for adolescents' affect, but offering instrumental help to other peers, such as roommates, may not offer the same benefit (Armstrong-Carter et al., 2020). Future research should explore how different types and targets of prosocial behavior affect students' academic engagement.

Study Implications

The present study suggests teachers should be supported in using strategies that promote their students' prosocial behavior. Being immersed within a classroom alongside prosocial classmates not only elicits students' greater academic motivation, but also leads to increased social support, both of which are key to supporting individual students' learning (Wentzel et al., 2017). By nurturing prosocial behaviors, students can develop the skills and attitudes that contribute to their academic success while simultaneously fostering a more collaborative learning community.

The present study also suggests the importance of group-level behavior when considering the target of interventions. The findings underscore the dynamic between personal prosocial behavior and the perceived collective prosocial behavior within the classroom. While individual behavior is a key determinant of academic engagement, the influence of group dynamics within the classroom is also an important component of classroom climate and students' prosocial behavior. Being around prosocial peers can support and even promote individual student's prosocial behavior and engagement. Thus, in addition to fostering individual prosocial actions, behavioral interventions might also consider addressing the collective level of classroom prosocial behavior. One approach may be to provide students with opportunities to collaboratively work together to cultivate and reinforce prosocial behaviors (Van Ryzin & Roseth, 2018). This, in turn, encourages the kind of motivation and critical thinking that can increase academic engagement. Another approach is for teachers to intentionally, publicly praise students' behaving prosocially (e.g, "Thank you for being so helpful to your neighbor," or "I appreciate that you shared your supplies"). Praise is a powerful tool teachers can use for vicarious reinforcement (Bandura, 1986) to influence behavior of students beyond the target student.

Conclusion

Classrooms are inherently social places. Understanding how social relations affect students' behavior in school could support cultivation of a learning environment where all students can thrive. This study highlights the connection between students' prosocial behavior and academic engagement. In particular, when students collectively engage in prosocial behavior—such as sharing, helping, supporting, and encouraging each other—they are not only strengthening classroom relationships and climate, but they are also promoting each other's prosocial behavior and academic engagement.

Supplementary information The online version contains supplementary material available at https://doi.org/10.1007/s10964-024-02027-1.

Acknowledgements We would like to extend a special thank you to the students, teachers, and administrators at our participating school sites. We thank all members and affiliates of the Prosocial Development and Education Research Lab at the University of Missouri for their contributions to the research process.

Authors' Contributions NB conceived the study, conducted statistical analyses, and drafted the manuscript; CH assisted with the statistical analyses and contributed to the Methods and Results sections; TS contributed to the Literature Review and Discussion sections; CB designed the larger intervention study from which this study was drawn, coordinated the study, and helped to draft the manuscript, CR participated in the design and coordination of the study and helped draft the manuscript; SP participated in the design and coordination of the study and helped the draft the manuscript. All authors read and approved the final manuscript.

Funding The contents of this article were developed under a grant from the Institute for Education Sciences, U.S. Department of Education, through award R305A210212, to the University of Missouri. However, those contents do not necessarily represent the policy of the Department of Education, and you should not assume endorsement by the Federal Government.

Data Sharing and Declaration The datasets generated and/or analyzed during the current study are not publicly available but are available from the corresponding author on reasonable request.

Compliance with ethical standards

Conflict of interest The authors declare no competing interests.

Ethical approval This study was performed in line with the principles of the Declaration of Helsinki. All procedures were approved by the Institutional Review Board at the University of Missouri (study title: ECHO: Prosocial and Positive School Climate; Protocol Number: 2068424).

Informed consent Informed consent was obtained from participants' legal guardians using an opt-out procedure. All students were asked to provide informed assent on the first page of the survey at the beginning of survey administration at both data collection points (fall and spring of a school year).

References

Allen, J. P., & Antonishak, J. (2008). Adolescent peer influences: Beyond the dark side. In M. J. Prinstein & K. A. Dodge (Eds.), *Understanding peer influence in children and adolescents*. (2008-08239-007; pp. 141–160). The Guilford Press.

Armstrong-Carter, E., Guassi Moreira, J. F., Ivory, S. L., & Telzer, E. H. (2020). Daily links between helping behaviors and emotional well-being during late adolescence. *Journal of Research on Adolescence*, *30*(4), 943–955. https://doi.org/10.1111/jora.12572.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory* (1985-98423-000). Prentice-Hall, Inc.

Barry, C. M., & Wentzel, K. R. (2006). Friend influence on prosocial behavior: The role of motivational factors and friendship characteristics. *Developmental Psychology*, *42*(1), 153–163. https://doi.org/10.1037/0012-1649.42.1.153.

Bellmore, A. (2011). Peer rejection and unpopularity: Associations with GPAs across the transition to middle school. *Journal of Educational Psychology*, *103*(2), 282–295. https://doi.org/10.1037/a0023312.

Bergin, C. (2018). *Designing a prosocial classroom: Fostering collaboration in students from PreK-12 with the Curriculum You Already Use*. WW Norton & Company.

Bergin, C. (2020). Prosocial goals in the classroom. In M. H. Jones (Ed.), *Social goals in the classroom: Findings on student motivation and peer relations* (pp. 93–110). Routledge. https://doi.org/10.4324/9780429468452.

Bergin, C., Talley, S., & Hamer, L. (2003). Prosocial behaviors of young adolescents: A focus group study. *Journal of Adolescence*, *26*(1), 13–32. https://doi.org/10.1016/S0140-1971(02)00112-4.

Bergin, C., Wang, Z., & Bergin, D. A. (2011). Prosocial behavior in fourth to twelfth grade classrooms. *Biennial Meeting for the Society for Research in Child Development*.

Brass, N. R., McKellar, S. E., North, E. A., & Ryan, A. M. (2019). Early adolescents' adjustment at school: A fresh look at grade and gender differences. *The Journal of Early Adolescence*, *39*(5), 689–716. https://doi.org/10.1177/0272431618791291.

Brass, N. R., Memmott-Elison, M. K., Brockmeier, L., Hung, C., & Bergin, C. (2022). Prosocial behavior and school engagement during adolescence: The mediating role of self-regulation. *Journal of Applied Developmental Psychology*, *83*, 101477. https://doi.org/10.1016/j.appdev.2022.101477.

Brown, B. B., & Larson, J. (2009). Peer relationships in adolescence. In *Handbook of Adolescent Psychology*. John Wiley & Sons, Inc. https://doi.org/10.1002/9780470479193.adlpsy002004.

Busching, R., & Krahé, B. (2020). With a little help from their peers: The impact of classmates on adolescents' development of prosocial behavior. *Journal of Youth and Adolescence*, *49*(9), 1849–1863. https://doi.org/10.1007/s10964-020-01260-8.

Carlo, G., & Padilla-Walker, L. (2020). Adolescents' prosocial behaviors through a multidimensional and multicultural lens. *Child Development Perspectives*, *14*(4), 265–272. https://doi.org/10.1111/cdep.12391.

Cham, H., Reshetnyak, E., Rosenfeld, B., & Breitbart, W. (2017). Full information maximum likelihood estimation for latent variable interactions with incomplete indicators. *Multivariate Behavioral Research*, *52*(1), 12–30. https://doi.org/10.1080/00273171.2016.1245600.

Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling: A Multidisciplinary Journal, 9*(2), 233–255. https://doi.org/10.1207/S15328007SEM0902_5.

Connell, J. P., & Wellborn, J. G. (1991). Competence, autonomy, and relatedness: A motivational analysis of self-system processes. In M. R. Gunnar & L. A. Sroufe (Eds.), *Self processes and development*. (1991-97029-002; pp. 43–77). Lawrence Erlbaum Associates, Inc.

Dijkstra, J. K., & Gest, S. D. (2015). Peer norm salience for academic achievement, prosocial behavior, and bullying: Implications for adolescent school experiences. *The Journal of Early Adolescence*, *35*(1), 79–96. https://doi.org/10.1177/0272431614524303.

Dirks, M. A., Dunfield, K. A., & Recchia, H. E. (2018). Prosocial behavior with peers: Intentions, outcomes, and interpersonal adjustment. In *Handbook of peer interactions, relationships, and groups*, 2nd ed (pp. 243–264). The Guilford Press.

Duckworth, A. L., Shulman, E. P., Mastronarde, A. J., Patrick, S. D., Zhang, J., & Druckman, J. (2015). Will not want: Self-control rather than motivation explains the female advantage in report card grades. *Learning and Individual Differences*, *39*, 13–23. https://doi.org/10.1016/j.lindif.2015.02.006.

Eagly, A. H. (2009). The his and hers of prosocial behavior: An examination of the social psychology of gender. *American Psychologist*, *64*(8), 644–658. https://doi.org/10.1037/0003-066X.64.8.644.

Eccles, J. S., Midgley, C., Wigfield, A., Buchanan, C. M., Reuman, D., Flanagan, C., & Mac Iver, D. (1993). Development during adolescence: The impact of stage-environment fit on young adolescents' experiences in schools and in families. *American Psychologist*, *48*(2), 90–101. https://doi.org/10.1037/0003-066X.48.2.90.

Eisenberg, N., Eggum-Wilkens, N. D., & Spinrad, T. L. (2015). The development of prosocial behavior. In *The Oxford handbook of prosocial behavior* (pp. 114–136). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780195399813.001.0001.

El Mallah, S. (2020). Conceptualization and measurement of adolescent prosocial behavior: Looking back and moving forward. *Journal of Research on Adolescence*, *30*, 15–38. https://doi.org/10.1111/jora.12476.

Estell, D. B., & Perdue, N. H. (2013). Social support and behavioral and affective school engagement: The effects of peers, parents, and teachers. *Psychology in the Schools*, *50*(4), 325–339. https://doi.org/10.1002/pits.21681.

Farrell, A. D., Thompson, E. L., & Mehari, K. R. (2017). Dimensions of peer influences and their relationship to adolescents' aggression, other problem behaviors and prosocial behavior. *Journal of Youth and Adolescence*, *46*(6), 1351–1369. https://doi.org/10.1007/s10964-016-0601-4.

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, *74*(1), 59–109. https://doi.org/10.3102/00346543074001059.

Fu, X., Padilla-Walker, L. M., & Brown, M. N. (2017). Longitudinal relations between adolescents' self-esteem and prosocial behavior toward strangers, friends and family. *Journal of Adolescence*, *57*, 90–98. https://doi.org/10.1016/j.adolescence.2017.04.002.

Giletta, M., Choukas-Bradley, S., Maes, M., Linthicum, K. P., Card, N. A., & Prinstein, M. J. (2021). A meta-analysis of longitudinal peer influence effects in childhood and adolescence. *Psychological Bulletin*, *147*, 719–747. https://doi.org/10.1037/bul0000329.

Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis, second edition: A regression-based approach*. Guilford Publications.

Hofmann, V., & Müller, C. M. (2018). Avoiding antisocial behavior among adolescents: The positive influence of classmates' prosocial behavior. *Journal of Adolescence*, *68*, 136–145. https://doi.org/10.1016/j.adolescence.2018.07.013.

Hoglund, W. L., & Leadbeater, B. J. (2004). The effects of family, school, and classroom ecologies on changes in children's social competence and emotional and behavioral problems in first grade.

Developmental Psychology, *40*(4), 533–544. https://doi.org/10.1037/0012-1649.40.4.533.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1–55. https://doi.org/10.1080/10705519909540118.

King, R. B. (2016). Gender differences in motivation, engagement and achievement are related to students' perceptions of peer—But not of parent or teacher—Attitudes toward school. *Learning and Individual Differences*, *52*, 60–71. https://doi.org/10.1016/j.lindif.2016.10.006.

Ladd, G. W., & Dinella, L. M. (2009). Continuity and change in early school engagement: Predictive of children's achievement trajectories from first to eighth grade? *Journal of Educational Psychology*, *101*(1), 190–206. https://doi.org/10.1037/a0013153.

Ladd, G. W., Herald-Brown, S. L., & Reiser, M. (2008). Does chronic classroom peer rejection predict the development of children's classroom participation during the grade school years? *Child Development*, *79*(4), 1001–1015. https://doi.org/10.1111/j.1467-8624.2008.01172.x.

LaFontana, K. M., & Cillessen, A. H. N. (2010). Developmental changes in the priority of perceived status in childhood and adolescence. *Social Development*, *19*(1), 130–147. https://doi.org/10.1111/j.1467-9507.2008.00522.x.

Lam, C., McHale, S. M., & Crouter, A. C. (2014). Time with peers from middle childhood to late adolescence: Developmental course and adjustment correlates. *Child Development*, *85*(4), 1677–1693. https://doi.org/10.1111/cdev.12235.

Lam, S., Jimerson, S., Kikas, E., Cefai, C., Veiga, F. H., Nelson, B., Hatzichristou, C., Polychroni, F., Basnett, J., Duck, R., Farrell, P., Liu, Y., Negovan, V., Shin, H., Stanculescu, E., Wong, B. P. H., Yang, H., & Zollneritsch, J. (2012). Do girls and boys perceive themselves as equally engaged in school? The results of an international study from 12 countries. *Journal of School Psychology*, *50*(1), 77–94. https://doi.org/10.1016/j.jsp.2011.07.004.

Laninga-Wijnen, L., Harakeh, Z., Dijkstra, J. K., Veenstra, R., & Vollebergh, W. (2018). Aggressive and prosocial peer norms: Change, stability, and associations with adolescent aggressive and prosocial behavior development. *The Journal of Early Adolescence*, *38*(2), 178–203. https://doi.org/10.1177/0272431616665211.

Little, T. D. (2013). Longitudinal structural equation modeling. *Methodology in the social sciences*. New York, NY: The Guilford Press.

Logis, H. A., Rodkin, P. C., Gest, S. D., & Ahn, H. (2013). Popularity as an organizing factor of preadolescent friendship networks: Beyond prosocial and aggressive behavior. *Journal of Research on Adolescence*, *23*(3), 413–423. https://doi.org/10.1111/jora.12033.

Martin, A. J., Way, J., Bobis, J., & Anderson, J. (2015). Exploring the ups and downs of mathematics engagement in the middle years of school. *The Journal of Early Adolescence*, *35*(2), 199–244. https://doi.org/10.1177/0272431614529365.

Memmott-Elison, M., Padilla-Walker, L. M., Yorgason, J. B., & Coyne, S. M. (2020). Intra-individual associations between intentional self-regulation and prosocial behavior during adolescence: Evidence for bidirectionality. *Journal of Adolescence*, *80*, 29–40. https://doi.org/10.1016/j.adolescence.2020.02.001.

Mikami, A. Y., Ruzek, E. A., Hafen, C. A., Gregory, A., & Allen, J. P. (2017). Perceptions of relatedness with classroom peers promote adolescents' behavioral engagement and achievement in secondary school. *Journal of Youth and Adolescence*, *46*(11), 2341–2354. https://doi.org/10.1007/s10964-017-0724-2.

Moses, J. O., & Villodas, M. T. (2017). The potential protective role of peer relationships on school engagement in at-risk adolescents. *Journal of Youth and Adolescence*, *46*(11), 2255–2272. https://doi.org/10.1007/s10964-017-0644-1.

Muthen, L., & Muthen, B. (2017). *Mplus user's guide: Statistical analysis with latent variables* (7th ed.). Muthen & Muthen.

Nelson, D. A., & Crick, N. R. (1999). Rose-colored glasses: Examining the social information-processing of prosocial young adolescents. *The Journal of Early Adolescence*, *19*(1), 17–38. https://doi.org/10.1177/0272431699019001002.

O'Brennan, L. M., Bradshaw, C. P., & Furlong, M. J. (2014). Influence of classroom and school climate on teacher perceptions of student problem behavior. *School Mental Health: A Multidisciplinary Research and Practice Journal*, *6*(2), 125–136. https://doi.org/10.1007/s12310-014-9118-8.

Padilla-Walker, L. M., & Carlo, G. (2014). The study of prosocial behavior: Past, present, and future. In L. M. Padilla-Walker & G. Carlo (Eds.), *Prosocial development: A multidimensional approach*. (2014-09499-001; pp. 3–16). Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199964772.003.0001.

Padilla-Walker, L. M., Memmott-Elison, M. K., & Coyne, S. M. (2018). Associations between prosocial and problem behavior from early to late adolescence. *Journal of Youth and Adolescence*, *47*(5), 961–975. https://doi.org/10.1007/s10964-017-0736-y.

Pekrun, R., Hall, N. C., Goetz, T., & Perry, R. P. (2014). Boredom and academic achievement: Testing a model of reciprocal causation. *Journal of Educational Psychology*, *106*(3), 696–710. https://doi.org/10.1037/a0036006.

Rastogi, R., & Juvonen, J. (2019). Interminority friendships and intergroup attitudes across middle school: Quantity and stability of Black-Latino ties. *Journal of Youth and Adolescence*, *48*(8), 1619–1630. https://doi.org/10.1007/s10964-019-01044-9.

Reeve, J., & Lee, W. (2014). Students' classroom engagement produces longitudinal changes in classroom motivation. *Journal of Educational Psychology*, *106*(2), 527–540. https://doi.org/10.1037/a0034934.

Ryan, A., North, E. A., & Ferguson, S. (2019). Chapter 6—Peers and Engagement. In J. A. Fredricks, A. L. Reschly, & S. L. Christenson (Eds.), *Handbook of Student Engagement Interventions* (pp. 73–85). Academic Press. https://doi.org/10.1016/B978-0-12-813413-9.00006-1.

Ryan, R., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Publications.

Satorra, A., & Bentler, P. M. (2001). A scaled difference chi-square test statistic for moment structure analysis. *Psychometrika*, *66*(4), 507–514. https://doi.org/10.1007/BF02296192.

Schacter, H. L., & Juvonen, J. (2018). You've got a friend(ly school): Can school prosocial norms and friends similarly protect victims from distress? *Social Development*, *27*(3), 636–651. https://doi.org/10.1111/sode.12281.

Skinner, E. A., Rickert, N. P., Vollet, J. W., & Kindermann, T. A. (2022). The complex social ecology of academic development: A bioecological framework and illustration examining the collective effects of parents, teachers, and peers on student engagement. *Educational Psychologist*, *57*(2), 87–113. https://doi.org/10.1080/00461520.2022.2038603.

Tashjian, S. M., Rahal, D., Karan, M., Eisenberger, N., Galván, A., Cole, S. W., & Fuligni, A. J. (2021). Evidence from a randomized controlled trial that altruism moderates the effect of prosocial acts on adolescent well-being. *Journal of Youth and Adolescence*, *50*(1), 29–43. https://doi.org/10.1007/s10964-020-01362-3.

Thapa, A., Cohen, J., Guffey, S., & Higgins-D'Alessandro, A. (2013). A review of school climate research. *Review of Educational Research*, *83*(3), 357–385. https://doi.org/10.3102/0034654313483907.

Valiente, C., Lemery-Chalfant, K., & Swanson, J. (2010). Prediction of kindergartners' academic achievement from their effortful control and emotionality: Evidence for direct and moderated relations. *Journal of Educational Psychology*, *102*(3), 550–560. https://doi.org/10.1037/a0018992.

Van der Graaff, J., Carlo, G., Crocetti, E., Koot, H. M., & Branje, S. (2018). Prosocial behavior in adolescence: Gender differences in development and links with empathy. *Journal of Youth and Adolescence*, *47*(5), 1086–1099. https://doi.org/10.1007/s10964-017-0786-1.

van Hoorn, J., van Dijk, E., Meuwese, R., Rieffe, C., & Crone, E. (2016). Peer influence on prosocial behavior in adolescence. *Journal of Research on Adolescence, 26*(1), 90–100. https://doi.org/10.1111/jora.2016.26.issue-1, https://doi.org/10.1111/jora.12173.

Van Ryzin, M. J., & Roseth, C. J. (2018). Cooperative learning in middle school: A means to improve peer relations and reduce victimization, bullying, and related outcomes. *Journal of Educational Psychology*, *110*(8), 1192–1201. https://doi.org/10.1037/edu0000265.

Wang, M.-T., & Fredricks, J. A. (2014). The reciprocal links between school engagement, youth problem behaviors, and school dropout during adolescence. *Child Development*, *85*(2), 722–737. https://doi.org/10.1111/cdev.12138.

Wang, M.-T., L. Degol, J., Amemiya, J., Parr, A., & Guo, J. (2020). Classroom climate and children's academic and psychological wellbeing: A systematic review and meta-analysis. *Developmental Review*, *57*, 100912. https://doi.org/10.1016/j.dr.2020.100912.

Wang, Z., Bergin, C., & Bergin, D. A. (2014). Measuring engagement in fourth to twelfth grade classrooms: The Classroom Engagement Inventory. *School Psychology Quarterly*, *29*(4), 517–535. https://doi.org/10.1037/spq0000050.

Wentzel, K. R. (1996). Social and academic motivation in middle school: Concurrent and long-term relations to academic effort. *The Journal of Early Adolescence*, *16*(4), 390–406. https://doi.org/10.1177/0272431696016004002.

Wentzel, K. R., Barry, C. M., & Caldwell, K. A. (2004). Friendships in middle school: Influences on motivation and school adjustment. *Journal of Educational Psychology*, *96*(2), 195–203. https://doi.org/10.1037/0022-0663.96.2.195.

Wentzel, K. R., & Caldwell, K. (1997). Friendships, peer acceptance, and group membership: Relations to academic achievement in middle school. *Child Development*, *68*(6), 1198–1209. https://doi.org/10.2307/1132301.

Wentzel, K. R., Filisetti, L., & Looney, L. (2007). Adolescent prosocial behavior: The role of self-processes and contextual cues. *Child Development*, *78*(3), 895–910. https://doi.org/10.1111/j.1467-8624.2007.01039.x.

Wentzel, K. R., Muenks, K., McNeish, D., & Russell, S. (2017). Peer and teacher supports in relation to motivation and effort: A multilevel study. *Contemporary Educational Psychology*, *49*, 32–45. https://doi.org/10.1016/j.cedpsych.2016.11.002.

Wentzel, K. R., Muenks, K., McNeish, D., & Russell, S. (2018). Emotional support, social goals, and classroom behavior: A multilevel, multisite study. *Journal of Educational Psychology*, *110*(5), 611–627. https://doi.org/10.1037/edu0000239.

Nicole R. Brass is a postdoctoral fellow in the Educational, School, and Counseling Psychology Program at the University of Missouri. Her research focuses on how peer relations such as prosocial behavior, popularity, and friendship, contribute to academic and social adjustment at school during early adolescence.

ChenYu Hung is a recent graduate from the Educational, School, and Counseling Psychology doctoral program at the University of Missouri. She is also a researcher at the American Institutes for Research. Her research interests include measurement, game-based learning environments, students' self-efficacy, motivation, and sense of belonging.

Tayla Stephen is a recent graduate from the Educational, School, and Counseling Psychology doctoral program at the University of Missouri. Her research interests include classroom behavior, student well-being, equity, and program evaluation.

Christi Bergin is a research professor emerita in the College of Education and Human Development at the University of Missouri. Her research focuses on socio-emotional well-being of children, teaching effectiveness, and designing interventions to support students and teachers.

Chad Rose is an associate professor in the Special Education department at the University of Missouri. His research focuses on the intersection of disability labels and special education services within the bullying dynamic, unique predictive and protective factors associated with bullying involvement among students with disabilities, and bully prevention efforts within a multi-tiered educational framework.

Sara Prewett is an adjunct professor in the College of Education and Human Development at the University of Missouri. She is also a Senior Researcher at Aperture Education. Her research focuses on social and emotional learning practices, prosocial education, human development, and multi-tiered systems of support.