

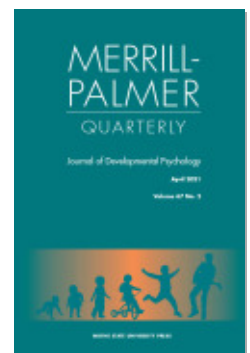


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Sarah E. McKellar, Allison M. Ryan, Elizabeth A. Messman, Nicole R. Brass, Lydia Laninga-Wijnen



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## Teachers' Emphasis on Mastery Goals Moderates the Behavioral Correlates of Coolness in Early Adolescent Classrooms

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This study investigated how two aspects of the classroom environment (teachers' emphasis on mastery goals and descriptive norms (i.e., the average student disruptive, prosocial, and achievement-related behavior in a classroom), moderated the relationship between student behaviors and coolness. The sample included 976 students nested in 54 fifth- and sixth-grade classrooms. Students completed peer nominations of coolness and three behaviors (prosocial, disruptive, and academic achievement). Students reported on the extent to which their teacher emphasized mastery goals in the classroom. The extent to which each of these three behaviors correlated with coolness varied across classrooms. The variability between classrooms in the behavioral correlates of coolness was not related to descriptive norms but was related to classroom mastery goals. In classrooms with a high-mastery goal emphasis, good grades and prosocial behavior were more likely to be perceived as cool. Our findings also suggest the need for future studies to examine the direct effect of prosocial descriptive norms on nominations of coolness. This study adds to a growing literature on how teaching practices matter for peer relationships in the classroom.

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Popular and cool youth serve as role models for their fellow peers and are influential in signaling behaviors and values considered desirable within social contexts (Dijkstra & Gest, 2015). During early adolescence, the desire to be popular or cool increases among youth, and they may engage in certain behaviors to gain or maintain status (Cillessen & Rose, 2005; LaFontana & Cillessen, 2010). At the same time, there tends to be a shift in what types of behaviors or attributes are considered *cool* or *popular* during adolescence. Working hard and getting good grades may be less likely to lead to accrual of social status during adolescence, whereas goofing off and starting fights may be seen as more “cool” (Galván et al., 2011; Moffitt, 1993). However, these patterns are not universal among classrooms. Some research has highlighted that the classroom context may be critical in determining which behaviors are associated with popularity or coolness during adolescence (Dijkstra & Gest, 2015).

On a daily basis at school, students come together with the same group of peers in the classroom, and a distinct context emerges. The norms that develop over time among peers in the classroom may have implications for what is considered *cool* or *popular* among students in that context. Prior work in this area has tended to assess classroom descriptive norms, or the average of student behaviors within a classroom, and the extent to which these descriptive norms affect the association between student behavior and popularity (Boor-Klip et al., 2017; Chang, 2004; Garandeau et al., 2011). Less attention in the literature has been paid to how teachers contribute to the social status dynamics that emerge in the classroom.

Prior work has found that teaching practices and the messages teachers convey to students have led to prosocial behavior or high achievement being more attractive in some classrooms than others (Ahn & Rodkin, 2014; Hendrickx et al., 2016). Yet, to date, no empirical studies have examined how teaching practices play a role in the behavioral correlates of coolness among students. Thus, in the present study, we examine how three behaviors (prosocial behavior, disruptive behavior, and academic achievement) are associated with coolness across classrooms in an early adolescent sample. We examine two classroom-level predictors of the behavior–coolness association: (a) descriptive norms and (b) the motivational climate or goals promoted in the classroom by the teacher.

### *Behavioral Correlates of Social Status*

The link between social status and behaviors is considered an important characteristic for defining the classroom climate (Boor-Klip et al., 2017; Henry et al., 2000). Two types of status have mostly been distinguished:

*peer preference*, which refers to the extent to which adolescents are liked by peers (Wentzel, 2017), and *peer popularity*, which reflects students' social reputation characterized by social visibility, prestige, and dominance in the peer group (Cillessen & Marks, 2011, 2017). One core attribute of perceived popularity is coolness (Adler & Adler, 1998; Closson, 2009). Although coolness and perceived popularity are not conceptually identical, they represent parallel forms of social status distinct from peer preference and are highly correlated to each other (Closson, 2009; Rodkin et al., 2006). The current study uses *coolness* as an indicator of perceived popularity.

Several behaviors have been linked to peer-perceived popularity and coolness, such as prosocial behavior, social withdrawal, aggression, disruption, and academic reputation (Jonkmann et al., 2009; Newcomb et al., 1993). Some work shows developmental trends, such as aggression, becoming more correlated with coolness over time (e.g., Galván et al., 2011). Beyond developmental trends, a growing number of studies have found that classrooms differ greatly in the extent to which peers perceive certain behaviors as cool or popular (Boor-Klip et al., 2017; Garandeau et al., 2011; Jonkmann et al., 2009; Laninga-Wijnen et al., 2018, 2019; Meisinger et al., 2007). Some scholars have referred to this as variations in norm salience between classrooms (Dijkstra & Gest, 2015). This work highlights unique aspects of classrooms, including the actions and beliefs of teachers, that could affect the extent to which certain behaviors exhibited by classmates are seen as cool among peers.

### *Descriptive Norms: The Role of Peers in the Link Between Perceived Popularity and Behaviors*

One classroom characteristic that has been examined in relation to social status dynamics is descriptive norms, or the average level of a particular behavior exhibited by students in the classroom (Henry et al., 2000). Most research on descriptive norms is undergirded by the *person–group similarity theory* (also called the *social misfit model*). In this framework, the social desirability of a behavior is hypothesized to be reinforced by the prevalence of the behavior in a classroom and inhibited if most students do not engage in the behavior (Chang, 2004; Wright et al., 1986). For example, disruptive behavior may be more likely to be seen as cool in classrooms where disruptive behavior is common among students.

Some work has found descriptive norms to be associated with classroom differences in the behavioral correlates of status (Chang et al., 2007; Laninga-Wijnen et al., 2019), whereas other studies have not found this pattern (Boor-Klip et al., 2017; Dijkstra & Gest, 2015; Garandeau et al., 2011).

Given these mixed findings across several studies, descriptive norms merit further investigation (for an in-depth review, see Laninga-Wijnen et al., 2018). Thus, the current study investigates descriptive norms as one classroom-level predictor that potentially moderates the behavioral correlates of coolness. In addition, it is important to consider how additional aspects of classroom climate beyond descriptive norms may contribute to different status-behavior correlations across classrooms.

*Classroom Mastery Goals: The Role of Teachers in the Link Between Perceived Popularity and Behaviors*

In the present investigation, we also consider how teachers' goals are related to peer dynamics among students in their classrooms, specifically in relation to coolness. In recent years, increased attention has been paid to the teacher's role in peer relationships, termed "social management dynamics" (Farmer et al., 2011, 2018). To date, scholars have examined teachers' attunement (accurate knowledge of students' friendships), attitudes toward social behavior, and seating arrangements in relation to peer relations in the classroom (Ahn & Rodkin, 2014; Farmer et al., 2011; Gest & Rodkin, 2011; Hamm et al., 2011). In this investigation, we add to the emerging literature on the teacher's social management dynamics by examining the extent to which teachers' promotion of mastery goals is related to the behavioral correlates of coolness in the classroom. We consider classroom mastery goals given the extensive theory and research about the importance of goals for student academic and social behaviors in the classroom (Linnenbrink-Garcia & Patall, 2015; Wigfield et al., 2015).

Teachers communicate different ideas about the purpose of schoolwork and what constitutes success in their classroom through the types of tasks that teachers assign, how they encourage students to do their work, and how they recognize and evaluate students. When teachers emphasize mastery goals and create a classroom mastery goal structure, they communicate to students that understanding, improvement, and the intrinsic value of learning are the primary reasons for involvement in schoolwork. A classroom mastery goal structure is thought to be developed from teaching practices that focus on activities that emphasize effort, growth, and mistakes as part of the learning process (see Ames, 1992).

Evidence in the literature points to three overlapping ways in which teachers' classroom mastery goals may be shaping peer dynamics related to who is cool within their classrooms. First, encouraging mastery goals may affect students' own goals and behaviors. Students adopt similar goals to those that teachers emphasize in the class (Skaalvik & Federici, 2016;

Wolters, 2004). As a result of adopting individual mastery goals, students may view their peers with more adaptive and learning-focused behaviors as being cool. Specifically, prosocial behaviors may be seen as cool because cooperative peers can support their goals to learn, whereas disruptive behaviors may be viewed as less cool because they conflict with their individual goals and classroom-wide goals (Li & Wright, 2014).

Second, classroom mastery goals may create interdependence and positive relationships within classrooms. Through classroom mastery goals, teachers may emphasize that learning is a collaborative process and occurs with the support and aid of peers. When teachers emphasize that everyone can master tasks through collective and interdependent learning, students may look up to prosocial peers rather than peers who are disruptive and goofing off. In contrast, when teachers do not emphasize classroom mastery goals, students may show distrust of their peers, even their friends, and exhibit negative behaviors, such as withholding helpful academic information from classmates (Darnon et al., 2012; Levy-Tossman et al., 2007; Murdock et al., 2008; Roseth et al., 2008). Similarly, in the absence of a positive structure enforced by the teacher, disruptive behavior might be a tactic students use to stand out among peers and be seen as cool. Lack of positive structure is especially risky during adolescence when high achievers and academically engaged youth are less likely to accrue social status (Bellmore, 2011; Galván et al., 2011). These negative developmental trends in what is cool might be more pronounced in classrooms where the teacher is not conveying classroom mastery goals to counteract this trend.

Third, classroom mastery goals may shape students' overall classroom behavior or descriptive norms, and these norms may affect which behaviors classmates deemed cool (Chang et al., 2007). Collectively, theory and research indicate that an emphasis on mastery goals aids in the creation of a positive and inclusive learning community that orients students toward learning and cooperation and away from disruptive behavior in the classroom (Ames & Archer, 1988; L. H. Anderman, 1999; Nolen, 2003; Urdan & Midgley, 2003; for a review, see Linnenbrink-Garcia & Patall, 2015). Given there have been mixed findings on whether descriptive norms explain cross-classroom variation in the behavioral correlates of popularity (e.g., Chang et al., 2007; Boor-Klip et al., 2017; Dijkstra & Gest, 2015; Garandau et al., 2011), there are likely to be additional processes at play. Considering the role of teacher, the examination of mastery goals may be a first step in disentangling these processes. The present study aims to assess the extent to which classroom mastery goals are related to behavioral correlates of coolness alone and in conjunction with classroom descriptive norms.

*The Role of Grade Level in the Link Between Perceived Popularity and Behaviors*

For the purpose of our study, we are primarily interested in how teachers' goals alongside classroom descriptive norms may be linked to behavioral correlates of coolness; however, we are also interested in exploring the role of grade-level patterns given marked differences in context between elementary school and middle school. Differences in the behavioral correlates of coolness from elementary school to middle school may be the result of a culmination of developmental and contextual changes (Cillessen & Rose, 2005; Eccles et al., 1993). Developmental changes during adolescence may lead some students to use behaviors like aggression or disruption to gain attention among a larger group of peers (Pellegrini & Long, 2002) and to convey rebellion against authority (Moffitt, 1993). When youth transition to middle school, they are often thrust into a new environment with many unfamiliar peers as they begin to rotate to different teachers for subject-specific courses (as is the case in traditional U.S. elementary school; Juvonen, 2007; Juvonen et al., 2004). With a new social environment, social status hierarchies often need to be renegotiated, and aggression can be an effective way for students to convey dominance (Pellegrini & Long, 2002). However, work has yet to examine how grade-level differences interact with classroom contextual effects (e.g., classroom mastery goals or descriptive norms) to moderate the behavioral correlates of coolness.

The developmental and contextual changes in early adolescence around the transition to middle school lead to competing hypotheses regarding the extent to which grade-level differences interact with classroom differences in peer descriptive norms and teacher classroom master goals. On one hand, middle-school students have less time with the same teachers and peers in one class, which could lead to fewer classroom-level differences among sixth graders than fifth graders. On the other hand, despite less time in a given space, teacher goals, peer norms, or the interaction between these two classroom factors may hold more weight in sixth-grade than in fifth-grade classrooms because peers and nonparental adults play an increasingly important role when students transition into middle school (Eccles et al., 1993). There also may be no grade-level differences in the extent to which classroom context plays a role; as work with a contemporary sample of youth found few differences between fifth and sixth graders in their social adjustment at school (Brass et al., 2019). Given limited prior work on the interaction between grade level and classroom context in predicting the behavioral correlates of social status, the current study aims to explore the role of grade-level differences (fifth-grade elementary-school students versus sixth-grade middle-school students) in these processes.

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*The Current Study*

In the present study, we investigate the extent to which two classroom-level predictors are related to the behavioral correlates of coolness. We specifically study the hypothesis that in classrooms where teachers emphasize classroom mastery goals, coolness will be more strongly associated with the academic achievement and prosocial behavior, and less strongly associated with disruptive behavior. We also explored the moderating role of grade-level and descriptive norms in our models since some prior work has demonstrated the potential importance of these classroom factors in relation to variations in coolness across classrooms (e.g., Boor-Klip et al., 2017; Chang et al., 2007; Galván et al., 2011).

## **Method**

*Participants and Procedure*

Data were collected as part of a larger project examining early adolescent social and academic adjustment. Three school districts were approached, and all agreed to participate in the project, pending approval by the principals and teachers of each school. The school districts were located in small to moderate-sized urban areas in the Midwestern United States. The demographics and academic achievement of the school districts are comparable. The school districts serve a sizable proportion of low-income (50%–71%) and middle-income families. In these school districts, the elementary schools held students in kindergarten through Grade 5, and the middle schools held Grades 6–8. All of the middle schools in these districts ( $N = 6$ ) agreed to participate in the project. Two feeder elementary schools for each middle school also agreed to participate ( $N = 12$ ). In the 18 schools included in the present study, 84% of the students' parents responded to a letter sent home by returning a slip with their consent for their child to participate, yielding the current sample. The percentage of students with consent ranged 58%–100% across classrooms, with all but two classrooms exceeding a two-thirds consent rate. To organize survey administration at the middle-school level, we worked with the sixth-grade math and science teachers and chose one of their class periods to participate in the project. For the present study, participants were in 54 classrooms with different teachers (27 sixth-grade classrooms from middle schools and 27 fifth-grade classrooms from elementary schools). On average, our teachers had 13 years of teaching experience and were predominantly European American (87%), and these characteristics were similar across grade levels. Our sixth-grade teachers were more evenly split by gender (55% female) compared to fifth-grade teachers (82% female).



The total sample of students ( $N = 976$ ) was about half female (51%) and ethnically diverse (37% African American, 47% European American, 7% Hispanic, and 9% other ethnic groups). The number of participants ranged 11–27 when examining all 54 classrooms (mean = 18.34). For the 27 fifth-grade classrooms, the number of classroom participants ranged 11–27 (mean = 17.63). For the 27 sixth-grade classrooms, the number of classroom participants ranged 13–25 (mean = 18.89).

School started in mid-August. Surveys were administered to students in their classrooms in the fall (October–November) by trained researchers. Instructions and items were read aloud while students read along and responded. Students were told that the purpose of the survey was to learn about their experiences at school, that the survey was not a test, and that there were no right or wrong answers. Students were assured that the information in the survey would be kept confidential. In addition, students were told that filling out the survey was voluntary. A blank sheet of paper was provided for students to cover their answers as they worked on the survey to keep their responses private. Students who did not participate in the survey did other classwork assigned by the teacher in the back of the room or in the library. We visited the schools one additional day to administer make-ups for students who were absent for the survey administration. Students were given small gifts (e.g., school supplies such as mechanical pencils or erasers) for returning signed permission slips and taking the survey.

### *Measures*

*Student coolness and behaviors (Individual/Level 1)* Students were asked to nominate which peers within their classroom best fit various descriptors. Embedded in each child's survey was a class list, and students were told they could nominate as many or as few peers as they wanted, with the exclusion of nominating themselves, by putting a check next to the names of their classmates. Coolness was assessed with the item "Which students in your class are really cool?" Peer-nominated prosocial behavior was assessed by taking the mean of the nominations for classmates who are "really nice" and are "cooperative and willing to help others" ( $r = .84$ ,  $p < .001$ ). Academic behavior was assessed with an item asking students which classmates "get good grades." Disruptive behavior was assessed with an item asking students which classmates "goof off and don't follow the rules."

Students were then given a score for each item based on the number of times they were nominated by classmates divided by the total number of classmates who made nominations (to account for varying class

size). Given consistent gender differences found in the social status and reputation literatures (see Glick & Rose, 2011; Rose et al., 2011; Rose & Smith, 2018), we standardized each of our variables by gender (academic achievement, prosocial behavior, disruptive behavior, and coolness). This well-documented practice of standardizing variables by each gender group enables us to examine associations of interest that might otherwise be obscured by gender, while still controlling for gender differences (see Farmer et al., 2002; Rodkin et al., 2006).

*Classroom behavioral descriptive norms (Classroom/Level 2)* Three classroom descriptive norms were created—prosocial behavior, disruptive behavior, and academic achievement, respectively—by calculating the mean value of the proportion of nominations received for each of these three behavioral variables within 54 classes. Thus, the proportion of peer nominations of prosocial behaviors were aggregated for each classroom to create prosocial descriptive norms, and this process was replicated to create disruptive descriptive norms and academic descriptive norms. This is consistent with the approach in prior studies on descriptive norms (e.g., Boor-Klip et al., 2017; Chang, 2004; Garandean et al., 2011; Sentse et al., 2007, 2015; Torrente et al., 2014).

*Classroom mastery goals (Classroom /Level 2)* We used a measure from the Patterns of Adaptive Learning Survey (PALS; Midgley et al., 2000) to assess student perceptions that their teacher emphasized mastery goals in the classroom. This scale refers to student perceptions that their teacher emphasizes that they understand new ideas, learn from errors, develop novel skills, and enjoy the learning process. Two sample items include “My teacher wants us to understand our work, not just memorize it” and “My teacher gives us time to really explore and understand new ideas.” Students rated the items on a 5-point Likert scale with 5 being *very true* and 1 being *not at all true*. There were six items, and the measure was reliable in our sample (Cronbach’s  $\alpha = .76$ ).

## Analyses

*Preliminary analyses and descriptive results* As a preliminary analysis, we examined both individual and classroom-level means for each variable in the study, and we also ran *t*-tests to assess grade-level differences and gender differences (Tables 1 and 2). When looking at grade-level means (Table 1), fifth graders perceived their peers as more prosocial and cool than sixth graders. While students in the fifth grade individually perceived greater classroom mastery goal orientation than students in the sixth grade, there were no significant grade-level differences in the classroom mastery

**Table 1.** Means and standard deviations for the total sample and by grade (uncorrected for class-level/class-size differences and unstandardized by gender)

	Total L1 <i>N</i> = 978 L2 <i>N</i> = 54		Grade 5 L1 <i>N</i> = 472 L2 <i>N</i> = 27		Grade 6 L1 <i>N</i> = 506 L2 <i>N</i> = 27		Grade mean difference	Grade differ- ence <i>t</i> -test (raw scores)	Grade differ- ence <i>t</i> -test (proportions <sup>b</sup> )	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				
Individual level (L1)										
Good grades	3.33	2.78	3.44	2.87	3.23	2.70	0.21	−0.08	0.93	
Disruptive	4.11	4.10	4.10	4.38	4.12	3.82	−0.02	1.08	−1.49	
Prosocial	2.52	3.57	2.65	3.77	2.41	3.37	0.24	1.30	2.83*	
Cool	3.60	3.23	3.74	3.44	3.47	3.01	0.27	1.18	2.92*	
Class mastery goals <sup>a</sup>	4.02	0.89	4.11	0.87	3.94	0.90	0.17	3.06*	—	
Classroom level (L2)										
Good grades	4.04	0.73	4.03	0.69	4.06	0.78	−0.03	−0.14	1.32	
Disruptive	2.48	0.87	2.56	0.91	2.39	0.83	0.17	0.71	1.26	
Prosocial	3.54	0.74	3.70	0.56	3.37	0.86	0.33	1.69†	3.13**	
Cool	3.26	0.81	3.40	0.56	3.12	0.99	0.28	1.26	2.64*	
Class mastery goals <sup>a</sup>	4.03	0.35	4.12	0.37	3.94	0.31	0.18	1.91†	—	

Note. *M* = mean; *SD* = standard deviation; L1 = Level 1; L2 = Level 2.

<sup>a</sup>Data source based on average student report of classroom mastery goals rather than peer nominations as with good grades, disruptive, prosocial, and cool.

<sup>b</sup>The *t*-test scores based on corrections for class size—based on the proportion of individual nominations divided by the total number of possible students to nominate within a classroom.

\**p* < .1. \*\**p* < .05. †*p* < .01. \*\*\**p* < .001.

**Table 2.** Means and standard deviations for the total sample and by gender (uncorrected for class-level/class-size differences and unstandardized by gender)

	Total <i>N</i> = 984		Girls <i>N</i> = 504		Boys <i>N</i> = 480		Gender mean difference	Gender difference <i>t</i> -test (raw scores)	Gender difference <i>t</i> -test (proportions <sup>b</sup> )
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i> girls – <i>M</i> boys	<i>t</i>	<i>t</i>
Good grades	4.11	4.10	4.77	4.31	3.44	3.75	1.34	5.18**	5.35**
Disruptive	2.52	3.57	1.48	2.42	3.60	4.19	–2.12	–9.67***	–9.78***
Prosocial	3.60	3.23	4.55	3.56	2.62	2.49	1.94	9.89***	10.02***
Cool	3.33	2.78	3.36	2.64	3.30	2.92	0.06	0.33	0.32
Class mastery goals <sup>a</sup>	4.02	0.89	4.10	0.83	3.94	0.95	0.17	2.94**	–

*Note.* *M* = mean; *SD* = standard deviation.

<sup>a</sup>Data source based on average student report of classroom mastery goals rather than peer nominations as with good grades, disruptive, prosocial, and cool.

<sup>b</sup>The *t*-test scores based on corrections for class size—based on the proportion of individual nominations divided by the total number of possible students to nominate within a classroom.

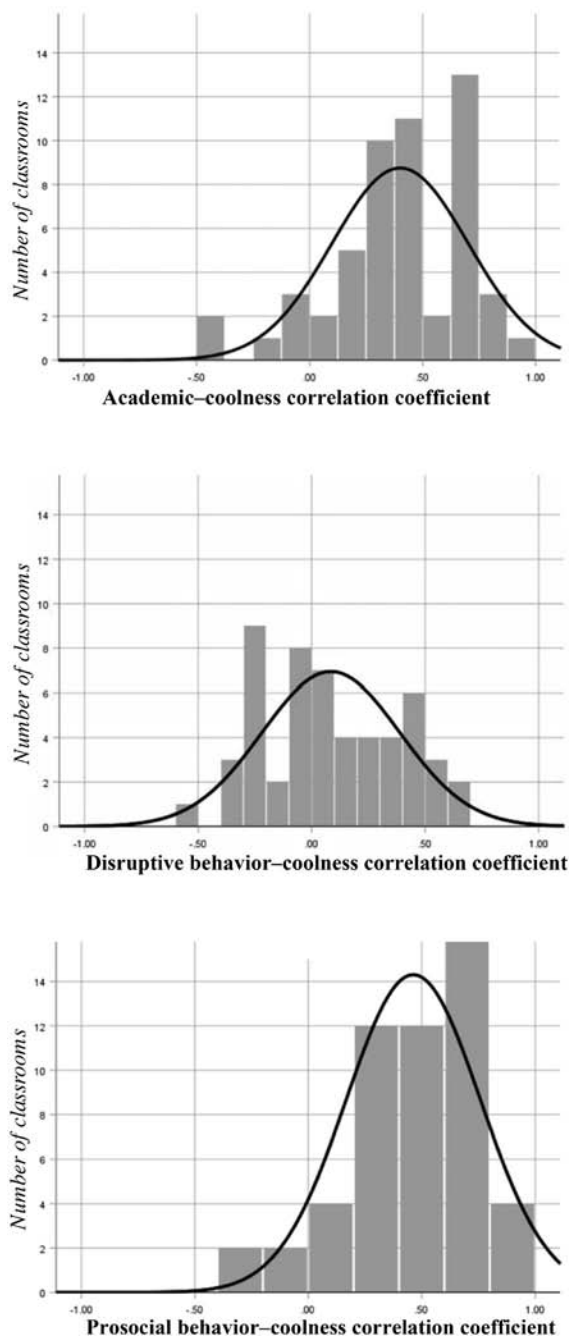
\**p* < .1. \*\**p* < .05. \*\*\**p* < .001.

goals for fifth- and sixth-grade classrooms. When looking at gender differences (Table 2), girls were more likely to be nominated as being prosocial and getting good grades, while boys were more likely to be nominated as disruptive. Girls also reported perceiving their teachers to emphasize classroom mastery goals to a greater extent than boys. Boys and girls were equally likely to be nominated as cool by their peers.

Next, we examined the correlations between peer nominations of student behavior (i.e., prosocial behavior, disruptive behavior, and academic achievement) and coolness (i.e., “are really cool”) for each classroom. Across the 54 classrooms, the association between academic achievement and coolness (or academic achievement–coolness correlation) ranged from neutral at the 10th percentile to strongly positive at the 90th percentile ( $r_{10th} = -.03$ ,  $r_{90th} = .74$ , mean = 0.40, median = .43,  $SD = .30$ ). The disruptive behavior–coolness correlation ranged from negative to moderately positive ( $r_{10th} = -.29$ ,  $r_{90th} = .50$ , mean = 0.08, median = 0.06,  $SD = .30$ ). The prosocial behavior–coolness correlation ranged from neutral to strongly positive ( $r_{10th} = .10$ ,  $r_{90th} = .79$ , mean = 0.46, median = 0.52,  $SD = .30$ ). These descriptive statistics indicate that classrooms are different in how certain behaviors are linked with coolness. See Figure 1 for a histogram displaying the ranges of the average correlation of peer nominations for each of three behaviors and coolness across classrooms (cf. Dijkstra & Gest, 2015).

*HLM analyses* After these preliminary analyses, we used hierarchical linear modeling (HLM) to address our research questions because students in the sample are situated within 54 different classrooms. HLM is a multilevel regression-based technique that partitions variance into within- and between-group components (Raudenbush & Bryk, 2002), enabling us to understand and explain variation in relationships across classrooms. To examine whether the behavior associated with coolness varied across classrooms, we use HLM Level-1 regression with each behavior independently predicting coolness. The predictor variables were prosocial behavior, disruptive behavior, and academic achievement (see the baseline model in Tables 4, 5, and 6, respectively).

In a series of models, we examined the cross-level interactions of individual level (Level 1) prosocial, disruptive, and academic behaviors with each of the following classroom level (Level 2) predictors: (a) grade, (b) descriptive norms, and (c) classroom mastery goals on coolness. The cross-level interactions between Level 2/classroom factors and Level 1/individual behaviors are modeling the moderators of the behavioral correlates of coolness (i.e., the Level 1 slope). In Model 1, we included the students’ grade level (fifth versus sixth grade) as a Level 2 predictor of the behavioral correlates of coolness—this can also be conceptualized as a cross-level



**Figure 1.** Distribution of academic achievement, disruptive behavior, and prosocial behavior, correlated with coolness across classrooms.

interaction between classroom grade level (Level 2) and individual behavior (Level 1) as predictors of coolness. In Model 2, we examined the effect of the classroom behavioral descriptive norms (prosocial, disruptive, and academic) separately on the corresponding behavioral correlates of coolness (prosocial–coolness, disruptive–coolness, and academic–coolness correlation, respectively). In Model 3, we looked at the effects of classroom mastery goals on each of the three behavior–coolness correlations. Finally, in Model 4, we examined all three Level 2 predictors (i.e., grade, the behavioral descriptive norm, and classroom mastery goals) on the behavior–coolness correlations. In every step of the model, we also examined grade level as a moderator. There were few grade-level interactions. We summarize these findings in a paragraph at the end of the Results section.<sup>1</sup>

In all models, Level 1 (student-level) variables were centered around the group mean, and Level 2 (classroom-level) variables were centered around the grand mean. The only exception is our one categorical variable (grade level), which remained uncentered. For all models, we employed full maximum likelihood estimation. See Appendix A for the HLM equations for prosocial behavior; model equations for disruptive behavior and academic achievement were parallel to those used for prosocial behavior.

## Results

### *Descriptive Statistics and Correlations*

Table 1 displays the means and standard deviations for all variables at Level 1 (individual) and Level 2 (classroom) for fifth and sixth graders separately. Overall, there were few grade-level differences. Peer nominations of prosocial behavior and coolness were higher in fifth grade than sixth grade at the individual and classroom levels. In Table 2, we show the means and standard deviations for our variables separated by gender. There were significant differences in peer nominations of academic, prosocial, and disruptive behavior by gender. Girls viewed classrooms as more mastery goal oriented than boys. The bivariate correlations for all the variables in the study for both levels are shown in Table 3. At the individual and classroom level, prosocial and academic variables were correlated positively with each other and coolness. Classrooms where more students were nominated as prosocial were also classrooms where more students were nominated as cool.

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1. Please contact the corresponding author for the grade-level interaction tables.

**Table 3.** Bivariate correlations among the study variables at the individual and classroom level (uncorrected for classroom-level differences and unstandardized by gender)

	Coolness <sup>a</sup>	Academic <sup>a</sup>	Disruptive <sup>a</sup>	Prosocial <sup>a</sup>	Classroom mastery goals
Coolness <sup>a</sup>					
All		.50**	.37**	.83***	.24†
5th	—	.69***	.38†	.81***	.15
6th		.13	.29	.80***	.18
Academic <sup>a</sup>					
All	.42***		.13	.74***	.27*
5th	.36***	—	-.12	.94***	.13
6th	.47***		.37†	.37†	.40*
Disruptive <sup>a</sup>					
All	.11**	-.34***		.20	.09
5th	.12**	-.35***	—	.04	.04
6th	.10*	-.34***		.31	.14
Prosocial <sup>a</sup>					
All	.48***	.85***	-.38***		.26†
5th	.48***	.82***	-.38***	—	.18
6th	.48***	.88***	-.39***		.18
Classroom mastery goals					
All	.04	.08	-.03	.09**	
5th	.05	.10*	-.04	.08†	—
6th	.02	.06	-.04	.09†	

*Note.* Level 1 correlations (individual behavior) are shown below the diagonal. Level 2 correlations (classroom norms) are presented above the diagonal. <sup>a</sup>Indicates variable is the proportion calculated by the correlations between the number of peer nominations an individual received for an attribute divided by the total classroom of participants.

† $p < .10$ . \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .



*Direct Effects of Level-2 Predictors on Coolness*

While the goal of the current study is focused on examining cross-level interactions and predictors of the behavioral correlates of coolness, we found significant direct effects of our classroom level/Level 2 predictors on coolness. As observed in our descriptive statistics, fifth graders nominated more peers as cool than sixth graders. We also found that to some extent all descriptive norms were positively related to nominations of coolness; more nominations of peer behavior were related to more nominations of peers as cool. This pattern was particularly salient for prosocial norms in predicting cool nominations ( $\beta = 0.91$ ,  $SE = 0.14$ ,  $p < .001$ ).

*Cross-Level Interactions (Main Findings)*

Our research questions are answered by examining the cross-level interactions, along with our baseline model (Model 1)—or the behavioral correlates of coolness models.

*Prosocial behavioral correlates of coolness* In Table 4, our results are displayed for all models assessing prosocial behavioral correlates of coolness and moderators of this relationship. Our baseline model showed that students who were prosocial were more likely to be perceived as cool, as indicated by a positive slope ( $\beta = 0.47$ ,  $SE = 0.04$ ,  $p < .001$ ). Consistent with our preliminary analysis, the slope between prosocial behavior and coolness varied significantly across classrooms [ $\chi^2(53) = 133.86$ , classroom level variance = 0.06,  $SD = .25$ ,  $p < .001$ ], indicating that in some classrooms prosocial behavior was more strongly linked to coolness than in others (see Figure 1).

For Model 1, there was no significant difference between fifth- and sixth-grade classrooms in the extent to which prosocial behavior was correlated with coolness. For Model 2, neither grade level nor classroom prosocial descriptive norms moderated the prosocial behavioral correlates of coolness. For Model 3, we found that students perceived as prosocial were more likely to be nominated as cool by their peers in classrooms where teachers emphasize mastery goals ( $\beta = .27$ ,  $SE = .13$ ,  $p < .05$ ). For Model 4, we found that both prosocial descriptive norms and classroom mastery goals played a moderating role on the behavioral correlates of coolness when included in the same model ( $\beta = -.30$ ,  $SE = .15$ ,  $p < .05$ , and  $\beta = .33$ ,  $SE = .13$ ,  $p < .05$ , respectively). Together in the same model, classroom mastery goals strengthened the association between prosocial behavior and coolness, whereas prosocial descriptive norms weakened the association—as prosocial descriptive norms directly increase the total nominations of coolness classwide.

**Table 4.** Multilevel regression models predicting coolness from student prosocial behavior, grade, classroom descriptive norms, classroom mastery goals, and interactions

	(L1) Prosocial Behavior	(L1) + (L2) Grade	(L1) + (L2) Grade + PDN	(L1) + (L2) Grade + CMG	(L1) + (L2) Grade + PDN + CMG
Baseline model					
	$\beta$ (SE)	Model 1 $\beta$ (SE)	Model 2 $\beta$ (SE)	Model 3 $\beta$ (SE)	Model 4 $\beta$ (SE)
Intercept	0.01 [0.04]	0.01 [0.04]	0.02 [0.03]	1.02 [0.47]*	0.02 [0.03]
Level 1					
Prosocial (individual)	0.47 [0.04]***	0.47 [0.04]***	0.49 [0.04]***	0.56 [0.45]	0.47 [0.04]***
Level 2					
Grade level ( $\delta_{th} = 1$ )		-0.21 [0.08]*	-0.03 [0.05]	-0.18 [0.08]*	-0.02 [0.05]
PDN			0.91 [0.14]***		0.90 [0.15]***
CMG				0.16 [0.10]	0.02 [0.08]
Cross-level interactions					
(L2) Grade level $\times$ (L1) prosocial		-0.07 (0.08)	-0.12 (0.09)	-0.02 (0.08)	-0.08 (0.07)
(L2) PDN $\times$ (L1) prosocial			-0.24 (0.15)		-0.32 (0.15)*
(L2) CMG $\times$ (L1) prosocial				0.27 (0.13)*	0.33 (0.13)*
Variance components					
(L1) Within class ( $\sigma^2$ )	0.73	0.73	0.72	0.72	0.71
(L2) Between class ( $\tau_{00}$ )	0.06	0.05	0.00	0.05	0.00
Chi-square	133.86***	123.65***	54.30	121.57***	55.13
Deviance	2,522.26	2,514.72	2,458.54	2,502.06	2,442.67
Number of estimated parameters	4	6	8	8	10

*Note.* PDN = prosocial descriptive norms; CMG = classroom mastery goals;  $\beta$  = coefficient and SE = standard error; L1 = Level 1; L2 = Level 2. We reported the final estimation of fixed effects with robust standard errors.  
\* $p < .10$ . \*\* $p < .05$ . \*\*\* $p < .01$ . \*\*\*\* $p < .001$ .

*Disruptive behavioral correlates of coolness* In Table 5, our results are displayed for all models assessing disruptive behavioral correlates of coolness and moderators of this relationship. Our baseline model showed that students who were disruptive were not seen as more or less likely to be perceived as cool than their classmates, as indicated by a no slope ( $\beta = .06$ ,  $SE = .04$ ,  $p = ns$ ). However, the slope between disruptive behavior and coolness significantly varied across classrooms [ $\chi^2(53) = 102.78$ , classroom level variance = .04,  $SD = .21$ ,  $p < .001$ ]. Consistent with our preliminary analysis, in some classrooms, disruptive behavior was positively linked to coolness and in other classrooms disruptive behavior was negatively linked to coolness (see Figure 1).

For Model 1, there was no significant difference between the fifth- and sixth-grade classrooms in the disruptive behavioral correlates of coolness. For Model 2, disruptive descriptive norms did not moderate the disruptive correlates of coolness. For Model 3, our findings show that teacher emphasis on classroom mastery goals was not related to the disruptive correlates of coolness. For Model 4, when disruptive descriptive norms and classroom mastery goals are in the same model, neither of these classroom factors moderate the disruptive behavioral correlates to coolness.

*Academic behavioral correlates of coolness* In Table 6, our results are displayed for all models assessing academic behavioral correlates of coolness and moderators of this relationship. Our baseline model showed that students who were nominated as getting good grades were more likely to be nominated as cool, as indicated by a positive slope ( $\beta = 0.42$ ,  $SE = .05$ ,  $p < .001$ ). However, the slope between academic achievement and coolness significantly varied across classrooms [ $\chi^2(53) = 126.33$ , classroom level variance = .06,  $SD = .24$ ,  $p < .001$ ], indicating that in some classrooms academic achievement was more strongly linked to coolness than in others, similar to our preliminary analyses (see Figure 1).

For Model 1, there was no significant difference in the academic correlates of coolness between fifth- and sixth-grade classrooms. For Model 2, both grade level and classroom academic descriptive norms did not moderate the academic behavioral correlates of coolness. For Model 3, we found students perceived as getting good grades were more likely to be nominated as cool in classrooms where teachers emphasized mastery goals ( $\beta = .35$ ,  $SE = .12$ ,  $p < .05$ ). For Model 4, when classroom mastery goals and academic descriptive norms are included in the same model, classroom mastery goals strengthened the association between prosocial behavior and coolness ( $\beta = .43$ ,  $SE = 0.11$ ,  $p < .001$ ), while academic descriptive norms weakened the association ( $\beta = -0.53$ ,  $SE = 0.18$ ,  $p < .01$ )—similar to

**Table 5.** Multilevel regression models predicting coolness from student disruptive behavior, grade, classroom descriptive norms, classroom mastery goals, and interactions

	(L1) Disruptive behavior	(L1) + (L2) Grade	(L1) + (L2) Grade + DDN	(L1) + (L2) Grade + CMG	(L1) + (L2) Grade + DDN + CMG
Baseline model		Model 1	Model 2	Model 3	Model 4
	$\beta$ [SE]	$\beta$ [SE]	$\beta$ [SE]	$\beta$ [SE]	$\beta$ [SE]
Intercept	0.01 [0.04]	1.11 [0.46]*	0.98 [0.42]*	0.96 [0.45]*	0.85 [0.43]*†
Level 1					
Disruptive (individual)	0.06 [0.04]	-0.48 [0.43]	-0.49 [0.45]	-0.29 [0.42]	-0.31 [0.43]
Level 2					
Grade level (6th = 1)		-0.20 [0.08]*	-0.18 [0.08]*	-0.17 [0.08]*	-0.15 [0.08]*†
DDN			0.35 [0.13]*		0.33 [0.13]*
CMG				0.15 [0.10]	0.13 [0.10]
<b>Cross-level interactions</b>					
(L2) Grade level x (L1) disruptive		<b>0.10 (0.08)</b>	<b>0.10 (0.08)</b>	<b>0.07 (0.07)</b>	<b>0.07 (0.08)</b>
(L2) DDN x (L1) disruptive			<b>0.03 (0.15)</b>		<b>0.09 (0.15)</b>
(L2) CMG x (L1) disruptive				<b>-0.21 (0.13)</b>	<b>-0.22 (0.14)</b>
Variance components					
(L1) Within class ( $\sigma^2$ )	0.95	0.95	0.95	0.95	0.95
(L2) Between class ( $\tau^2$ )	0.04	0.04	0.03	0.03	0.02
Chi-square	102.78***	94.96***	86.70**	92.69***	85.25**
Deviance	2,762.25	2,754.04	2,748.62	2,747.88	2,742.41
Number of estimate parameters	4	6	8	8	10

Note. PDN = prosocial descriptive norms; CMG = classroom mastery goals;  $\beta$  = coefficient and SE = standard error; L1 = Level 1; L2 = Level 2. We reported the final estimation of fixed effects with robust standard errors.  
† $p < .10$ . \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

**Table 6.** Multilevel regression models predicting coolness from student academic behavior, grade, classroom descriptive norms, classroom mastery goals, and interactions

	(L1) Academic behavior	(L1) + (L2) Grade	(L1) + (L2) ADN	(L1) + (L2) CMG	(L1) + (L2) Grade + ADN + CMG
Baseline model	$\beta$ (SE)	$\beta$ (SE)	$\beta$ (SE)	$\beta$ (SE)	$\beta$ (SE)
Intercept	0.01 [0.04]	1.16 [0.47]*	0.90 [0.42]*	1.01 [0.46]*	0.84 [0.44]†
Level 1					
Academic (individual)	0.42 [0.05]***	1.02 [0.51]*	1.13 [0.51]*	0.72 [0.46]	0.83 [0.42]*
Level 2					
Grade level (6th = 1)		0.21 [0.08]*	-0.16 [0.08]*	-0.18 [0.08]*	-0.15 [0.08]†
ADN			0.67 [0.32]*		0.07 [0.08]
CMG				0.15 [0.09]	0.64 [0.32]†
<b>Cross-level interactions</b>					
(L2) Grade level $\times$ (L1) academic		-0.11 (0.09)	-0.12 (0.09)	-0.05 (0.09)	-0.08 (0.08)
(L2) ADN $\times$ (L1) academic			-0.35 (0.18)†		-0.53 (0.18)**
(L2) CMG $\times$ (L1) academic				0.35 (0.12)**	0.43 (0.11)***
Variance components					
(L1) Within class ( $\sigma^2$ )	0.78	0.77	0.77	0.76	0.75
(L2) Between class ( $\tau_{00}$ )	0.06	0.05	0.03	0.05	0.03
Chi-square	126.33***	116.95***	97.90***	115.95***	100.09***
Deviance	2,574.88	2,565.25	2,547.17	2,544.99	2,519.93
Number of estimate parameters	4	6	8	8	10

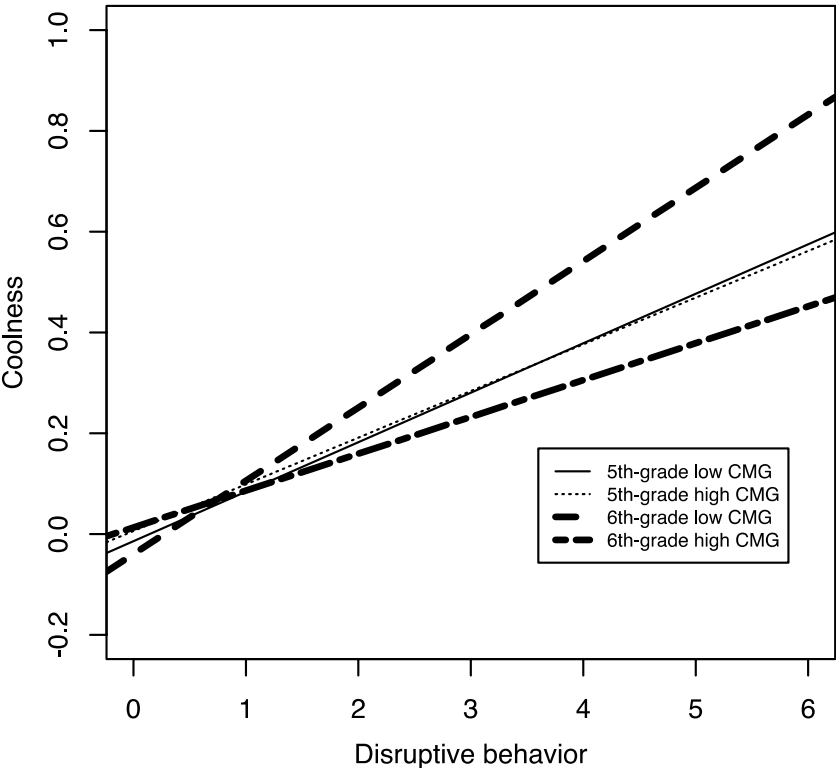
Note. PDN = prosocial descriptive norms; CMG = classroom mastery goals;  $\beta$  = coefficient and SE = standard error; L1 = Level 1; L2 = Level 2. We reported the final estimation of fixed effects with robust standard errors.

\* $p < .10$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

prosocial norms, academic descriptive norms increase the total nominations of coolness classwide.

*Grade-Level Interactions with Descriptive Norms and Classroom Mastery Goals*

We also examined the interactions between descriptive norms and grade level, as well as classroom mastery goals and grade level for each of our behavioral correlates of coolness. There was only one significant interaction (classroom mastery goals and grade level). For sixth grade, in classrooms with low classroom mastery goals,



**Figure 2.** Disruptive behavioral correlates of coolness for classrooms with fifth- and sixth-grade classrooms by high and low classroom mastery goals (CMGs). This figure shows the interaction between grade and classroom mastery goals in moderating the disruptive behavioral correlates of coolness.

disruptive behavior was more likely to be associated with coolness ( $\beta = 0.50$ ,  $SE = 0.24$ ,  $p < .05$ , Figure 2). For fifth grade, there was no association of classroom mastery goals with the disruptive coolness correlation.

## Discussion

The purpose of this study was to investigate the role that the classroom context plays in how student behaviors relate to who is nominated as cool during early adolescence. We examined the extent to which teachers' promotion of mastery goals and descriptive norms are related to how three behaviors (getting good grades, acting in prosocial ways, and being disruptive) correlated with perceived coolness, along with grade-level interactions. We found that the strength of the relationship between coolness and behaviors varied from classroom to classroom. Our main hypothesis was confirmed: Classroom mastery goals (i.e., motivational climate set by the teacher) strengthened the association between positive student behavior (prosocial and academic) and coolness regardless of grade level. For disruptive behavior and coolness, our hypothesis was only supported for sixth-grade classes and not fifth-grade classes. Among sixth graders, a negative relation emerged when teachers emphasized classroom mastery goals, yet no relation was found in fifth-grade classrooms. Taken together, our study suggests that teachers' behaviors and values may shape which students are considered "really cool."

According to achievement goal theory, teachers' emphasis on classroom mastery goals is related to teachers promoting mutual respect, warmth, and excitement in their practice (E. M. Anderman & Patrick, 2012). While prior work on achievement goals suggests that mastery-focused teaching practices are linked to positive social interactions (Linnenbrink-Garcia & Patall, 2015; Patrick et al., 2011; Wolters, 2004), no studies had connected measures of the classroom motivational climate to understanding the relationship between student behaviors and coolness. This study adds to a growing literature on how teaching practices can positively influence peer dynamics in classrooms (Farmer et al., 2018).

Going beyond the well-known benefits of classroom mastery goals for academic beliefs and behaviors, this study reveals that teachers' emphasis on mastery goals holds important implications for social dynamics in the classroom (Boaler & Staples, 2008; Hamm et al., 2011; Meece et al., 2006). Our focus on classroom mastery goals bridges teachers' pedagogical practice with ways they can shape the classroom social climate.

Prior research on teachers' management of peer dynamics recommends that teachers form individualized relationships with students,

use specific peer grouping strategies, understand or have *attunement* to peer dynamics, and scaffold social opportunities based on student needs (Ahn & Rodkin, 2014; Farmer et al., 2011; Gest & Rodkin, 2011; Hamm et al., 2011, 2014). However, research on teacher attunement offers educators few specific strategies they can implement to develop attunement in contrast to implementing classroom goals. Thus, an advantage of our focus on classroom mastery goals in fostering positive classroom peer ecology is that it is an aspect of teaching that is linked to specific behaviors that teachers can implement. Decades of research point to how classroom mastery goal structures are developed—namely, centering around six key considerations: knowledge of task (design of activities), authority (autonomy of decisions), recognition (use of effective praise), grouping (selection of peers), evaluation (assessment approach), and time (instructional pacing)—forming the acronym TARGET (see Ames, 1992; Epstein, 1989). Future research should investigate the extent to which these practices behind classroom mastery goal structures are also the mechanisms behind teacher attunement and/or positive peer dynamics in classrooms.

We found that descriptive norms, or the average student behavior in a classroom, did not moderate the behavioral correlates of coolness when examined alone or in conjunction with grade level. However, in classrooms where students generally nominate a large number of their classmates as prosocial, they also nominate a large number of classmates as cool. Thus, as more students are nominated as cool, the less coolness is associated with prosocial behavior. The results reported by Boor-Klip et al. (2017) were similar as they found that prosocial descriptive norms had a direct effect on popularity nominations rather than a moderating effect on the prosocial correlates of coolness. While the person–group similarity model postulates that social acceptance of a behavior is reinforced by the prevalence of the behavior in a setting and is sanctioned if most students do not engage in that behavior (e.g., Chang, 2004). However, rather than the person–group similarity model, we found greater support for the direct link between behaviors and overall nominations of coolness—or density of network nominations of coolness. Future studies would benefit from examining the overall degree of nominations of coolness alongside behavioral correlates (e.g., Ahn & Rodkin, 2014).

Our findings were largely consistent across grade levels. However, when teachers emphasized mastery goals in sixth-grade classrooms, student disruptive behavior was less likely to be seen as cool, compared to fifth-grade classrooms where classroom mastery goals were less likely to be as influential in the behavioral correlates of coolness. Prior work suggests that behaviors such as goofing off in class and disengaging with schoolwork



are increasingly perceived as popular during adolescence (Galván et al., 2011; Moffitt, 1993). While sixth graders may be more likely to perceive peer defiance as cool, our findings show this varies depending on teachers' emphasis on mastery goals. Our findings indicate that defiance and rebellious behavior are seen as cool only in sixth-grade classrooms where students do not perceive a classroom environment characterized by learning and growth, whereas there were no differences in disruptive behavioral correlates of coolness in fifth grade across classrooms with different levels of classroom mastery goals. Coolness is generally not associated with disruptive behaviors prior to adolescence (Moffitt, 1993; Pellegrini & Long, 2002), and there are low associations between behavioral correlates of coolness in all classrooms for fifth graders regardless of the mastery goals. Disruptive behavior starts to gain status as students enter middle school (Moffitt, 1993), and thus our findings support that teachers need to leverage effective approaches to learning, such as classroom mastery goals, in order to alter disruptions that may be viewed as cool in their classrooms.

While our study contributes to the growing understanding of classroom peer processes and the role of teachers in these processes, it is not without limitations. One limitation of our study was the use of data at one time point, so we cannot make inferences about the direction of effects or determine whether the relationships change across the school year or across the transition to middle school. It could also be that student behavior and coolness were actually predictive of student reports of teacher goal emphasis. In this case, "model" cool kids (i.e., studious and nonaggressive) may have beliefs about the teacher that are distinct from those of "tough" cool kids (i.e., aggressive and antisocial; Rodkin et al., 2006). Thus, there might be reciprocal relations with peer dynamics also affecting approaches that teachers use in their classroom. Prior work indicates most teachers are well attuned to which students are popular within their classrooms (van den Berg et al., 2015).

Future studies should examine how peer dynamics, specifically behavioral correlates of coolness, change over time to better establish the extent to which teachers may influence peer processes or vice versa. This work could follow students for additional waves (as the fifth graders transition to middle school, and sixth graders move to seventh grade and eighth grade). Future work could specifically investigate whether the correlation between disruptive behavior and coolness is strengthening over time and whether aspects of the classroom climate could influence this association, or the alternative hypothesis that strong initial association between disruptive behavior and coolness may influence changes in teaching practices. For example, in classrooms where prosocial and academic behavior are

perceived as cool by peers, teachers may be able to dedicate more time to supporting students' in-depth learning or other practices that emphasize student mastery in their learning rather than using that time to manage disruptive behaviors. There is still relatively little data that look at the extent to which peer dynamics may affect teaching practices, but this is an important consideration for future researchers.

Another limitation of our study is that we examined only one type of social status: coolness. Future work investigating patterns in the behavioral correlates of perceived popularity directly, as well as sociometric popularity in relation to classroom mastery goals, could provide additional and important information for educators. Although descriptive norms have been found to play more of a role in sociometric popularity (Boor-Klip et al., 2017; Chang, 2004; Garandeau et al., 2011), examining classroom mastery goals, descriptive norms, and nominations of coolness together would be an informative next step in order to facilitate a more comprehensive understanding of classroom and peer ecology.

Our study is unique in that we incorporate motivational literature and measures through our use of achievement goal theory to build upon the burgeoning literature on peer dynamics and the social context of classrooms. We examined students' perceptions of peer social status coupled with their perceptions of teachers' motivational practices to understand the contributions of each to the classroom ecology. It would be interesting to see how promotion of classroom mastery goals operates with other teacher beliefs and behaviors that potentially shape peer networks in the classroom. As part of this work, longitudinal studies that include other aspects of teacher behaviors (e.g., teacher-student relatedness or teacher instructional support) and other measures of peer dynamics (e.g., friendship networks) could be important in addressing questions about the teachers' role in shaping peer dynamics in the classroom. In particular, accounting for networks structures (e.g., density, reciprocity, outdegree, and indegree; for a brief review, see Veenstra & Dijkstra, 2012) could provide unique insights and are important measures when understanding peer dynamics in the classroom.

In conclusion, our research contributes important information about peer relations in early adolescence. The motivational climate set by the teacher matters beyond academic development and is associated with the social dynamics of a classroom, especially social status dynamics within classrooms. This study provides support for the growing work on how teachers may play a role in determining who is popular in the classroom peer ecology. This is important because coolness takes on increased importance in early adolescence—*cool* or *popular* youth may serve as role

models for their peers. By promoting a focus on mastery goals, teachers may be able to shift admiration and attention to students with more positive behaviors in the classroom and hopefully create a more adaptive learning community for their students.

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## Appendix

### **A.0.** *Baseline model measuring whether the slope for prosocial behavior correlated with coolness varies across classrooms*

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Level-1 model

$$\text{Coolness}_{ij} = \beta_{0j} + \beta_{1j} * (\text{Prosocial}_{ij}) + r_{ij}$$


---

Level-2 model

$$\beta_{0j} = \gamma_{00} + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + u_{1j}$$


---

### **A.1.** *Model 1 measuring whether grade level moderated the prosocial behavioral correlates of coolness*

---

Level-1 model

$$\text{Coolness}_{ij} = \beta_{0j} + \beta_{1j} * (\text{Prosocial}_{ij}) + r_{ij}$$


---

Level-2 model

$$\beta_{0j} = \gamma_{00} + \gamma_{01} * (\text{Grade}_j) + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11} * (\text{Grade}_j)$$


---

### **A.2a.** *Model 2a measuring whether prosocial descriptive norms (PDN) and grade moderated the prosocial behavioral correlates of coolness*

---

Level-1 model

$$\text{Coolness}_{ij} = \beta_{0j} + \beta_{1j} * (\text{Prosocial}_{ij}) + r_{ij}$$


---

Level-2 model

$$\beta_{0j} = \gamma_{00} + \gamma_{01} * (\text{Grade}_j) + \gamma_{02} * (\text{PDN}_j) + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11} * (\text{Grade}_j) + \gamma_{12} * (\text{PDN}_j)$$


---

### **A.2b.** *Model 2b measuring whether prosocial descriptive norms (PDN), grade, and the interaction between the two (i.e., grade by PDN) moderated the prosocial behavioral correlates of coolness*

---

Level-1 model

$$\text{Coolness}_{ij} = \beta_{0j} + \beta_{1j} * (\text{Prosocial}_{ij}) + r_{ij}$$


---

Level-2 model

$$\beta_{0j} = \gamma_{00} + \gamma_{01} * (\text{Grade}_j) + \gamma_{02} * (\text{PDN}_j) + \gamma_{03} * (\text{GradeXPDN}_j) + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11} * (\text{Grade}_j) + \gamma_{12} * (\text{PDN}_j) + \gamma_{13} * (\text{GradeXPDN}_j)$$


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---

**A.3a.** *A.3a. Model 3 measuring whether classroom mastery goals (CMG) and grade moderated the prosocial behavioral correlates of coolness*

---

Level-1 model

$$\text{Coolness}_{ij} = \beta_{0j} + \beta_{1j} * (\text{Prosocial}_{ij}) + r_{ij}$$


---

Level-2 model

$$\beta_{0j} = \gamma_{00} + \gamma_{01} * (\text{Grade}_j) + \gamma_{02} * (\text{CMG}_j) + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11} * (\text{Grade}_j) + \gamma_{12} * (\text{CMG}_j)$$


---

**A.3b.** *Model 3b measuring whether classroom mastery goals (CMG), grade, and the interaction between the two (i.e., grade by CMG) moderated the prosocial behavioral correlates of coolness*

---

Level-1 model

$$\text{Coolness}_{ij} = \beta_{0j} + \beta_{1j} * (\text{Prosocial}_{ij}) + r_{ij}$$


---

Level-2 model

$$\beta_{0j} = \gamma_{00} + \gamma_{01} * (\text{Grade}_j) + \gamma_{02} * (\text{CMG}_j) + \gamma_{03} * (\text{GradeXCMG}_j) + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11} * (\text{Grade}_j) + \gamma_{12} * (\text{CMG}_j) + \gamma_{13} * (\text{GradeXCMG}_j)$$


---

**A.4.** *Model 4 measuring whether prosocial descriptive norms (PDN), classroom mastery goals (CMG), grade, and the interaction between the three (i.e., grade by PDN by CMG) moderated the prosocial behavioral correlates of coolness*

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Level-1 model

$$\text{Coolness}_{ij} = \beta_{0j} + \beta_{1j} * (\text{Prosocial}_{ij}) + r_{ij}$$


---

Level-2 model

$$\beta_{0j} = \gamma_{00} + \gamma_{01} * (\text{Grade}_j) + \gamma_{02} * (\text{PDN}_j) + \gamma_{03} * (\text{CMG}_j) + \gamma_{04} * (\text{GradeXPDNXXCMG}_j) + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11} * (\text{Grade}_j) + \gamma_{12} * (\text{PDN}_j) + \gamma_{13} * (\text{CMG}_j) + \gamma_{14} * (\text{GradeXPDNXXCMG}_j)$$


---

For all models:

Prosocial behavior at Level 1 has been centered around the group mean.

Prosocial descriptive norms (PDN) and classroom mastery goals (CMG) at Level 2 have been centered around the grand mean.

Interactions between Level-2 variables Grade, PDN, and CMG at Level 2 were calculated prior to being included in the HLM models.

