Enhancing Peer Cultures of Academic Effort and Achievement in Early Adolescence: Promotive Effects of the SEALS Intervention

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Peer cultures of effort and achievement influence early adolescents' academic adjustment. A randomized controlled trials design was used to test the extent to which aspects of peer cultures of effort and achievement were enhanced following teachers' participation in the *Supporting Early Adolescents' Learning and Social Success* (SEALS) intervention. Observational and survey data from teachers ($N = 188$) and survey data from 6th-graders ($N = 2,453$) in 36 rural schools across the United States were analyzed. Results indicated that in SEALS versus matched control schools, social prominence was more favorably associated with effort and school valuing, and peer group injunctive norms were more supportive of effort and achievement. Findings indicate that aspects of peer cultures respond to the school context and provide evidence of the efficacy of the SEALS model.

Keywords: adolescence, peer groups, popularity, academic adjustment, school-based intervention

A substantial concern for early adolescents is that doing well and trying hard in school will compromise peer approval and acceptance (Juvonen, 2006). Such concerns emanate from peer cultures, which are the "stable set of activities or routines, artifacts, values, and concerns that children produce and share in interactions with peers" (Corsaro & Eder, 1990, p. 197). In early adolescence, peer cultures convey the acceptability and desirability of effort and achievement; they are vital to understand, given their considerable influence over early adolescents' academic outcomes (Hamm, Hoffman, & Farmer, 2012). Corsaro and Eder's (1990) conceptualization of peer cultures shifts attention from individual children within the context of peer relations, to peer contexts themselves, as meaningful outcomes. Results of recent studies document variability in peer cultures of effort and achievement

across schooling environments and demonstrate that peer cultures respond to naturally occurring features of schools (e.g., Fuller-Rowell & Doan, 2010; Jonkmann, Trautwein, & Ludtke, 2009). A critical next step is to establish whether peer cultures can be altered, to be more supportive of effort and achievement. The purpose of this study was to test experimentally, with a randomized controlled trials design, the extent to which peer cultures of effort and achievement were enhanced for sixth-graders following implementation of the *Supporting Early Adolescents' Learning and Social Success* (SEALS) program with teachers.

Early Adolescents' Peer Cultures of Effort and Achievement

Peer cultures involve diverse types of relationships at multiple levels of the school environment in varying proximity to students. Most adolescents are in peer groups, which are self-selected collectives of peers who regularly interact with one another (Cairns, Xie, & Leung, 1998; Kindermann, 1993). Peer groups are defined by members' shared experiences, including norms, values, and behaviors (Ryan, 2000), that is, by a mutually determined culture. Yet adolescents share academic and social time and space with peers in the broader school environment. Schools serving early adolescents are typically grade-segregated; within a grade, students maintain regular interaction, have shared experiences, provide information and feedback about desired behaviors and dispositions, and grant access to status (Crosnoe, Riegle-Crumb, Field, Frank, Muller, 2008). Thus, a grade-level can function as a peer culture.

In an effort to capture peer cultures that reflect students' immediate and intermediate peer contexts, as well as features of the broader social status system that set the tone for desired and acceptable school behavior (Rodkin & Ryan, 2011), we examine

peer group normative contexts; grade-level peer cultures for the extent to which academic effort and achievement are favored by the social status system; and the emotional riskiness of participation that students anticipate if they invest in academic endeavors. Each represents a well-documented influence on early adolescents' academic effort and achievement (i.e., Bellmore, 2011; Juvonen, 2006; Ryan, 2000).

Peer Group Injunctive Norms

Although definitions and measurement of peer groups vary, it is generally accepted that through processes of selection and socialization, peer groups influence members' academic adjustment (Ryan, 2000). A means through which peer groups socialize their members is through *injunctive* norms, which reflect the standards and expectations for behaviors and values that are perceived to be endorsed by group members. Hamm, Schmid, Farmer, and Locke (2011) found that within peer groups, members shared beliefs about the group's expectations for effort and achievement that significantly differentiated peer groups. Moreover, peer group injunctive norms were significant predictors of members' own effort and valuing of school. Thus, students in peer groups with norms that favored effort and achievement experienced academic gains, while students in peer groups with norms that devalued effort and achievement experienced a deterioration in academic adjustment across the school year.

Social Costs and Benefits of Effort and Academic Success to Popularity

Social status systems reward adolescents for exemplifying desired behaviors and penalize, socially, adolescents whose behaviors and dispositions are at odds with the system (Rubin, Bukowski, & Parker, 2006). The extent to which academic success yields social costs or benefits to popularity is an influential aspect of the peer culture (Bellmore, 2011; Gorman, Kim, & Schimmelbusch, 2002; Schwartz, Gorman, Nakamoto, & McKay, 2006). Popularity is a coveted status that reflects pronounced visibility, attention, and influence (Parkhurst & Hopmeyer, 1998); popular students are seen as leaders and as cool by peers and are considered to be socially prominent (Estell, Farmer, & Cairns, 2007). Study findings are mixed, with some results indicating that peer cultures grant popularity to academically successful students but other evidence suggesting that poor achievement and academic disengagement are defining features of popularity (deBruyn & Cillessen, 2006; Estell et al., 2007; Gorman et al., 2002; Schwartz et al., 2006). Results of a recent comprehensive study of early adolescents indicated that higher achieving students are perceived as unpopular as early as the beginning of sixth grade (Bellmore, 2011). Popularity results from conformity to the values of the peer culture; a tenuous relationship between popularity and academic success in the peer culture puts the academic success of individuals at risk for decline, particularly students already at-risk for academic difficulty (Schwartz et al., 2006; Troop-Gordon, Visconti, & Kuntz, 2011).

Researchers have focused primarily on the costs or benefits of achievement (grade-point average) to popularity, with little consideration of academic behaviors such as effort, and dispositions toward school, such as school valuing (see Troop-Gordon et al.,

2011, and Schwartz et al., 2006, for exceptions). Academic effort and popularity may be incompatible, given that early adolescents tend to equate effort with low ability (Juvonen & Murdoch, 1995). Moreover, overt valuing of school is typically characteristic of low-status adolescents, such as nerds or brains (B. B. Brown, 1993). Greater understanding of the academic correlates of popularity during early adolescence would be valuable, given that effort and valuing of school are foundational to academic success (Wigfield, Eccles, Schiefele, Roeser, & Davis-Kean, 2006).

Emotional Risk of Participation

Academic engagement has a public nature; when students answer questions, seek help, and otherwise engage in instructional tasks, they are vulnerable to their classmates' evaluations. Peer cultures of early adolescence may involve heightened risk for investing in schoolwork; more so than younger or older students, early adolescents worry that their social image will be compromised if they work hard, particularly if they are not successful or ask for assistance (Juvonen & Murdock, 1995; Ryan & Pintrich, 1997). However, when early adolescents perceive that classmates provide academic support and tolerate effort and mistakes, they report greater interest in school (Wentzel, Battle, Russell, & Looney, 2010), a more favorable sense of belonging (Hamm & Faircloth, 2005), and greater academic initiative (Danielsen, Wiium, Wilhelmsen, & Wold, 2010). Moreover, academic achievement improves when students experience a cooperative school environment that features peer support, compared to an individualistic or competitive school environment (Roseth, Johnson, & Johnson, 2008).

Teachers' Roles in Peer Cultures of Effort and Achievement

Peer cultures are constructed by children, through interaction and "appropriation, reinvention, and reproduction" of adult social rules, expectations, and structures within settings such as schools (Corsaro & Eder, 1990, p. 217). Teachers contribute to adolescent peer cultures of effort and achievement through their efforts to engage students instructionally while simultaneously encouraging productive, on-task behavior and facilitating students' social interactions. Moreover, although teachers may explicitly attempt to influence peer cultures, their contributions often reflect their everyday instructional and behavioral management practices (Farmer, Lines, & Hamm, 2011; Gest & Rodkin, 2011).

Teachers of adolescent students may struggle to coordinate classroom social dynamics with instructional and classroom management practices, to the detriment of productive peer cultures. Hand (2010) and McFarland (2001) illustrated how peer cultures increasingly featured disruptive behavior and overt defiance toward learning. As teachers failed to engage students instructionally, their classroom management became more negative and coercive, and they did not respond to the role of high-status, academically disengaged students and the potential for peer groups to proliferate disruptive behaviors. Thus, given unengaging instruction and ineffective classroom management, peer cultures do not reinvent positive dispositions but, instead appropriate and reproduce the negative regard conveyed by the teacher and encourage activities that resist rather than align with productive behaviors.

In contrast, teachers' efforts to promote student mastery and competence, and productive and respectful social exchange of ideas among students, encourages classroom settings in which students support one another's learning, perceive less emotional risk of academic engagement, and experience greater acceptance of effort and achievement within peer groups (Boaler & Staples, 2008; Hamm, Malloy, & Meece, 2006). That is, when teachers make instruction engaging and direct student behavior toward academically and socially productive behaviors, their actions and expectations appear to be appropriated and reproduced within peer cultures. Of note, the school with supportive peer cultures in Boaler and Staples's (2008) study had historically implemented Cohen and Lotan's "complex instruction" program that was designed to help teachers equalize students' social and academic status. Although not a point of focus in the Boaler and Staples (2008) study, this suggests the potential for professional development to help teachers encourage peer cultures supportive of effort and achievement.

Thus, findings suggest that peer cultures that support effort and achievement are more likely when teachers successfully coordinate the instructional, classroom management, and social aspects of the classroom. However, teachers may not have developed this capacity or use it spontaneously in their daily practice. Without this teacher capacity, peer cultures are at risk to be characterized by behavioral disruptions and resistance to academic engagement.

The SEALS Program and Peer Cultures of Effort and Achievement

The SEALS program is a universal intervention program designed to improve student academic outcomes, by using professional development to enhance teachers' capacity to create supportive learning environments for early adolescents (Farmer et al., in press). Adapted from the *stage-environment fit hypothesis*, which centers on the developmental challenges that youth experience as they transition to middle school (Eccles, 1999), teachers learn instructional and classroom management strategies responsive to the needs of struggling youth and that focus on structuring classroom contexts in ways that teach early adolescents how to be successful students. The second framework, *developmental science*, focuses on how processes in key domains of development coalesce to contribute to individual functioning within and adaptation to meaningful social contexts (Cairns & Cairns, 1994). The SEALS model recognizes the holistic nature of early adolescent development and coordinates intervention across the academic, behavioral, and social domains of adjustment. These two frameworks come together in an *ecological intervention* framework, which emphasizes intervention strategies intended to organize and structure the environment to foster the development of new skills, opportunities, and social roles that help to sustain productive patterns of adaptation (Farmer, Farmer, & Brooks, 2010). The program is geared to sixth-grade teachers, given the social, behavioral, and academic challenges faced at this grade-level in general and for rural youth specifically (Farmer et al., in press).

A primary aim of the program is to help teachers learn strategies to coordinate instructional, behavioral, and social dimensions of the classroom. Rather than trying to "fix the student," this model helps teachers to develop an awareness of classroom social dynamics and how to use this knowledge with empirically supported classroom management strategies to effectively promote students' academic engagement and to reinforce student engagement by creating and maintaining a peer context that values learning and that fosters positive social behaviors among classmates. As part of the training, for instance, teachers learn to identify distinct peer groups and social roles within the peer system and how to incorporate this understanding into instructional practices that enhance student engagement, such as constructive feedback, participatory structures that encourage student involvement, and curricular modifications. Teachers learn to recognize how student social dynamics contribute to classroom behavioral problems and develop proactive management goals, productive classroom routines, and strategies for using peers to establish and reinforce desired classroom behavior. A complete description of the conceptual basis, content, and delivery of the SEALS program can be found in Farmer et al. (in press).

The Current Study

Their pronounced influence on adolescents' adjustment coupled with their receptivity to adult socialization practices make peer cultures of effort and achievement potentially powerful intervention targets. The purpose of this study is to test the extent to which, at the end of the sixth-grade school year, aspects of peer cultures of effort and achievement are more favorable in schools in which teachers have participated in the SEALS program compared to matched schools in which teachers have not. Specifically, we propose that

1. The injunctive norms of peer groups in SEALS schools will be more supportive of effort and achievement than will the injunctive norms of peer groups in matched control schools.

2. The relationship between academic success, time spent on homework, school valuing, and popularity will be more positive in intervention versus control schools.

3. Students' perceptions of the emotional riskiness of participation will be lower in intervention versus matched control schools.

Gender and ethnic minority group membership can differentiate students' experience of the peer context of effort and achievement (e.g., Espinoza & Juvonen, 2011; Graham, Taylor, & Hudley, 1998; Wentzel et al., 2010). Thus, for Hypotheses 2 and 3 in particular, we controlled for differences in experiences of the peer culture for these groups and examined the possibility of differential intervention effects on dimensions of the peer culture by gender and for students from ethnic minority groups.

Method

The current study was part of a larger national project, REAL (Rural Early Adolescent Learning), which followed a cluster randomized controlled trials design, in which matched pairs of schools were recruited for participation, and one of each pair was randomly assigned to the intervention or control condition. Intervention schools received a year-long professional development program for all sixth grade teachers (available to control schools at

the end of the project). The SEALS program was implemented during either the 2005–2006, 2006–2007, 2007–2008, or 2008–2009 school year with all sixth-grade teachers in intervention schools. The research study to test the efficacy of the intervention employed a longitudinal design; data were collected preintervention (baseline; spring of fifth grade) and during and postintervention (fall and spring of sixth grade). Data for the current study are taken from the preintervention (baseline) and postintervention time points.

School Selection and Matching Procedure

The larger efficacy study was conducted in schools designated as rural according to urban-centric locale codes established by the National Center for Education Statistics (NCES). In total, 18 matched pairs of schools were located in nine states in diverse regions across the United States. NCES data were used to identify schools that reflected the dominant school configuration used to educate sixth graders for the state and region in general (Grades 6–8 middle school or K–8/K–12 configuration). A spreadsheet was generated that listed schools; their locale code; size; student achievement data, including test score and annual yearly progress status; percentage minority; and student free/reduced lunch rates. School addresses were located on state maps and schools were grouped according to reasonable proximity and shared geographic area of the state. Within these geographic groupings, schools were matched on the demographic data listed above. Schools that constituted a possible match were contacted, informed of the study and its experimental nature (i.e., random assignment to intervention versus control status) and invited to participate. Following this procedure a total of 36 schools (18 pairs) consented to participate.

Sample

Two samples were used for the current study: the full sample, and a subsample that included schools with peer nomination data.

Table 1 includes descriptive summaries of school, teacher, and student characteristics and student consent rates for each sample, by intervention versus control designation.

Schools. The full sample included the 36 schools that were located in the Far Western ($n = 4$), Midwestern ($n = 4$), Northern Plains ($n = 4$), Southwestern ($n = 4$), Southeastern ($n = 4$), Appalachian ($n = 8$,), and Deep Southern ($n = 4$) regions of the United States. By design, half of the pairs utilized a middle school configuration and half utilized a K–8/K–12 configuration. Most schools (75%) in the full sample were located in NCES locale codes 42 (rural, distant) and 43 (rural, remote); the remaining schools were in locale codes 41 (rural, fringe), 32 (town, distant), and 33 (town, remote).

The majority (20) of the participating schools included peer nomination data; certain hypotheses were tested in these schools. The 10 matched pairs were located in the Far Western ($n = 2$), Midwestern ($n = 2$), Northern Plain ($n = 4$), Southwestern ($n = 4$), Southeastern ($n = 2$), Appalachian ($n = 4$), and Deep Southern ($n = 2$) regions of the United States. Of these 20 schools, 65% were classified as fringe, distant, or remote rural (locale codes 41, 42, or 43); 35% were distant or remote towns (locale codes 32 or 33). As is evident from Table 1, characteristics of the subsample were comparable to those of the full sample.

Teachers. All regular education sixth grade teachers in both intervention and control schools were invited to participate as research participants; 100% consented. All were licensed teachers; nearly all were licensed in the content area they currently taught. More than half of the teachers across the samples reported over 10 years of teaching experience; nearly half held a master's degree. The majority of participating teachers were White and female. Teachers who self-identified as members of ethnic minority groups were concentrated in the Southwestern schools (Latino teachers) and the Deep South or Southeastern schools (African American teachers).

Table 1
School, Teacher, and Student Sample and Subsample Characteristics by Intervention and Control

| | Full sample | | Subsample | |
| | Intervention M (SD) | Control M (SD) | Intervention M (SD) | Control M (SD) |
Variable				
Schools	($n = 18$)	($n = 18$)	($n = 10$)	($n = 10$)
% minority	33.8 (39.26)	35.7 (38.57)	40.3 ($SD = 40.84$)	42.2 ($SD = 37.50$)
% free/reduced lunch	61.8 (26.34)	60.8 (26.81)	61.3 ($SD = 26.22$)	63.0 ($SD = 27.92$)
% proficient math/reading	60.1 (23.11)	55.8 (30.07)	59.7 ($SD = 24.53$)	52.1 ($SD = 31.38$)
% consent	66.1 (0.11)	65.6 (0.15)	70.1 ($SD = .09$)	70.4 ($SD = .09$)
school size	318 (185.74)	298.6 (171.17)	314.7 ($SD = 203.28$)	301.8 ($SD = 198.33$)
% middle schools	55.6	55.6	60	60
Teachers	($n = 98$)	($n = 90$)	($n = 58$)	($n = 57$)
% minority	28.6	29.2	36.2	27.3
% female	73.6	77.8	76.6	79.5
% area certified	96.9	96.7	98.3	96.5
% 4-year degree	100	100	100	100
% graduate degree	40.7	51.4	44.7	54.5
% more than 10 years' experience	58.6	56.9	59.6	61.4
Students	($n = 1,325$)	($n = 1,128$)	($n = 820$)	($n = 799$)
% minority	38.7	40.2	34.5	39.9
% female	52.3	51.9	53.7	52.1
% consent	64.4	62.9	65.9	67.8

Students. All sixth grade students in regular education class-rooms were invited to participate.

Proportions of male and female students were comparable. A substantial proportion of the sample was classified as a member of an ethnic minority group (African American, Latino, or Native American); students from ethnic minority groups were concentrated in particular regions of the United States (i.e., all Native American students attended schools in the Northern Plains; all Latino students attended schools in the Southwest, and nearly all African American students attended schools in the Deep South or Southeast).

Data Collection Procedures

Data were collected from consented participants by project staff, following procedures used by the researchers for decades. Consented students were gathered in the cafeteria or similar area and assured of their confidentiality as well as reminded that participation was voluntary and could be withdrawn at any time. Then, adhering to established protocol, a trained staff member guided a group administration as students individually responded to survey items about themselves and their schooling experiences. Additional project staff monitored students and answered questions as needed. Students were given school supplies for their participation. Teachers completed survey packets, which included questions about teachers' individual experiences and background. Teachers also rated aspects of interpersonal and academic competence for participating students. Teachers were compensated financially for participation.

School-Level Measures

School-level variables included 18 (10 for the subsample) dummy coded variables for each matched pair of schools (1 = matched) and a dummy coded variable for intervention condition (1 = intervention; see J. L. Brown, Jones, LaRusso, & Aber, 2010).

Peer Group-Level Measure: Injunctive Peer Norms for Effort and Achievement

Social-cognitive mapping (SCM) procedures were used to identify sixth-grade student peer groups (Cairns, Gariépy, Kindermann, & Leung, 1996). In survey format, students were asked, "Are there some kids in your grade who hang around together a lot?" "Yes" responses were prompted to identify these social groups. Nominated students who were unknown to school personnel, not sixth graders, or identified by a first name were excluded from SCM mapping procedures. Such instances occurred infrequently.

The SCM procedure operates on the principle that although every student is unable to perfectly identify every social group of students, individual perceptions can be aggregated into an overall view of students' social groups. In each school, a list of all nominated groups was created and entered into SCM computer software (SCM Version 4.0; Alston, 1998). This program aggregates all nominations submitted and generates a report of peer groups based on these nominations. Specifically, the program produces an overall list of members for each peer group, the total number of nominations for each member, and three matrices. The *recall* matrix gives a visual overview of who nominated who into each group and is organized for quick visual comparison purposes. The *co-occurrence* matrix shows how frequently each student is nominated with every other student in the grade. Students are shown in clusters based on their SCM-determined group. Finally, the *correlation* matrix shows how well each student's peer profile, which is based on the students with whom he or she was nominated into groups, correlates with that of each other student in the grade. Correlations $r \geq .40$ are considered significant and are shown (Cairns et al., 1996). Final determination of actual group membership is completed by research staff who evaluate the program output and confirm SCM-determined groups (Cairns et al., 1998). Three-week coefficient of stability indicators for this measure are high ($\alpha = .90$) suggesting reliability over short intervals. Validity has been established through observational studies in which students interact four times more frequently with members of their peer group than with students outside their groups (Cairns et al., 1985).

In the 20 school sample, the SCM procedure identified a total of 319 peer groups that ranged from three to 17 members, with an average of 5.86 members ($SD = 2.70$) per group. The majority of groups identified were homogeneous with respect to gender and ethnic minority status.

Peer group injunctive norms for effort and achievement were determined for each peer group as an average of members' perceptions of peer norms for effort and achievement for their group (see Hamm et al., 2011). Thus, each peer group had an injunctive peer norms score that reflected the collective perceptions of group members. Individual members' perceptions of the acceptability of and expectations for academic effort and achievement by their peer group were measured by an 11-item scale (Hamm et al., 2011). Students responded to questions such as, "The kids I hang around with at school think it is good to volunteer to answer questions," by rating their agreement on a scale of 1 = *strongly disagree* to 6 = *strongly agree*. Cronbach's alpha coefficient ranged from .79 to .83 across diverse student groups. Construct validity for the scale comes from findings that the scale scores aggregated to the peer group level are associated with changes to behavioral characteristics of the group, including group-level sense of school belonging, school valuing, and academic effort (Hamm et al., 2011).

Student-Level Measures

Social prominence. Social status indicators were generated from students' nominations of grademates into specific behavioral characteristics or roles. Students listed up to three peers for each behavioral descriptor and were allowed to name the same person for more than one descriptor and to nominate themselves. Relevant to the current study were nominations for "leader," "cool," and "popular," which are dimensions conceptualized to characterize social prominence (Farmer, Irvin, et al., 2010). The average number of nominations across these items was calculated and used to create a composite score; Cronbach's alpha coefficient ranged from .89 to .93.

Academic dispositions and behaviors. Participating students were rated by one of their sixth grade classroom teachers. *Academic effort* was measured by teachers' response to a single-item measure that asked, "How well does child complete his/her home-

work." Teachers assigned a rating of 1 = *Not at all well* to 5 = *Very well*. This measure is limited in its focus on homework and possibly overlooks the importance of in-class effort that would be more visible to classmates. *Academic competence* for each student was derived from the Interpersonal Competence Scale—Teacher (ICS-T); this instrument contains 18 items that are related to specific social or behavioral characteristics of students (Cairns, Leung, Gest, & Cairns, 1995). For each item, teachers rated individual students on a 7-point Likert-type scale from negative to positive (e.g., not good at math, sometimes, very good at math). Multiple subscales can be defined (e.g., academic, social, internalizing and aggressive). The ICS-T Academic subscale was used in the current study and is the average of two items: ability in spelling and ability in math. These items are strongly correlated ($r = .63$); ICS-T factors have convergent validity with direct observation, student records, and peer nomination (Cairns & Cairns, 1994; Cairns et al., 1995).

School valuing was adapted from the 16-item Identification with School Questionnaire (Voelkl, 1996) and includes seven items that reflect feelings of valuing school and school-related outcomes. Students rate their agreement with statements such as "School is one of the most important things in my life" on a 5-point response scale where 1 = *strongly disagree* and 5 = *strongly agree*. Cronbach's alpha coefficient was .81 for the total sample (range = .69–.82 across diverse student groups). Construct validity for the scale has been established through high correlations with academic achievement and class participation (Finn & Frone, 2004; Voelkl, 1996).

Emotional risk of participation. Students' perceived emotional risk of participating in their classes was measured by a six-item scale (Hamm & Faircloth, 2005). Given the prompt, "If I give a wrong answer to a question in my classes, the following happens," students are asked to respond to items such as ". . . other students will think I'm not smart." Students rate their agreement to these items on a 6-point scale, with response options ranging from *strongly disagree* to *strongly agree*. Cronbach's alpha coefficient ranged from .67 to .83 across diverse student groups. Results of a study that used this scale with African American and White sixth-graders indicated that students who perceived less emotionally risky classrooms perceived greater peer support for academics (Hamm & Faircloth, 2005).

Student background characteristics. Student minority status (1 = African American, Latino, or Native American students; 0 = White students) and gender (1 = female) were obtained from school records.

Treatment Implementation and Fidelity

Toward the end of the school year prior to the intervention year, teachers in schools designated to receive the intervention met as a group for approximately 90 min with Project intervention staff in site visits to their schools. During August, intervention school teachers attended a 1.5-day summer institute (12 hr), in which the major components of the intervention were introduced and applications of components were presented and discussed. Between September and April, teachers completed eight online modules covering topics including early adolescent development, student cognition, motivation, classroom management, and social dynamics (estimated time, 45 min per module). Videoconferencing began

shortly after fall data collection; eight videoconferences (approximately 1 hr in length) occurred for each site, coinciding with teachers' completion of the online modules. Training hours of individual teachers were documented by intervention staff for site visit, summer institute, online module completion, and videoconferencing. Teachers completed an average of 27.55 ($SD = 3.76$) hr of training. Fidelity of teacher implementation of the intervention was measured via classroom observation.

After completion of all professional development components, teachers in both intervention and control schools were observed once in their classrooms, for a 90-min period. Observations were conducted by a rater who was blind to the school condition; to establish reliability, 25% were rated by a second observer who was not blind to condition. The SEALS observation instrument was used to assess teachers' practices in the classroom related to observable indicators of each of eight major topics covered by the on-line modules (e.g., attention to social dynamics, classroom management, student motivation). This instrument was developed and pilot-tested in Project sites. Full fidelity data were available for 32 sites. The indicators parallel other classroom observation measures (e.g., La Paro, Pianta, & Stuhlman, 2004), and the rating procedure follows the format of established and validated classroom observation protocols (Weiss, Pasley, Smith, Banilower, & Heck, 2003) by including a "synthesis" rating for each module topic that is informed by the observers' ratings for the of the topic. The rating scale included the following options: 1 (*construct is absent and necessary*), 2 (*construct is present but teacher orientation is negative*), 3 (*construct is present and used favorably but inconsistently*), 4 (*teacher behavior directly reinforces construct*), and 5 (*teacher behavior is not present because it is not necessary*). Cronbach's coefficient alpha for the total scale was .92; interrater reliability (Kappa coefficient) was .88.

Plan of Analyses

The aim of the present study is to investigate the extent to which indicators of peer cultures of effort and achievement are more favorable in schools in which teachers have completed the SEALS program, compared to matched comparison schools. We first established that classroom practice differed between intervention and control school teachers, as an indicator of the fidelity of implementation by teachers in the intervention schools. Second, we tested for intervention effects on each indicator of the peer culture of effort and achievement after accounting for student ethnicity and gender where appropriate. All models were estimated for a two-level data structure: Teacher fidelity data were nested in schools, and each indicator of the peer culture was nested in schools. Student-level indicators of the peer culture (i.e., perceptions of emotional risk and social prominence) were not nested in peer groups, as including this level would exclude students not affiliated with a peer group and would limit interpretations of the findings to students in peer groups. Students and peer groups were not nested in teachers. Reflecting common educational practice, students experienced multiple teachers across the school day and peer groups represented students across teachers. Thus, students and groups were not associated with a single teacher in the school.

Because of the nested data structure and matched-pair design, data analyses involved multilevel hierarchical linear model (HLM) procedures for cluster randomized controlled trials designs (see Brown et al., 2010), with dummy-coded blocking variables that corresponded to each matched pair included at the school level. The worst matched pair served as the referent. Intervention effects were tested by including the dummy-coded variable for intervention at the school level. Although schools could be either K–8/K–12 or middle schools, it was not possible to test for differences in intervention effects by grade configuration because configuration did not vary within each matched pair. To test for the possibility that intervention effects were moderated by implementation of the program by teachers, models were estimated with the school-level aggregate of the classroom observations of teachers within a school, and the interaction of the intervention variable with this aggregate as school-level predictors. However, fidelity of implementation data were not available for four schools; thus, the implementation and Implementation × Intervention terms were tested in the subsamples of schools for which the data were available (32 schools for the emotional risk dependent variable and 16 schools for the peer group norms and social prominence dependent variables). Results not reported here, but available from the authors, indicated that implementation of the program did not independently or interactively differentiate any aspects of the peer culture. For all analyses, Level 1 predictor variables were group-mean centered, to account for the relative standing of the individual or peer group within the distribution of scores within the school. For models estimated for student-level data (perceived emotional risk and social prominence), student gender and minority status were included as control variables and tested in interaction with other variables within the model, as appropriate. The Level 2 variable (intervention) was uncentered. For the continuous indicators of peer culture (i.e., peer group norms and emotional risk), we calculated the size of the intervention effect in standard deviation units of the difference between intervention and control schools. For the nomination data (i.e., social prominence), we reported the size of the intervention effect in terms of differences in numbers of nominations received based on individuals' score on the school disposition or behavior.

Results

Implementation Fidelity

Differences in teachers' total score on the classroom observation fidelity instrument were tested by intervention versus control site. The results of the unconditional model, to partition the variance in classroom observation scores into between- versus within-school variance, indicated an intraclass correlation coefficient (ICC) of .25, signifying that 25.01% of the variance was between schools, variance component = 9.46, $\chi^2(31) = 63.33$, $p < .001$. The 15 blocking variables that corresponded to the schools for which there were fidelity data and the intervention dummy-coded variable were entered in the next model. The coefficient associated with the intervention variable was significant (coefficient = 2.82, SE = 1.29, $p = .04$). The size of the effect was .27 standard deviations in the observation score, reflecting a small effect. This finding signifies that instructional practices and classroom environments were significantly more aligned with the ideals of the SEALS model in intervention versus control schools.

Baseline Comparability of Students and Descriptive Statistics

Table 2 presents the baseline (i.e., preintervention) student scores by intervention and control schools. Results from HLM models (students nested in schools for student-level outcomes, peer groups nested in schools for peer group-level outcomes; full results available from the first author) indicated that prior to the start of the intervention delivery, there were no significant differences on these variables at the end of fifth grade between participants who completed sixth grade in an intervention versus control school.

Intervention Effects on Peer Group Injunctive Norms

The test of the first hypothesis, that the average level of peer group injunctive norms would be more supportive of effort and achievement in intervention versus control schools, involved a two-level model, with the 319 peer groups nested in 20 schools (10 pairs). The results of the unconditional model, to partition the

Table 2
Preintervention (Spring Fifth Grade) and Postintervention (Spring Sixth Grade) Scores for Key Variables for Intervention and Control Schools

	Preintervention		Postintervention	
Variable	Intervention *M* (*SD*)	Control *M* (*SD*)	Intervention *M* (*SD*)	Control *M* (*SD*)
Peer group variables				
Peer norms	3.97 (0.94)	3.89 (0.97)	3.75 (0.69)	3.57 (0.68)
Student variables				
Emotional risk[a]	2.58 (1.11)	2.61 (1.05)	2.61 (1.04)	2.61 (1.07)
School valuing	4.30 (0.69)	4.27 (0.68)	4.23 (0.76)	4.18 (0.77)
Homework completion	3.86 (1.15)	3.81 (1.23)	3.73 (1.14)	3.69 (1.19)
Academic competence	4.59 (1.81)	4.76 (1.83)	4.44 (1.57)	4.40 (1.56)
Social prominence	47.39 (77.44)	45.82 (73.40)	16.25 (32.56)	14.57 (27.68)

Note. Results of two-level hierarchical linear model analyses indicated no significant differences between intervention and control schools for these variables.
[a] Data for this variable were taken from the full sample. All other variables are taken from the subsample.

variance in peer group injunctive norms into between- versus within-school variance, indicated an ICC of .09, signifying that 9.15% of the variance was between schools, variance component = .04, $\chi^2(19) = 50.97$, $p < .001$. The nine school blocking variables and the intervention dummy-coded variable were entered as predictors in a single model. The coefficient associated with the intervention variable was significant (coefficient = .18, $SE = .07$, $p = .04$), signifying that peer group injunctive norms were more favorable at the end of the school year in intervention, compared to control schools (see Table 2). The size of the intervention effect was .26, signifying a small effect.

Intervention Effects on the Relationship between Academic Variables and Social Prominence

Hypothesis two proposed that in intervention schools, grade-level status systems would evidence a more favorable relationship between social prominence and student academic behaviors and dispositions compared to control schools. Social prominence is a composite score of the number of peer behavioral nominations (for cool, leader, popular) received and is defined in terms of the probability of assignment by n raters to the specified role. Thus, a log odds transformation of the outcome variable is used to improve estimation. A series of two-level (students in 20 schools) hierarchical generalized linear models for Poisson distributions was used to test this hypothesis. In contrast to HLM procedures, in which the Level 1 variance component is estimated, hierarchical generalized linear model (HGLM) procedures assign the Level 1 variance a value of $\pi^2/3$ (Snijders & Bosker, 1999). The Level 2 variance is estimated relative to the assigned Level 1 variance, which enables calculation of an ICC. The results of the unconditional model indicated an ICC of .13, signifying that 13.42% of the variance was between schools, variance component = .51, $\chi^2(19) = 1737.87$, $p < .001$.

Following inclusion of blocking variables, Model 1 included student-level minority status and gender as dummy-coded variables, and student-level scores for the school valuing, effort, and academic competence indicators. Gender and ethnic minority status interaction terms for each academic variable were initially included in the model but removed because they were not significant terms. Model 2 added the intervention variable as a main effect; the test of the hypothesis included intervention as a cross-level moderator of the relationship between student behaviors and dispositions, and social prominence, which included Intervention × School Valuing, Intervention × Effort, Intervention × Academic Competence, Intervention × Minority Status, and Intervention × Gender terms in the model. Intervention interaction terms with minority status and gender were not significant and were removed from the model. Correlations among the academic dispositions were significant (all $ps < .01$), in the low to moderate range (rs from .19 to .53), and in the expected direction.

Table 3 summarizes the coefficients estimated in the final HGLM model. The likelihood that students received peer nominations for social prominence increased with greater academic competence and greater academic effort, while the likelihood that students received peer nominations for social prominence diminished as their valuation of school increased. Minority students were more likely to be nominated than their White peers. Significant cross-level interaction terms signify that the relationships between academic behaviors and dispositions differed between

Table 3

Results of Final HGLM Analyses for SEALS Intervention Effects on the Relationships Between Student Academic Dispositions and Behaviors and Social Prominence

Variable	Coefficient	SE
Level 1: Student		
Intercept	−3.49***	0.23
Minority	0.18**	0.06
Female	−0.05	0.04
School (Sch) valuing	−0.21***	0.04
Homework completion	0.07*	0.03
Academic competence	0.21***	0.02
Level 2: Schools		
Intervention (Int)	0.02	0.13
Int × Sch Valuing	0.14**	0.06
Int × Homework	0.13**	0.05
Int × Academic Competence	−0.08*	0.04

Note. HGLM = hierarchical generalized linear model; SEALS = Supporting Early Adolescents' Learning and Social Success. School blocking variables are included in models but not presented here.
* $p < .05$.   ** $p < .01$.   *** $p < .001$.

intervention and control schools. Because a log-odds transformation of the outcome variable was used to improve estimation, interpretation of coefficients is not a direct translation of the coefficients as is the case for HLM procedures; it is necessary to undo the transformation in order to interpret the meaning of the coefficients. To facilitate interpretation, we calculated two predicted outcome scores to compare: one for a participant who is 1 SD above the grand mean of the predictor variable, and one for a participant who is 1 SD below the grand mean of the predictor variable. The predicted outcome score for a participant with a value 1 SD above was calculated by adding the coefficient to the value of 1 SD for that independent variable; the predicted outcome score for a participant with a value 1 SD below was calculated by subtracting 1 SD for that independent variable from the coefficient. These sums were converted to probabilities by undoing the log-odds transformation. To further aid interpretation, probabilities were transformed to yield a score for the number of nominations received per 1,000 raters. Figures 1, 2, and 3 illustrate the intervention effect.

As shown in Figure 1, and as predicted, in control schools, the grade-level peer culture conveyed a social cost to valuing school,
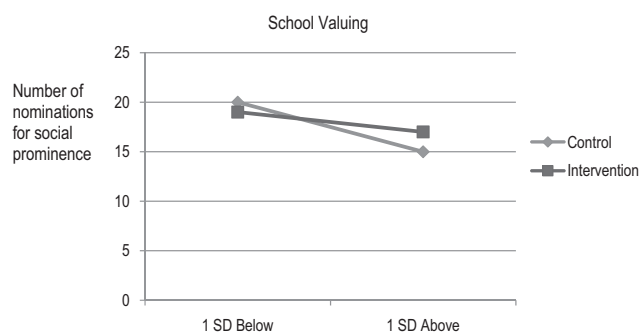

Figure 1. Relationship between school valuing and social prominence in intervention and control schools.

as students who place greater value on school receive fewer nominations associated with social prominence. In comparison, in intervention schools, valuing school still involved a social cost to social prominence, but the costs were significantly diminished. As shown in Figure 2, and as predicted, effort is rewarded by the grade-level social status system. Putting forth effort, in terms of homework completion, nets students greater social prominence in control schools, but these social benefits are enhanced significantly in intervention schools. These findings together suggest that naturally occurring social benefits to positive school orientations evident in control schools are significantly enhanced in intervention schools, while naturally occurring social costs to positive school orientations evident in control schools are minimized in intervention schools. However, counter to expectation, as shown in Figure 3, although there is no social cost of academic competence in the intervention schools, students rated as having greater academic competence yield fewer nominations in intervention than in control schools.

Intervention Effect on Perceived Emotional Riskiness of Participation

The test of the third hypothesis, that students' perceptions of the emotional riskiness of participation would be lower in intervention versus control schools, involved estimating a two-level model (students nested in 36 schools), with the 17 school blocking variables, the intervention dummy-coded variable, and student-level gender and ethnic minority status as predictors in a single model. The unconditional model estimated to partition the variance between versus within schools indicated that a very small (1.12%) but statistically significant ($p < .01$) proportion of the variance existed between schools. Results of the model testing for intervention effects indicated that intervention and control schools did not differ in students' perceptions of the emotional riskiness of participation (coefficient $= -.05$, $SE = .08$, $p = .55$). Ethnic minority students perceived their schools to be less emotionally risky than did their White peers (coefficient $= -.26$, $SE = .10$, $p = .01$). The intervention did not moderate the relationship between ethnicity and perceived emotional risk but did moderate the relationship between gender and perceived emotional risk (coefficient $= -.18$, $SE = .09$, $p = .04$), such that in intervention schools, boys
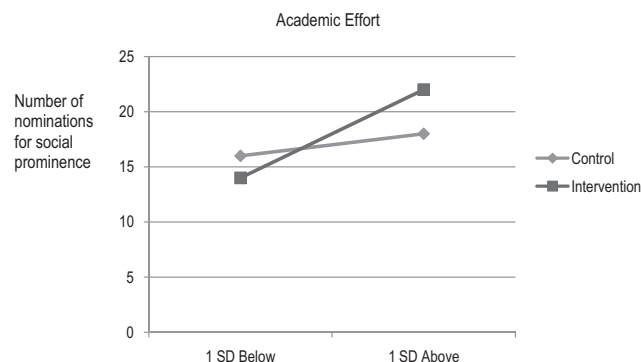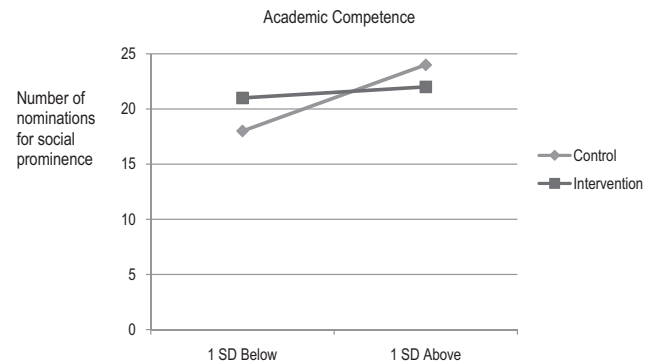

Figure 3. Relationship between academic competence and social prominence in intervention and control schools.

perceived less emotional risk than did girls. The intervention $\times$ Gender term yielded a .12 effect size, which is a very small effect.

Discussion

Peer cultures exist at multiple layers of the school peer ecology, developing where students spend sustained time together and have opportunity to form expectations, values, behaviors, and other collective socializing experiences (Corsaro & Eder, 1990). Our use of field experiments revealed novel insights into peer cultures: Peer cultures can be enhanced, to be more supportive of effort and achievement, when teachers take part in professional development intended to deepen their understanding of how to create classroom and school environments to support early adolescent social, behavioral, and academic adjustment. Specifically, aspects of both immediate peer cultures (peer groups) and intermediate peer cultures (grade-level social systems defining social prominence) can be enhanced.

Enhancing Peer Group Injunctive Norms

In support of our hypothesis, peer group injunctive norms for effort and achievement were more favorable in SEALS schools than in matched control schools. Peer group injunctive norms reflect more than simply the typical behaviors of the peer group; they are members' shared perceptions of what is acceptable and expected by their group (Cialdini, Kallgren, & Reno, 1991). Yet, despite their autonomous features, the findings indicate that peer group injunctive norms are susceptible to influence from teachers. Sources of improvements to injunctive norms are valuable to understand, as adolescents tend to underestimate their peer group's acceptability of adult-endorsed behaviors such as effort and achievement (Bissell-Havran & Loken, 2009) but can be more strongly influenced by injunctive norms than by their group's actual behavior (Hamm et al., 2011; Juvonen & Cadigan, 2002).

Enhancing the Value of Academic Behaviors and Dispositions to Social Prominence

In support of our hypothesis, academic dispositions and behaviors were more favorably associated with social prominence in SEALS schools compared to control schools. Specifically, the social value of effort to popularity was strengthened, and the social

Figure 2. Relationship between academic effort and social prominence in intervention and control schools.

cost of valuing school was attenuated, in peer cultures in SEALS schools. Researchers have tended to focus on achievement as the primary academic correlate of popularity. Thus, the findings from the current study identify additional academic correlates of popularity in general and demonstrate that the social value of these academic behaviors and dispositions can be promoted. Consistent with the literature (Fuller-Rowell & Doan, 2010; Jonkmann et al., 2009), sixth-grade peer cultures rewarded academic success with valued social status, but the strength of the relationship was more strongly positive in control schools compared to SEALS schools.

In SEALS schools, effort was more strongly associated with social prominence than in control schools. Although this intervention effect was predicted, the positive association between effort and social prominence observed in both SEALS and control schools was somewhat unexpected. Effort is not typically valued by early adolescents because of its potential to compromise interpretations about ability (Juvonen, 2006) and because it can imply that one is trying to outperform peers (B. B. Brown, 1993). The measure of effort utilized in this study was teachers' report of students' completion of homework; classmates may not be as aware of their peers' homework completion, which may minimize the extent to which it compromises status. More generally, the indicator of effort utilized in this study was limited methodologically as a single-item rating focused on homework completion. Future research efforts could build on this finding, by assessing a broader base of student effort, or classmates' perceptions of their peers' effort, to capture more fully the public nature of students' effort and its relation to social status.

In contrast to evidence that sixth-grade peer cultures reward academic effort and success with social prominence, findings from the current study revealed that strongly valuing school can compromise this status. This finding is consistent with the observation that although academic success may be acceptable to students, valuing school is not. For instance, B. B. Brown (1993) noted that students whose behaviors signify that school is a strong priority are often assigned derogatory status such as nerd or geek. Moreover, overt school valuation can be viewed with suspicion among adolescents, as it has the potential to convey too strong an orientation to adults and adult norms (Eckert, 1989).

Counter to prediction, the positive association between academic competence and social prominence was weaker in intervention versus control schools, although, importantly, there was not a social cost of academic competence in intervention schools. This difference between intervention and control schools may be attributable to the fixed nomination procedure, for which participants could nominate only three classmates into a particular role (i.e., popular, leader, or cool). The low to moderate correlations among school valuing, teacher-rated homework completion, and teacher-rated academic competence indicate that it is not the same students who exhibit these characteristics. If school valuing and effort are more strongly valued by the peer culture in intervention schools, students who exhibit these characteristics are more likely to garner the limited number of slots available, reducing the opportunity for academically successful students to be nominated. It is further noteworthy that the student academic characteristics that were more strongly associated with social prominence in the intervention schools reflect student choice. That is, students choose the extent to which they value school, and they choose the extent to which they complete their homework well. Although they certainly

make choices that affect how teachers perceive their academic competence, this may not reflect the same level of volition and positive disposition toward academic success as school valuing and homework completion.

The capacity for teachers to strengthen particular academic correlates of popularity is promising, given that aspects of effort and valuation of schooling are foundational to early adolescents' academic success (Wigfield et al., 2006). Students are motivated to engage in behaviors that are valued by the peer culture to enhance their own status; if the peer culture devalues these dispositions or behaviors, students may choose to minimize or avoid these behaviors because of their associated social costs (Jonkmann et al., 2009). Moreover, if students in positions of social influence invest more of themselves in schooling, there is the strong potential for their peers to follow suit, given that students with greater popularity have the attention of and influence over their peers (Parkhurst & Hopmeyer, 1998). If the sixth-grade peer culture values effort, and takes a less negative stance toward school valuing, over time, more students may invest themselves in school or be less inclined to devalue school.

These findings also suggest an alternative to interventions focused on individual students who struggle academically but derive social status from low achievement. Scholars (Schwartz et al., 2006; Troop-Gordon et al., 2011) have noted that students who derive popularity from school disengagement are likely to resist improving their own academic behaviors and dispositions if doing so has the potential to compromise their social status. If teachers can alter the peer group context so that effort and school valuing are associated with greater popularity, low achieving students may be more motivated to alter their own behavior. However, a peer group culture that more strongly values effort and achievement may have negative social implications for students with learning difficulties. As a universal intervention, the SEALS program is designed to help all students, including struggling learners, develop more favorable academic behaviors and dispositions; with its coordinated focus on academic, behavioral, and social adjustment, struggling learners are hypothesized to make academic gains (Farmer et al., in press). Still, targeted interventions may be necessary to help students with learning difficulties both academically and socially.

Students' perceptions of the emotional riskiness of participation did not differ between intervention and control schools, in general, but in SEALS schools, boys perceived less emotional risk of participation than did girls. When gender differences are present, girls tend to perceive greater peer emotional support than boys, although in a recent study, middle school boys and girls did not differ in the level of safety they felt with peers (Wentzel et al., 2010). The intervention effect observed for boys was quite small and may be of questionable practical significance. Moreover, although the between-school variance in students' perceptions was statistically significant, it was quite small in magnitude, suggesting that there was not a coherent perspective on the emotional riskiness within the grade-level. Although researchers have investigated constructs related to perceived emotional riskiness at the grade-level (i.e., Juvonen & Murdoch, 1995), in a recent study, Danielsen et al. (2010) found significant proportions of variance between classrooms for early adolescents. Grade-level may be too broad a context to consider for students' perspectives on the feedback they receive. It may be useful in future work to consider

emotional risk within classrooms or among coursemates (e.g., Crosnoe et al., 2008).

The Contributions of the SEALS Program to Peer Cultures of Effort and Achievement

The findings demonstrate that aspects of early adolescent peer cultures are amenable to change and provide evidence that implementing the SEALS professional development program with teachers can alter aspects of the peer context. Given that the aspects of peer culture investigated here are known to influence students' academic behaviors, dispositions, and achievement, our findings that the culture is receptive to teacher influence hold significant value. Results from our fidelity data analysis indicate that teachers in SEALS schools, compared to teachers in control schools, created classroom environments that were more promotive of early adolescent behavioral, academic, and social success. The analyses in the current study are not designed to investigate what, specifically, teachers do that result in more supportive peer cultures. The program is designed to act as a whole; it is not possible to determine which components are most strongly associated with enhanced peer cultures (Farmer et al., in press).

Peer cultures may be influenced by teachers through a number of mechanisms. Regarding the relationship between social prominence and academic effort, recent findings indicate that desirable social status, including popularity, is associated more favorably with academic success in peer cultures embedded in school contexts with greater achievement levels (Fuller-Rowell & Doan, 2010) or academic emphasis (Jonkmann et al., 2009). The intervention and control schools that participated in the current study had, by design, comparatively low levels of student achievement. It is possible that the change to this aspect of the peer culture following teachers' participation in the SEALS program reflects an overall gain in achievement for the grade level, making achievement and achievement-related behaviors more normative in the intervention schools compared to the control schools.

Corsaro and Eder (1990) maintained that peer cultures are an interpretation and reproduction of children's experiences in the larger social environment that is structured and governed by adults. Research findings indicate that students align their valuation of behaviors such as aggression with teachers' attitudes toward the behavior, and toward students who exemplify those behaviors, particularly when teachers create classroom settings characterized by warmth and egalitarian treatment of students, rather than by coercion (Chang, Liu, Wen, Fung, & Xu, 2004). As teachers learn to become more proactive and coordinated in addressing student classroom behavior, as in the case of SEALS schools, they may alter the affective contexts of their classroom, and more effectively convey the value of effort and schooling.

Different mechanisms may explain changes to peer group normative contexts. McFarland (2001) demonstrated how disruptive behaviors that were normative for some peer groups were fueled by teachers' unengaging instruction, poor classroom management strategies, and inattention to peer group dynamics. Disruptive and disengaged behavior dispersed across peer groups over the course of the school year to become normative for most peer groups. McFarland's findings (see also, Hand, 2010) suggest that in typical classrooms, peer group norms related to academic engagement naturally deteriorate across the school year if teachers do not coordinate their instructional and classroom management strategies with an understanding of student social dynamics. These findings suggest that intervention and control schools may have differed because teachers in SEALS schools, armed with better instructional and classroom management techniques and an understanding of peer groups, thwarted this naturally occurring process.

Other studies of SEALS program effects suggest that improvements to teacher capacity may contribute to the effects observed in the current study. Following participation in SEALS, teachers were more knowledgeable about the peer group affiliations of their students, and they managed the social dynamics of the classroom more effectively than did teachers in control schools (Farmer et al., 2011; Hamm et al., 2011). This greater understanding of student social dynamics may help teachers to recognize, monitor, and intervene in peer interactions that undermine a positive learning environment and may enable teachers to draw successfully on peer dynamics in their instructional and classroom management practices. However, this added capacity is likely one of many changes to teachers' practices that contribute to peer cultures more supportive of effort and achievement.

There are numerous strengths associated with the current study. Randomized controlled trials are a gold standard in intervention research; the matched pair design enables greater confidence that differences between intervention and control schools can be attributed to the intervention (Hsieh et al., 2005). Confidence in the effectiveness of the SEALS program is supported by our finding that at fifth grade, prior to intervention implementation, peer cultures and student characteristics did not differ significantly for students who subsequently experienced a SEALS versus control school sixth-grade classroom.

The sample, though focused on rural schools, was drawn from diverse regions of the United States to represent schooling conditions and experiences in American low-resource, rural communities. This strength limits the generalizabilty of the findings to nonrural schools, as peer cultures in metropolitan or urban schools may differ from those that develop in rural schools, or may be differently influenced by teachers. For instance, rural schools can be characterized by their supportive teacher–student relations (e.g., Burney & Cross, 2006), which may facilitate teachers' influence over the peer culture following professional development. Rural, compared to metropolitan schools, may have smaller numbers of sixth graders enrolled; which could affect the peer cultures that form and their vulnerability to teacher influence. Finally, teachers' implementation of professional development may differ across geographic locales. The small size and limited turnover of personnel more characteristic of rural than urban schools may result in different depth and breadth of implementation across locales. These are issues to be addressed in future tests of the SEALS model in schools in nonrural locales.

An additional limitation was that we could not test for differences of the efficacy of SEALS for students from different ethnic groups. Although results of our other studies indicate that for some outcomes, the SEALS program is particularly effective for ethnic minority students' schooling adjustment (Hamm et al., 2010), the nature of sampling for the study as a whole does not permit such comparisons. Conflicting findings persist regarding the extent to which ethnic minority students suffer greater social cost for achievement (i.e., Fuller-Rowell & Doan, 2010); the aim of this study is not to provide evidence to either position of the debate.

The findings here inform the debate in a different way: For students from ethnic minority and majority groups alike, aspects of the peer context of effort and achievement are amenable to change and can be enhanced through teacher professional development.

The study does not constitute an exhaustive look at peer cultures of effort and achievement in schools. Scholars have identified numerous influential peer cultures, including, for adolescents, coursemates and schoolmates (Crosnoe et al., 2008), with dimensions beyond norms, status hierarchy, and perceptions of peer responses, that influence students' academic adjustment and that may be receptive to teacher influence. However, the study offers a unique perspective in its focus on peer cultures, rather than individual students, as developmental outcomes receptive to teacher influence.

In closing, students' peer contexts constitute a significant influence over their academic adjustment during early adolescence. Without careful coordination of instructional and classroom management efforts, the peer context has the potential to undermine students' academic success. The current study represents an important step toward identifying dimensions of the sixth-grade peer culture that are amenable to change, and by documenting that a benefit of the SEALS program is its potential to help teachers create learning environments that support more productive peer cultures of effort and achievement.

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