Abstract Title Page

Title: Enhancing the effects of teacher attunement to student peer group affiliations on the school social-affective context: Promotive effects of the SEALS intervention

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Background / Context:

Keeping students engaged in the schooling process is a challenge for educating students of any age, but perhaps especially for teachers of early adolescents. During this time period, students' sense of belonging and their valuing of school deteriorate (e.g., Anderman, 2003; Roeser, Eccles, & Sameroff, 2000; Wang & Holcombe, 2010). Moreover, students are increasingly likely to perceive an unsupportive schooling environment for effort and achievement, in terms of perceived peer norms for effort and achievement and emotional risk for participation (Hamm, Schmid, Farmer, & Locke, in press; Hamm & Faircloth, 2005; Juvonen & Murdock, 1993). A supportive social-affective context is foundational to academic engagement and achievement, as well as social and emotional well-being, both in the short- and long-term (e.g., Hamm et al, in press; Roeser et al., 2000; Wang & Holcombe, 2010).

Early adolescence is also a period in which social aggression intensifies as students jockey for social power and membership in the school social system (Pellegrini & Bartini, 2000; Swearer & Cary, 2003). Schools have a bullying culture, which involves not only the actions of bullies and their direct victims, but the inactions of student bystanders, who do not intervene or who can even encourage additional bullying (O'Connell, Pepler, & Craig, 1999; Salmivalli, Lagerspetz, Bjorkqvist, Osterman, & Kaukiainen, 1996). Experiencing a school environment that encourages social aggression undermines positive student adjustment (Baker, 1998).

A challenge for teachers of early adolescents, then, is to support the positive adjustment not only of individual students but of the social-affective context. In a previous study of SEALS intervention effects, we found that the students of teachers trained by the SEALS model perceived a more supportive social-affective school environment at the end of sixth grade (Hamm et al., 2010). Research and theory regarding teacher involvement and classroom management (e.g., Rodkin & Hodges, 2003; Skinner & Belmont, 1993) highlight teacher attunement to, or knowledge and understanding of, students' peer group affiliations as a condition vital to creating a supportive learning environment. When teachers have an understanding of students' social status and relationships within the classroom, they are in a better position to direct classroom procedures, make instructional decisions that account for student social dynamics, and support positive relationships among students (Cohen & Lotan, 1995; McFarland, 2001).

Within its multicomponential approach, the SEALS intervention program (described below) incorporates attention to the classroom and school social context, including understanding the nature of student peer group affiliations. Following participation in the SEALS program, greater attunement to students' peer group affiliations is proposed to be a teacher capacity that is enhanced (see Figure 1). Moreover, when coupled with the SEALS training regarding how to promote a supportive social, academic, and behavioral learning environment, we predict that the benefits of teacher attunement to students' experience of the school social environment will be enhanced. That is, the most positive school social-affective contexts will reflect not only teachers' greater understanding of students' peer group affiliations, but their training regarding how to apply that information to promote a supportive learning environment.

Purpose / Objective / Research Question / Focus of Study:

The purpose of this study was to examine teachers' attunement to student peer group affiliations as a factor in students' experiences of the school social-affect context. First, we hypothesize that teacher attunement will be greater in intervention versus control schools

following initial SEALS training. Second, we predict that experiencing the SEALS program will enhance the effects of teacher attunement to peer group affiliations. That is, we predict that there will be a moderating effect of teacher attunement on an intervention effect. Multiple indicators of students' experiences of the social-affective context are tested in relation to the interactive effects of intervention and teacher attunement: sense of belonging, valuing of school, perceived norms for effort and achievement, perceived emotional risk of participation, and perceptions of the school bullying context.

Setting:
 Project REAL took place in public schools serving sixth graders; schools were configured as either middle (grades 6-8) or k8/k12 schools. Schools were located in the Appalachian, Deep South, Southwest, Pacific Northwest, Far West, Southeast, Northern Plains, and Midwest regions of the United States. Participating schools were located in low-wealth communities designated as rural by the National Center for Education Statistics (NCES).

Population / Participants / Subjects:
 The current study included 22 Project REAL schools (11 matched pairs); 55% were middle schools. Data from NCES are the source of school demographic data. On average, the percentage of students eligible for free/reduced lunch was 61.12% (SD = 24.73). Schools ranged from 0% to 98% minority (*M* = 37.08%, *SD* = 37.72). On average 60% of students were at or above grade level for reading and math standardized test scores. Consent rate averaged 67.5% (*SD*= 9.43). School size ranged from 72-622 students. A total of 1620 students participated; 861 were female.
 Teachers in intervention schools took part in the intervention components described below. Teachers in both intervention and control schools participated as research participants. All were sixth grade teachers; 77% were female and the average level of education was a bachelors' degree and some graduate-level work. Student participants were the sixth grade students of these teachers in the intervention and control schools. 53% were female and 34.9% were classified as ethnic minority (African American, Latino, or Native American ethnicity).

Intervention / Program / Practice:
 The SEALS intervention is a professional development program that trains 6th grade teachers in the use of three complementary intervention components designed to foster supportive school contexts in early adolescence.
 Academic Engagement Enhancement (AEE). The focus of this component is on research-based strategies for structuring and organizing the learning environment to maintain the attention and involvement of all students' difficulties (Gut, Farmer, Bishop, Hives, Aaron, & Jackson, 2004; Sutherland & Farmer, 2007).
 Competence Enhancement Behavior Management (CEBM). From the *CEBM* component (Farmer, Goforth, Hives, Aaron, Jackson, & Sgammato, 2006; Sutherland & Farmer, 2007), teachers learn to teach and reinforce appropriate classroom behavior while providing constructive consequences to reduce problem behavior. The *CEBM* model was developed from evidenced-based practices for promoting positive classroom behavior (e.g., Johns & Carr, 1995; Lewis, Sugai, & Colvin, 1998; Nelson, 1996; White, Algozzine, Audette, Marr, & Ellis, 2001).
 Social Dynamics Management (SDM). *SDM* is an inservice training and directed-consultation model to enhance teachers' awareness of classroom social dynamics and the

corresponding impact of such dynamics on students' academic engagement and classroom behavior (Farmer, 2000; Farmer & Xie, 2007; Farmer, Xie, Cairns, & Hutchins, 2007). Teachers learn to identify students' peer groups and social roles (e.g., leaders, followers, isolates) in the peer system, as well as how to recognize and prevent bullying and social aggression.

Each component is designed to complement the others, resulting in a collective impact on what teachers do in the classroom (e.g., teacher attunement); how teacher functioning influences student functioning and creates a peer and classroom context that supports and reinforces positive student functioning; and how, in turn, teacher functioning, school and peer context conditions, and student functioning contribute to students' academic outcomes (see Figure 1).

Training. The goal is to teach teachers specific strategies, and to provide them with a framework for using them in a systematic manner to promote a supportive and engaging school context. SEALS is multicomponential and designed to move teachers' understanding and skill-set from more general to more advanced levels. Training involves 1) a site visit by intervention staff that includes directed observations and consultation with 6th grade teams of teachers and school personnel in the spring semester prior to the intervention year; 2) a 1 ½ day summer institute immediately prior to the beginning of school, that provided teachers with an introduction to the three intervention components and involved direct instruction, group discussion, and hands-on activities, were used to present and discuss the content; 3) teachers' completion of 8 self-guided web-based instructional modules between September and March; and 8 directed consultation sessions corresponding to on-line modules, and accomplished through videoconferencing between intervention staff and the 6th grade teacher team at the school. On-line mechanisms are used to respond to issues that arise from geographic isolation in rural school districts.

Research Design:

Project REAL followed a cluster randomized control (CRCT) trials design, in which matched pairs of schools were identified and recruited for participation, and one of each pair was randomly assigned to the intervention or control condition. Paired schools were matched on multiple demographic variables (school size, student achievement, percentage minority, student poverty). Intervention schools received a professional development program for all sixth grade teachers (available to control schools following the end of Project REAL). The study followed a longitudinal design; baseline data were collected pre-intervention (spring of 5th grade), and during and post-intervention (fall and spring of sixth grade). Data sources included teacher and student survey completion, classroom observation, and school records.

Fidelity of intervention training was documented through logs of teacher participation. Project REAL teachers completed an average of 27.55 (*SD* =3.76) hours of professional development. Fidelity of teacher implementation was determined by classroom observation of intervention and control school teachers by trained observers blind to condition. The instrument used was aligned with the intervention components and had acceptable psychometric properties including a scale reliability of .831-.929 (Cronbach's alpha, range for subscales) and .92 (overall scale), and interrater reliability of .881 (Kappa). Multilevel analyses for CRCT indicated that the instructional practices and classroom environments were significantly more aligned with the ideals of the intervention in intervention versus control schools (Hamm, Farmer, Dadisman, Murray, & Lambert, under review).

Data Collection and Analysis:

Data were collected by project staff with consented participants, following procedures used by the PIs for decades. For the current study, student and teacher surveys, and social cognitive mapping data are included. Teachers' attunement to peer group affiliations at the fall of 6th grade, and student perceptions of social-affective context at the end of the 6th grade are the specific data points included in the current study.

School-level variables included dummy codes for each matched pair of schools (1= intervention) and intervention condition (1=intervention). Teacher attunement to peer group affiliations is measured at the peer group level; that is, each peer group has a score that reflects the average accuracy of the teachers in the school at identifying the membership of the peer group identified by students. Dependent variables and student demographics are measured at the student level.

Teacher attunement to peer group affiliations. Social-cognitive mapping (SCM) procedures were used with both teachers and students to identify the student peer groups present in each grade (Cairns, Gariepy, Kindermann, & Leung, 1996). The membership of student-generated peer groups was used as the standard against which the membership of teacher-generated student peer groups was compared. Teachers' attunement to student peer group affiliations reflected the extent to which, for a given peer group, teachers accurately identified the membership identified by students, as calculated by an established index (see Farmer et al., 2010; Hamm et al., in press; Pearl, Leung, VanAcker, Farmer, & Rodkin, 2007).

Emotional risk of participation. A 6-item scale measured perceptions of the emotional risk associated with academic participation (Hamm & Faircloth, 2005). Given the prompt, "If I give a wrong answer to a question in my classes, the following happens:" students rate items such as "…other students will think I'm not smart" on a 6-point scale (strongly disagree to strongly agree). Cronbach's alpha ranged from was .73 to .79 for students of different groups (e.g., ethnic minority, gender).

School belonging. The Psychological Sense of School Membership-Brief is an 11-item measure that assesses students' sense of school membership and belonging (Hagborg, 1994, 1998). Students rate their agreement with statements on a 5-point response scale ranging (completely false to completely true) to items such as, "I feel a real part of my school", "Most teachers at my school are interested in me.", and "Other students like the way I am.". Cronbach's alpha ranged from ranged from .78 to .86 across diverse groups of students.

Peer norms for effort and achievement. Adolescents' perceptions of the acceptability of and expectations for academic effort and achievement by their peer group were measured by an 11-item scale (Hamm, Schmid, et al., in press). 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 ranged from .79-.83 across diverse student groups.

School bullying context. Three scales measure student perceptions of 1) peer protection, or the inclination of classmates to protect one another from bullying, 2) peer protector, or the inclination of the rater to stand up for peers being bullied, and 3) bullying encouragement, or the likelihood that classmates would encourage continued bullying. Students rate, on a 5-point scale (never to always) between 5-8 items per scale, such as "I would stick up for them" (protector), "My peers would tell others to stop the bullying" (protection), and "My peers would laugh" (encouragement) in response to the prompt, "If someone in my school is being bullied…." Cronbach's alphas for all scales and across student gender and ethnicity ranged from .87 to .94.

Student minority status (recoded from race/ethnicity, 1 = African American, Latino, or Native American students, 0 = White students) and gender (1= female) were obtained from school records.

Findings / Results:

Hypotheses were tested using hierarchical linear modeling (HLM) procedures for CRCT designs (see Brown, Jones, LaRusso, & Aber, 2010), with 10 dummy-coded blocking variables corresponding to each matched pair included at the school-level. The worst matched pair served as the referent. The test of hypothesis one, that teacher attunement would be greater in intervention versus control schools at the beginning of the school year, involved a 2-level model (peer groups nested in schools), with the school blocking variables and the intervention dummy coded variable entered as predictors in a single model. Teacher accuracy in identifying student peer group affiliations averaged .43 in intervention schools and .39 in control schools, but the results of the HLM analysis indicated that this difference was not statistically significant (p =.51).

A series of 3-level models (students in peer groups in schools) were used to test hypothesis two, for a cross-level interactive effect of the SEALS intervention with teacher attunement on students' perceptions of the school social-affective context. Following inclusion of blocking variables, Model 1 included student-level minority status and gender as dummy-coded variables, teacher attunement at the peer group level, and school-level intervention status. Model 2 added the cross-level interaction term for intervention condition X teacher attunement. Greater teacher attunement at the beginning of the school year was associated with students' perceptions of less emotional risk at the end of the school year, and with less encouragement of bullying at the end of the school year. As evidenced by a significant intervention condition X teacher attunement interaction, the benefits of teacher attunement were enhanced in intervention schools for both student perceptions of emotional risk of participation (significant trend) and peer encouragement of bullying. Moreover, a significant intervention condition X teacher attunement effect for school valuing indicated a similar promotive effect of the intervention condition for teacher attunement to this outcome. No significant effects were observed for student sense of belonging, perceptions of peer norms for effort and achievement, or the other bullying context variables.

Additional models will be estimated that test for differential effects of intervention and teacher attunement, independently and interactively, by school configuration (middle school vs. k8/k12) and for students of different ethnicities and gender.

Conclusions:

These findings help to clarify a condition under which the SEALS intervention has particularly promotive benefits: when teachers start with an understanding of student peer group affiliations. With this greater understanding, teachers are better able to provide a safe and supportive learning environment for students. It was unexpected that teacher attunement did not differ by intervention condition, but it may be the case that in these rural schools, many of which are small and in small communities, teachers naturally possess greater attunement. However, the findings suggest that participation in the SEALS program enhances the benefits of teacher attunement, possibly because teachers learn strategies for how to act on that understanding. Explanations for this relationship, and its implications both for student adjustment and teacher preparation will be discussed in the presentation.

Appendices

Appendix A. References

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Appendix B. Tables and Figures

Figure 1: Intervention Model

SEALS Intervention Model

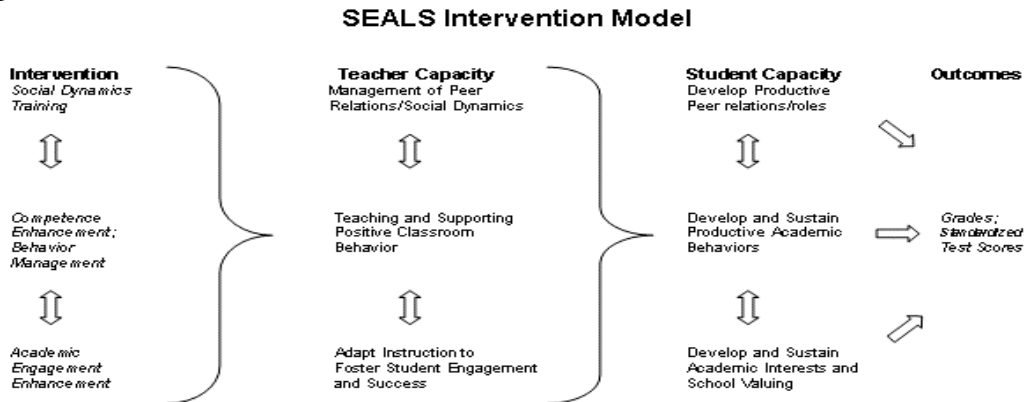| Intervention	Teacher Capacity	Student Capacity	Outcomes
Social Dynamics Training	Management of Peer Relations/Social Dynamics	Develop Productive Peer relations/roles	
Competence Enhancement; Behavior Management	Teaching and Supporting Positive Classroom Behavior	Develop and Sustain Productive Academic Behaviors	Grades; Standardized Test Scores
Academic Engagement Enhancement	Adapt Instruction to Foster Student Engagement and Success	Develop and Sustain Academic Interests and School Valuing	

Table 1

Results of Final HLM Model for Effects of SEALS Intervention on Students' Experience of School Social-Affective Context

	Emotional Risk of Participation		Encouragement of Bullying		School Valuing	
	B	SE	B	SE	B	SE
Intercept	2.61***	.04	1.67	.04	4.19***	.03
Minority	-.23***	.09	.29***	.07	.23***	.07
Male	.07	.07	.29***	.06	-.25***	.04
T Attunement	-.23*	.11	-.25**	.10	.05	.03
Intervention	-.08	.07	.01	.06	.07	.05
Teacher Attunement X Intervention	-.36+	.11	-.47*	.20	.39*	.14

Note: Blocking variables are not included.
+p = .08; *$p \leq .05, p \leq .01, p \leq .001$.