Identifying Adaptive Classrooms: Analyses of Measures of Dimensions of the Classroom Social Environment

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Abstract

This paper addresses measures of the classroom social environment, or students' perceptions about how they are encouraged to interact with and relate to others. The classroom social environment is an important educational context that is related to a wide range of adaptive student learning-related beliefs and behaviors. We focus on four separate dimensions of the classroom social environment: (1) teacher support, (2) promoting mutual respect, (3) promoting student task-related interaction, and (4) promoting performance goals. We present evidence from three separate samples (two of them longitudinal) showing that measures of these four dimensions are psychometrically sound when used with students from fifth through eighth grades. Specifically, we show that the scales are consistently internally reliable, and we present a range of evidence indicating construct validity.

Psychometric Analyses of Measures of Dimensions of the Classroom Social Environment

Positive educational environments are necessary to facilitate optimally adaptive student outcomes, including learning, motivation, school adjustment, and achievement (Eccles, Wigfield, & Schiefele, 1998). Researchers (e.g., Goodenow, 1992; Juvonen & Weiner, 1993) have been noting for some while that school success does not only involve academics -- schools and classrooms are inherently social places, and students go about their work in the presence of many peers. To understand students' success at school, therefore, we must attend to their relationships with others at school and ways that the environment promotes different types of social interactions and relationships.

The classroom social environment is comprised of students' perceptions about how they are encouraged to interact with and relate to others (e.g., classmates, the teacher), and encompasses dimensions of: (1) teacher support, (2) promoting mutual respect, (3) promoting student task-related interaction, and (4) promoting performance goals. Recent research has indicated that these various dimensions of the classroom social environment are separate, can be measured quickly and reliably, and relate significantly to students' motivation, self-regulated learning, classroom behavior (both positive and negative), social relationships, and achievement (Ryan & Patrick, 2001).

The emphasis on the importance of the classroom social environment, including support, mutual respect, task-related interaction among students, and a lesser focus on competition among students, is apparent in reform recommendations. For example, the National Science Education Standards include explicit reference to teachers creating a social and intellectual environment with support, respect, and collaboration as central

features (National Research Council, 1996). The National Council of Teachers of Mathematics (2000) also explicitly address these social norms when they outline what teachers should strive to create in their class. For example, they advocate that students be "encouraged to share their ideas and to seek clarification until they understand. . . . To achieve this kind of classroom, teachers need to establish an atmosphere of mutual trust and respect. . . . When teachers build such an environment, students understand that it is acceptable to struggle with ideas, to make mistakes, and to be unsure. This attitude encourages them to participate actively in trying to understand what they are asked to learn because they know that they will not be criticized personally, even if their mathematical thinking is critiqued" (p. 271).

Although the social environment of the classroom is likely to be important to motivation and engagement for students of all ages, it may be particularly important for adolescent students. Adolescence has been identified as a particularly precarious stage regarding changes in achievement beliefs and behaviors (Carnegie Council on Adolescent Development, 1989; 1995; Eccles & Midgley, 1989; Eccles et al., 1993). Certainly, for some adolescent students, the increases in self-reflection, autonomy, and identity exploration lead to new academic interests, increased self-regulated learning, and a commitment to education (Goodenow, 1993). However, for many children early adolescence marks the beginning of a downward trend in academics. More so than at other ages young adolescents doubt their abilities to succeed at their schoolwork, question the value of doing their schoolwork, and decrease their effort towards academics (Anderman & Maehr, 1994; Carnegie Council on Adolescent Development, 1989; 1995; Eccles & Midgley, 1989; Eccles et al., 1993).

Research using a stage-environment fit framework indicates that optimal development for adolescents will occur in an educational context that is appropriately matched to their developmental needs (see Eccles et al., 1993 for a review). Nonparental adults are especially important as role models and sources of support during adolescence (Midgley, Feldlaufer, & Eccles, 1989). Adolescence is typically a time of increased self-consciousness and sensitivity (Elkind, 1967; Harter, 1990). Therefore the promotion of mutual respect within the classroom, with clear norms that involve not making fun of others, may be especially beneficial to adolescents' adaptive social, emotional, and cognitive functioning in the classroom. Adolescents' increased capacity for considering others' perspectives, generating options, being reflective, and evaluating alternatives (Keating, 1990) suggests that interaction in the classroom may be especially beneficial at this stage. Adolescents' increased self-consciousness and sensitivity regarding social comparison (Nicholls, 1990) suggests that promoting competition and ability comparisons may be especially detrimental for adolescents' motivation.

In this paper we first review four important dimensions of the classroom social environment (teacher support, promoting mutual respect, promoting student task-related interaction, promoting performance goals) and their associations with adaptive outcomes for young adolescent students. We then present survey measures for these social environment dimensions, and present evidence that these scales are psychometrically sound for use with adolescents (i.e., from 5th grade).

Dimensions of the Classroom Social Environment

Teacher support. Teacher support refers to students' beliefs that their teachers care about them, and value and establish personal relationships with them (e.g., Fraser &

Fisher, 1982; Goodenow, 1993; Trickett & Moos, 1973). Researchers have found positive associations between perceptions of teacher support and students' adaptive motivational beliefs and engagement behaviors. For example, when students view their teacher as supportive they report higher levels of interest, valuing, effort, and enjoyment in their schoolwork (Fraser & Fisher, 1982; Midgley et al., 1989; Trickett & Moos, 1974), a more positive academic self-concept (Felner, Aber, Primavera, & Cauce, 1985), and greater expectancies for success (Goodenow, 1993). Perceiving the teacher as supportive is also related positively to asking for help with school work when needed (Newman & Schwager, 1993), use of self-regulated learning strategies (Ryan & Patrick, 2001), and a desire to comply with classroom rules (Wentzel, 1994). Perceived teacher support is related negatively to absenteeism (Moos & Moos, 1978) and disruptiveness in the classroom (Ryan & Patrick, 2001).

Promoting mutual respect. A focus on mutual respect in the classroom involves a perception that the teacher expects all students to value one another and the contributions they make to classroom life, and will not allow students to make fun of others. Environments that are perceived as respectful are likely to be ones in which students can focus on understanding tasks, without having their attention diverted by concern about what others might think or say if they are incorrect or experience difficulty. Respectful environments are also most conducive to student problem-solving, cognitive risk-taking, and conceptual understanding (Cohen, 1994; De Lisi & Golbeck, 1999). Perceptions that the teacher promotes mutual respect in the classroom arguably contribute to students' feelings of psychological safety and comfort, including low anxiety and low threat regarding making mistakes. When students are anxious or worried about making

mistakes they are less likely to engage in their academic work in an effortful and strategic manner (Turner, Thorpe, & Meyer, 1998). Resource allocation theory suggests this may be due to negative affect increasing task-irrelevant thoughts which overloads working memory, thereby reducing the available cognitive capacity (Ellis & Ashbrook, 1987). Thus, a perception that the teacher promotes respect in the classroom is related positively to increased academic efficacy and more self-regulated learning relative to the previous year (Ryan & Patrick, 2001).

Promoting task-related interaction. Teachers vary in the extent to which they allow, or even encourage, students to interact with one-another during academic activities. This interaction may encompass students sharing ideas and approaches during whole-class lessons, working together in small-group activities, or informal help-seeking and help-giving during individual seatwork. Whatever the form, however, interaction among students is a critical component of student-centered instructional approaches. When students are encouraged to interact and exchange ideas with each other during academic tasks they have opportunities to ask or answer questions, make suggestions, give explanations, justify their reasoning, and participate in discussions. These interactions are related to student learning and achievement (e.g., Cohen, 1994; Webb & Palincsar, 1996), consistent with expectations from both Piagetian and Vygotskian theories of learning and development (De Lisi & Golbeck, 1999; O'Donnell & O'Kelly, 1994). Students' perceptions that they are given opportunities to participate actively during lessons and are encouraged to interact with classmates in the pursuit of understanding are likely to be associated also with their motivation. For example, interaction opportunities may foster students' feelings of confidence or efficacy, sustain

interest, and support a willingness to persevere with the task when experiencing difficulty or frustration. Students made these kinds of comments during interviews, when they were asked about working with peers during project-based science activities (Patrick & Middleton, 2002). Students should also feel efficacious about their ability to learn and complete activities successfully when interaction among students is promoted, because they have a greater array of resources on which to draw than if they were only working individually. Relatedly, students' perception that the teacher encourages them to be actively involved in lessons and participate in discussions is related to their liking and interest of school and specific subject areas (Fraser & Fisher, 1982; Trickett & Moos, 1974).

Promoting performance goals. The promotion of performance goals concerns an emphasis on competition and relative ability comparisons between students in the classroom. Research from a goal theory framework has examined this dimension of the classroom and found that when students perceive an emphasis on performance goals they are more likely to exhibit beliefs and behaviors that are less conducive to, and often detrimental to, learning and achievement (see Ames, 1992 for a review). The perception that the teacher promotes performance goals may be particularly harmful to adolescents' motivation, again because of adolescents' heightened self-consciousness and sensitivity (Harter, 1990). Support for this comes from studies that examined emphasis on classroom performance goals and student motivation. Both Ames and Archer (1988) and Urdan, Midgley, and Anderman (1998) found that a classroom focus on performance goals was correlated negatively with students' perceived academic competence. Some research (e.g., Midgley, Anderman, & Hicks, 1995) found middle school students'

perception that performance goals are emphasized at school to be related negatively to their academic efficacy, although Roeser, Midgley, and Urdan (1996) found no significant relation. Additionally, students' perceptions that performance goals are emphasized are associated negatively with social efficacy relating to the teacher (Ryan & Patrick, 2001).

When classrooms are perceived as highly competitive, emphasizing a hierarchy of ability and students' relative position within that hierarchy, they are likely to report engaging in behaviors that are detrimental to learning (see Urdan, Ryan, Anderman, & Gheen, 2002, for a review). For example, classrooms that are perceived as being performance-focused are likely to have the highest rates of students' avoiding engaging in tasks, including not seeking help when it is needed (Ryan, Gheen, & Midgley, 1998) and academic self-handicapping (Urdan et al., 1998). Cheating is more prevalent in environments that are seen as emphasizing performance goals (Anderman, Griesinger, & Westerfield, 1998), as is students' disruptive behavior (Kaplan, Gheen, & Midgley, 2002, Ryan & Patrick, 2001).

Previous research has examined the relation between performance goals and students' self-regulated learning. Some work has found that when students focus on performance goals they are less likely to self-regulate their learning, indicating that a focus on task performance relative to others, rather than on the task itself, decreases the use of deep cognitive processing strategies that lead to better understanding (Graham & Golan, 1991; Meece, Blumenfeld, & Hoyle, 1988; Nolen, 1988). However, other research has found no relation between classroom performance goals and self-regulated learning (Ames & Archer, 1988).

In the remainder of this paper we examine and report the psychometric properties of the four measures of the classroom social environment -- teacher support, promoting mutual respect, promoting student task-related interaction, and promoting performance goals.

Method

Samples

The measures presented in this paper have been used successfully in a number of different studies. We report on psychometric analyses from three of those samples. For all samples, students were in their classroom for the academic year. Students in elementary school had the same teacher for all or most of their subjects, whereas students in middle schools had a different teacher for each or most subject(s).

Sample 1. The first sample came from a longitudinal study of adaptive adolescent learning and motivation involving students in three school districts in Michigan. The study was funded by the W. T. Grant Foundation. The classroom social environment measures were administered in the Spring of 1997 to 587 seventh graders in middle school, and the following year when they were eighth graders. The survey was administered to 341 students in the fall of eighth grade and to 586 students in the spring of eighth grade. The seventh grade sample was 51% female, and 49% male; 52% of the students received free or reduced lunch. The student-reported racial or ethnic background was 53% African American, 36% European American, 8% Hispanic, 2% Asian, & 1% Native American or Mixed. Family socioeconomic status was similar for both African American and European American students.

Sample 2. The second sample came from a longitudinal study conducted with 637 fifth graders in elementary school, and in the second wave with 780 seventh grade students in middle school (including some who were not in the original sample). The study was funded by the Spencer Foundation. The first wave of data was collected in spring 2000 and the second was collected in spring 2002. Students came from three school districts in Illinois. The sample was 50% female, and 50% male, and almost all of the students were European American.

Sample 3. The third sample came from data collected from 1314 sixth grade students in elementary school, in school districts in Michigan, Ohio, and Indiana. The study was also funded by the Spencer Foundation. The sample was 52% female, and 48% male; 37% of the students received free or reduced lunch. The student-reported racial or ethnic background was 29% African American, 65% European American, 4% Hispanic, and 1% Asian.

Measures of Dimensions of the Classroom Social Environment

The recommended versions of the four scales contain 17 items; these are shown in the Appendix. In our studies all items were specific to math class; this is easily altered however and we have done so for the scales listed in the Appendix. For two of the scales we varied the number of items across samples. The scales presented in the Appendix reflect considerations of both internal consistency and efficiency (i.e., fewest numbers of items for acceptable internal consistency).

The scales were administered in surveys to groups of students (e.g., as classrooms) by two researchers. One person read the items out loud while the other

monitored the students and answered any questions. Students followed along and marked their response to each item on the provided survey.

Teacher support. The scale of teacher support includes four items that refer to student perceptions of receiving socio-emotional support from, and being understood by, the teacher. It was taken from the Teacher Personal Support subscale of the Classroom Life Measure (Johnson, Johnson, & Anderson, 1983). Responses to these items are measured on a 5-point Likert scale, ranging from 1 = "almost never" through 5 = "often."

Promoting task-related interaction. The measure of promoting task-related interaction includes four items about the extent to which students perceive their teacher as encouraging interaction among peers around academic tasks. It was developed by Ryan and Patrick (2001). Responses to this and the following two scales are measured on a 5-point Likert scale, ranging from 1 = "not at all true" through 5 = "very true."

For the second wave of data collection (i.e., 8th grade) with Sample 1 we added more items to this scale, resulting in an 8-item scale. We report the alphas for both the short and long versions of this scale.

Promoting mutual respect. The measure of promoting mutual respect includes four items about the extent to which students perceive their teacher as encouraging mutual respect among classmates. It was developed by Ryan and Patrick (2001).

Promoting performance goals. The measure of promoting performance goals was taken from the Patterns of Adaptive Learning Survey (PALS; Midgley et al., 1996). It refers to the extent to which students perceive their teacher as encouraging competition and comparison among students with respect to academic tasks.

We used scales with different numbers of items for different samples. We used a 7-item version for Sample 1 students in seventh and eighth grades, a 4-item version for Sample 2 students in fifth and seventh grades, and a 5-item version for Sample 3 students in sixth grade. We report the alphas for all versions of this scale.

Procedures

To investigate the psychometric properties of the four classroom social environment scales we examined the distribution of the data, the reliability of the scales, and the validity of the scales.

Data Quality. We first investigated the general data quality for all samples with respect to the four classroom social environment scales. We examined the distribution of the responses to confirm variation in responses. We anticipated that the distribution of responses to the measures of teacher support and promoting mutual would be negatively skewed (i.e., more responses with higher, rather than lower, scores), and those of promoting performance goals would be positively skewed (i.e., more responses with lower, rather than higher, scores).

Reliability. We used Cronbach's alpha to examine the internal consistency of each of the four scales for all samples. A higher level on the alpha indicates that the scale items are answered in a similar manner within a given administration (Borg & Gall, 1989). Internal consistency coefficients greater than .70 are considered to be adequate.

Validity. We used a number of approaches to investigate construct validity of the four classroom social environment scales. First, we conducted *exploratory factor analysis* with all scales and samples. Additionally, we conducted separate factor analyses for males and females, and for African American and European American students.

Second, we examined *auto-correlations* of the four scales over time with one longitudinal data set. Specifically, we compared students' perceptions of each dimension of the classroom from spring of seventh grade, fall of eighth grade, and spring of eighth grade. Because students were in different classrooms, presumably with different social environments, in seventh and eighth grades we expected that students' scores in seventh grade would be related only modestly to those for the same measures in eighth grade. However, we expected that students' perceptions of the classroom environment would be similar during the same school year, and therefore that the auto-correlations between measures in the fall and spring of eighth grade would be moderately strong.

Third, we examined *correlation coefficients* to ensure that the classroom social environment scales were associated with measures of student motivation and engagement in ways that were anticipated theoretically. Specifically, the measures of motivation involved student reports of their academic efficacy (PALS, Midgley et al., 1996), social efficacy interacting with the teacher (Patrick, Hicks, & Ryan, 1997), and social efficacy relating to peers (Patrick et al., 1997). The measures of engagement involved student reports of their self-regulated learning (adapted from the Motivated Strategies for Learning Questionnaire, Pintrich, Smith, Garcia, & McKeachie, 1993) and their disruptive behavior (Kaplan & Maehr, 1999).

In the fourth approach to investigating validity, we triangulated student responses for three of the four scales with *qualitative analysis* of teacher discourse and classroom observations.

Results

Data Quality

Distribution of Responses. We examined the distributions of student scores for the four measures of the classroom social environment. There was considerable variability for all measures across the three samples.

The skewness statistics for each of the classroom social environment measures are shown in Table 1. The scale of *promoting mutual respect* was negatively skewed, particularly for Samples 2 and 3. This indicates that students' perceptions of their teacher promoting respect in the classroom tend not to be normally distributed, but students tend to view their teacher's actions as more positive. The scale of *promoting performance goals* was positively skewed, particularly for Samples 1 and 2. That is, students tended to view their teacher as not promoting high levels of performance goals in the classroom.

Reliability/ Internal Consistency

The Cronbach's alphas, indicating internal consistency, for each of the four social environment scales are shown in Table 1. In general, all scales had acceptable internal consistency. Across the three samples the alphas for the measure of *teacher support* ranged from .76-.85. The alphas for the measure of *promoting mutual respect* ranged from .68-.81; the only alpha below .70 was with the youngest, fifth grade sample. The alphas for the measure of *promoting task-related interaction* ranged from .71-.85; again, the lowest alpha was with the youngest, fifth grade sample. We created an 8-item version of this scale which we used with Sample 1 eighth graders; this measure was considerably more internally consistent, with an alpha of .90, than the shorter versions. The internal consistency of the *promoting performance goals* scale was highest with Sample 1, when we used seven items (α = .82 & .86). A shorter version with four items, used with

Sample 2, produced alphas of .67 and .66. The five-item version, used with Sample 3, resulted in alphas of .72 and .82.

Demographic Patterns

We examined whether there were mean level differences by gender and race in responses to the classroom social environment scales. There were two waves of data collection for each of the three samples, resulting in six sets of data. We used two-way analyses of variance, which allowed us to check for possible gender by race interactions; there were no gender by race interactions.

The means and standard deviations for males and females across the three samples are shown in Table 2. The means and standard deviations for African American and European American students across two samples (Samples 1 & 3) are shown in Table 3. We focused on these two racial groups because most students were from one of those two groups.

Teacher support. We investigated whether there were significant differences in perceptions of teacher support by gender. For four of the data sets (Sample 1, 7th & 8th grades; Sample 2, 7th grade; Sample 3, 6th grade Fall) there were no significant differences, whereas in two of the data sets (Sample 2, 5th grade; Sample 3, 6th grade Spring) females reported greater teacher support on average than did males. This indicates that there were not consistent gender differences, but when there was a difference females tended to view their teacher as more supportive than did males. There were no significant differences in perceptions of teacher support by race.

Promoting mutual respect. For three of the data sets (Sample 1, 7th & 8th grades; Sample 2, 7th grade) there were no significant differences in perceptions of the teacher

promoting mutual respect, whereas in two of the data sets (Sample 2, 5th grade; Sample 3, 6th grade Fall) more females than males reported that the teacher promoted respect. This indicates that there were not consistent gender differences, but when there was a difference females tended to view their teacher as promoting more mutual respect in the classroom than males did. In one of the three data sets (Sample 1, 8th grade) African American students reported perceiving more of an emphasis on mutual respect than did European American students, however there were no significant differences for the other two data sets (Sample 1, 7th grade; Sample 3, 6th grade Fall). This indicates that there were not consistent differences by race.

Promoting task-related interaction. For three of the data sets (Sample 1, 7th grade; Sample 2, 5th & 7th grades) there were no significant differences in perceptions of the teacher promoting task-related interaction, whereas in two of the data sets (Sample 1, 8th grade; Sample 3, 6th grade Spring) more females than males reported that the teacher promoted task-related interaction. This indicates that there were not consistent gender differences, but when there was a difference females tended to view their teacher as promoting more task-related interaction than males did. In one of the three data sets (Sample 3, 6th grade Spring) African American students reported perceiving more of an emphasis on task-related interaction than did European American students, however the opposite result was found in the second data set (Sample 1, 8th grade). Finally, investigation of the third data set (Sample 1, 7th grade) found no significant difference between both groups. This indicates that there were not consistent differences by race.

Promoting performance goals. For four of the data sets (Sample 1, 7th & 8th grades; Sample 2, 5th grade; Sample 3, 6th grade Fall) males reported that the teacher

promoted performance goals significantly more than females did. However two of the data sets (Sample 2, 7th grade; Sample 3, 6th grade Spring) indicated no significant differences, although the trend was for the males' means to be higher than the females'. This indicates that there were not consistent gender differences, but when there was a difference males tended to view their teacher as promoting performance goals more than females did. Two waves of Sample 1 (5th & 7th grades) indicated no difference in students' perceptions of the teacher promoting performance goals for African American and European American students. However in two waves of Sample 3 (6th grade, Fall & Spring) African American students perceived their teacher as promoting performance goals significantly more than European American students did. The differences by race were not sufficiently consistent to indicate a clear difference between perceptions of African American and European American students.

Between-class Differences in Dimensions of the Classroom Social Environment

We expected that there would be individual differences in student perceptions of their environment, these perceptions would converge somewhat among students in the same classroom because there is a common experience. Using data from Sample 1 eighth graders we examined the degree of consensus among students with respect to the classroom social environment. We calculated the intra-class correlation (the ratio of the between class variance and the total variance) for each measure. These were estimated by running four unbalanced one-way random-effects analyses of variance, in which class was a random factor with varying numbers of students per class, and each of the four dimensions of the classroom social environment were the outcome variables. The one way ANOVAS indicated that the intra-class correlations for the student reports about

their classroom environment were 26%, 35%, 39%, and 27% for teacher support, promoting mutual respect, promoting task-related interaction, and promoting performance goals, respectively. Thus, whereas there are individual differences regarding student perceptions, there is some degree of concordance among students in a given classroom regarding these four measures.

Construct Validity

Factor analysis. We conducted exploratory factor analysis with all samples at all grade levels. All items loaded on the appropriate factor.

In Table 4 we present the items and factor loadings from the exploratory factor analysis conducted with data collected from the eighth graders in Sample 1. Principal Axis Factor analysis with oblimin rotation was conducted for the entire sample. The analysis yielded four factors with Eigenvalues greater than 1.0, which accounted for 56% of the variance. Loadings above .40 are shown. The four factors corresponded to the four hypothesized classroom social environment variables: teacher support, promoting task-related interaction, promoting mutual respect, and promoting performance goals. All factor loadings were above .44 on their primary factor. No items cross-loaded (> .40) on two factors.

Auto-correlations across grade levels. We examined the auto-correlations of the four classroom social environment measures with Sample 1. Correlations among the measures of students' perceptions of *teacher support* at the three time points are shown in Table 5. As expected, students' perceptions of teacher support in fall and spring of eighth grade were correlated moderately with each other (r = .57). Furthermore,

perceived teacher support in seventh grade was not strongly associated with teacher support in the fall (r = .21) or spring (r = .17) of eighth grade.

Correlations among the measures of students' perceptions of their teacher *promoting mutual respect* at the three time points are shown in Table 6. Perceptions of promoting mutual respect in fall and spring of eighth grade were correlated moderately with each other (r = .54). Furthermore, the perception of promoting mutual respect in seventh grade was not strongly related to this view of the teacher in the fall (r = .28) or spring (r = .24) of eighth grade.

Correlations among the measures of students' perceptions of their teacher *promoting task-related interaction* at the three time points are shown in Table 7. Perceptions of thr teacher promoting interaction in fall of seventh grade was not related strongly to the perception of their eighth grade teacher in the fall (r = .18). This scale was not administered to students in the spring of eighth grade.

Correlations among the measures of students' perceptions of their teacher *promoting performance goals* at the three time points are shown in Table 8. Perceptions of the teacher *promoting performance goals* in fall and spring of eighth grade were correlated moderately with each other (r = .53). Furthermore, perceptions of promoting performance goals in seventh grade was not strongly related to this view of the teacher in the fall (r = .33) or spring (r = .29 of eighth grade.

Correlations with other constructs. We examined the correlations of the four classroom social environment measures among each other, and with measures of student motivation and engagement. The correlations from one data set (Sample 1, 8th grade) are shown in Table 9. An expected pattern of correlations was found, thus giving further

evidence of construct validity. Teacher support, promoting task-related interaction, and promoting mutual respect were related positively to each other, and related negatively to promoting performance goals. The scales of teacher support, promoting task-related interaction, and promoting mutual respect were related positively to social efficacy with teachers and with peers, academic efficacy, and self-regulated learning, and related negatively to disruptive behavior. Promoting performance goals was related negatively to social efficacy with teachers and peers, academic efficacy, and self-regulated learning, and related positively to disruptive behavior.

Triangulation of scales with qualitative analysis of classrooms. Evidence of validity for the scales of teacher support, promoting mutual respect, and promoting performance goals comes from a recent mixed method study of classroom psychological environments with Sample 3 (Patrick, Turner, Meyer, & Midgley, in press). In this study we analyzed tape-recorded and transcribed teacher discourse and additional observer notes of teacher and student behavior from eight sixth grade classrooms. On the basis of qualitative analysis we identified three different types of classroom environments; those in which the teacher appeared to send consistently supportive messages about learning, respectful social relationships and management, those where the messages were consistently non-supportive, and those where the teacher messages were ambiguous. After having made distinctions among classrooms using the qualitative data, we compared our findings with students' responses to the measures of teacher support, promoting mutual respect, and promoting performance goals, collected later that fall and in the spring. There was strong convergence between the qualitative analysis and students' responses to the scales, as indicated by a MANOVA and shown in Table 10.

Tukey post-hoc significant difference tests indicated that students in classrooms that appeared to us to be most supportive and respectful rated their classrooms as having most support from the teacher, to be most respectful, and to be least focused on performance goals. Additionally, classrooms that appeared to us to be least supportive and respectful rated their classrooms as having least support from the teacher, to be least respectful, and to be most focused on performance goals.

Summary and Discussion

The results presented in this paper give strong evidence that the four scales of the dimensions of the classroom social environment are reliable and valid measures. Factor analyses with separate samples indicated repeatedly that the four dimensions are distinct constructs. The Cronbach's alphas for the scales indicated that the items consistently work well together as a construct, and are reliable for use with students from fifth through eighth grades. Factor and reliability analyses indicated that the measure works equally well for males and females, and for European American and African American students. The scales had considerable variability in their distributions, across multiple samples. Furthermore, our research has indicated construct validity through a number of methods. The auto-correlations of the same scales indicated consistency of students' perceptions at different times within the same classroom in the year. However the correlations among the same measures were much smaller across different classrooms, consistent with the different environments being perceived differently by students. Additionally, the expected correlations were found among the social environment measures and several indices of motivation and engagement in the classroom. Additional evidence for construct validity came from a mixed quantitative and qualitative study that found that

students' perceptions of their classroom social environment, measured by these scales, were congruent with observer analyses of the classroom environments. Therefore, based on the evidence presented in this paper, we believe that these four measures yield reliable, valid, and socially significant information about early adolescent students' classroom perceptions that are linked to a wide range of adaptive student beliefs and behaviors. We recommend that these scales be included in national data collections involving students from the middle grades.

An obvious and much-needed area for future research involves addressing the applicability of these classroom environment measures with younger school children. The classroom dimensions of teacher support, promoting mutual respect, promoting task-related interaction, and not promoting performance goals are arguably vital for students at all grade levels. This may involve researchers adapting these scales through, for example, simplifying vocabulary, having much fewer (e.g., 3) responses to choose from (e.g., Gottfried, 1990), or representing responses pictorially (e.g., Harter & Pike, 1984). Or it may involve researchers investigating the comparability of similar scales designed specifically for young children, such as the Young Children's Appraisals of Teacher Support Scale (Mantzicopoulos & Neuharth-Pritchett, 2003).

Studies that have used these classroom environment measures have supported theoretical arguments for their association with important learning-related outcomes (e.g., Ryan & Patrick, 2001). That is, students who perceive their teacher as promoting support, respect, and task-related interaction, and not making an ability hierarchy among students salient, tend to hold the most positive beliefs about learning and engage in more adaptive learning-related behaviors. There is a need, however, for future research to

investigate longer-term questions, including the longitudinal prediction of "downstream" outcomes (Connell, 2003). For example, in what ways do optimal classroom experiences in elementary and middle school contribute to students' long-term school success (e.g., regular attendance at high school, graduation, college enrollment) and to healthy adjustment in adolescence and early adulthood (e.g., showing responsibility, engaging in low-risk behaviors). In what ways do positive educational environments and perceptions of teachers' support contribute to students' resilience and compensate for difficulties in other areas of their lives? Are the effects of positive environments for healthy student adjustment cumulative, or is a resiliency effect established with just a small number of particularly supportive teachers or classes?

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Table 1

Internal Consistency Coefficients and Skewness Statistic for Classroom Social Environment Scales

	Teacher Support		Promoting Mutual Respect		Promoting Task-related Interaction		Promoting Performance Goals	
	α	Skew	α	Skew	α	Skew	α	Skew
Sample 1								
7th Grade	.76	-.10	.77	-.47	.79	-.05	.82	.50
8th Grade	.82	-.20	.81	-.39	.85/.90[a]	-.02/.04[a]	.86	.97
Sample 2								
5th Grade	.84	-1.07	.68	-1.43	.71	-.16	.67[b]	.97
7th Grade	.85	-.93	.75	-.89	.80	-.25	.66[b]	1.20
Sample 3								
6th Grade (Fall)	.77	-.66	.72	-1.46	-	-	.72[c]	.09
6th Grade (Spring)	.81	-.54	-	-	.76	-.16	.82[c]	.06

Note. Subscripts: a indicates 8-item version; b indicates 4-item version; c indicates 5-item version of scale.

Table 2

Means and Standard Deviations by Gender for Classroom Social Environment Scales

	Teacher Support				Promoting Mutual Respect				Promoting Task-related Interaction				Promoting Performance Goals			
	Females		Males		Females		Males		Females		Males		Females		Males	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Sample 1																
7th Grade	3.11	1.13	3.11	1.14	3.64	1.04	3.60	1.16	3.04	1.07	2.95	1.16	2.23**	.95	2.46**	.96
8th Grade	3.24	1.06	3.13	1.00	3.64	1.09	3.58	1.08	3.13*	1.10	2.88*	1.02	2.05*	.93	2.30*	.99
Sample 2																
5th Grade	3.99**	1.07	3.75**	.91	4.35*	.80	4.20*	.95	3.29	1.01	3.20	1.03	2.17***	.96	2.44***	1.02
7th Grade	3.65	1.00	3.68	.97	3.96	1.02	4.00	.90	3.24	1.01	3.23	1.00	1.83	.88	1.90	.88
Sample 3																
6th Grade (F)	3.86	.87	3.78	.96	4.39*	.74	4.31*	.83	-	-	-	-	2.82*	1.00	2.95*	1.00

6th Grade (S)	3.73*	.95	3.61*	1.04	-	-	-	-	3.35***	.93	3.10***	1.00	2.92	1.15	2.97	1.13

*$p < .05$ **$p < .01$ ***$p < .001$

Table 3

Means and Standard Deviations by Race for Classroom Social Environment Scales

	Teacher Support				Promoting Mutual Respect				Promoting Task-related Interaction				Promoting Performance Goals			
	African American		European American		African American		European American		African American		European American		African American		European American	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Sample 1																
7th Grade	3.17	1.09	3.08	1.14	3.63	1.08	3.58	1.07	3.00	1.09	2.92	1.11	2.39	.97	2.28	.94
8th Grade	3.23	1.07	3.14	1.01	3.85***	1.11	3.35***	1.02	2.83**	1.06	3.20**	1.08	2.10	1.01	2.17	.90
Sample 3																
6th Grade (F)	3.75	.93	3.85	.89	4.37	.78	4.36	.77	-	-	-	-	2.97*	1.06	2.82*	.97
6th Grade (S)	3.67	.99	3.68	1.00	-	-	-	-	3.36**	.96	3.17**	.97	3.05*	1.15	2.88*	1.12

*$p < .05$ **$p < .01$ ***$p < .001$

Table 4

Factor Loadings for Items Regarding Classroom Social Environment Scales

	Teacher Support	Promoting Mutual Respect	Promoting Task-related Interaction	Promoting Performance Goals
Does your math teacher respect your opinion?	.85			
Does your math teacher really understand how you feel about things?	.68			
Does your math teacher try to help you when you are sad or upset?	.52			
Can you count on your math teacher for help when you need it?	.44			
My math teacher…				
wants students in this class to respect each others' ideas.		.82		
does not allow students to make fun of other students' ideas in class.		.68		
does not let us make fun of someone who gives the wrong answer.		.67		
will not allow students to say anything negative about each other in class.		.66		
wants all students to feel respected.		.55		
My math teacher…				
allows us to discuss our work with classmates.			.88	
lets us ask other students when we need help in math.			.86	
encourages us to share ideas with one another in class.			.81	
encourages us to get to know all the other students in class.			.59	
encourages us to get to know our classmates names.			.55	

encourages us to be helpful to other students with their math work.	.46	
If you have a problem in math class you can just talk to someone about it.	.80	
People in my math class often work out problems together.	.53	
My math teacher…		
points out those students who get good grades as an example to all of us.		.77
tells us how we compare to other students.		.76
lets us know which students get the highest scores on a test.		.74
lets us know which students get the lowest scores on a test.		.68
points out those students who get poor grades as an example to all of us.		.62
makes it obvious when certain students are not doing well on their math work		.58
calls on smart students more than on other students.		.46

Note. Factor loadings < .40 not reported.

Table 5

Auto-correlations among Teacher Support Scale for Different Waves

	1.	2.
1. 7th Grade (Spring)	-	
2. 8th Grade (Fall)	.21**	-
3. 8th Grade (Spring)	.17**	.57**

*$p < .05$ **$p < .01$

Table 6

Auto-correlations among Promoting Mutual Respect Scale for Different Waves

	1.	2.
1. 7th Grade (Spring)	-	
2. 8th Grade (Fall)	.28**	-
3. 8th Grade (Spring)	.24**	.54**

*$p < .05$ **$p < .01$

Table 7

Auto-correlations among Promoting Task-related Interaction Scale for Different Waves

	1.	2.
1. 7th Grade (Spring)	-	
2. 8th Grade (Fall)	.18*	-
3. 8th Grade (Spring)	NA	NA

Note. This scale was not administered in the spring of 8th grade.

*$p < .05$ **$p < .01$

Table 8

Auto-correlations among Promoting Performance Goals Scale for Different Waves

	1.	2.
1. 7th Grade (Spring)	-	
2. 8th Grade (Fall)	.33**	-
3. 8th Grade (Spring)	.29**	.53**

*$p < .05$ **$p < .01$

Table 9

Correlations Among Classroom Social Environment Measures and Student Motivation and Engagement

	1.	2.	3.	4.	5.	6.	7.	8.
1. Teacher Support	-							
2. Promoting Task-related Interaction	.49	-						
3. Promoting Mutual Respect	.60	.40	-					
4. Promoting Performance Goals	-.41	-.14	-.39	-				
5. Social Efficacy: Teacher	.71	.47	.49	-.45	-			
6. Social Efficacy: Peers	.17	.15	.20	-.17	.30	-		
7. Academic Efficacy	.35	.14	.46	-.29	.47	.42	-	
8. Disruptive behavior	-.41	-.16	-.35	.45	-.35	.04	-.18	-
9. Self-regulated Learning	.44	.25	.50	-.22	.41	.20	.50	-.38

Note. Correlations above .13 are significant at the $p < .05$ level.

Table 10

Classroom Social Environment Descriptive Statistics for Different Qualitatively Identified Classroom Environments

	Classroom Environments Identified by Qualitative Analysis						
	Supportive (n = 69)		Ambiguous (n = 71)		Non-supportive (n = 36)		
	M	SD	M	SD	M	SD	F Statistic
Teacher Support							
Fall	4.32 $_{a}$	.72	3.22 $_{b}$	.87	3.51 $_{b}$	.99	30.75***
Spring	4.24 $_{a}$	.81	2.90 $_{b}$	1.05	3.27 $_{b}$	1.09	30.74***
Promoting Mutual Respect							
Fall	4.67 $_{a}$	.51	4.37 $_{a,b}$	.72	4.14 $_{b}$	.81	8.02***
Promoting Performance Goals							
Fall	2.80 $_{a}$	.96	2.98 $_{a}$	1.04	3.74 $_{b}$	.81	11.63***
Spring	2.85 $_{a}$	1.17	3.84 $_{b}$	1.02	3.73 $_{b}$	1.01	14.47***

Note. Means with different subscripts within rows differ significantly at $p < .05$.

*$p < .05$ **$p < .01$ ***$p < .001$

Appendix

Measures of the Classroom Social Environment

Teacher Support

Does your teacher really understand how you feel about things?
Does your teacher try to help you when you are sad or upset?
Does your teacher respect your opinion?
Can you count on your teacher for help when you need it?

Promoting Mutual Respect

My teacher wants us to respect each others' opinions.
My teacher does not allow students to make fun of other students' ideas in class.
My teacher makes sure that students don't say anything negative about each other in class.
My teacher does not let us make fun of someone who gives the wrong answer.

Promoting Task-related Interaction

My teacher often allows us to discuss our work with classmates.
My teacher encourages us to share ideas with one another in class.
My teacher lets us ask other students when we need help with our work.
My teacher encourages us to get to know all the other students in class.

Promoting Performance Goals

My teacher points out those students who get good grades as an example to all of us.
My teacher lets us know which students get the highest scores on a test.
My teacher tells us how we compare to other students.
My teacher makes it obvious when certain students are not doing well on their work.
My teacher lets us know if we do worse than most of the other students in class.