

Class Climate Moderates Peer Relations and Emotional Adjustment in Children With an Early History of Anxious Solitude : A Child × Environment Model*

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Abstract:

Research since the 1980s has indicated that anxious solitary (AS) children—children who are shy, socially anxious, and often play alone when among familiar playmates—are at risk for interpersonal and internalizing problems as a group (Gazelle et al., 2005; Hymel, Rubin, Rowden, & LeMare, 1990; Morison & Masten, 1991; Rubin, Chen, McDougall, Bowker, & McKinnon, 1995; Rubin & Mills, 1988). However, recent work has revealed substantial heterogeneity in the adjustment trajectories of AS individuals. Some AS children encounter peer rejection and mistreatment soon after school entry and throughout middle childhood, whereas others escape interpersonal adversity (Gazelle & Ladd, 2003). Furthermore, adversity in the early school years predicts heightened stability of AS and partially mediates the relation between AS and depressive symptoms (Gazelle & Ladd, 2003; see also Gazelle & Rudolph, 2004). Given the implications of early adversity for subsequent adjustment, research on risk and protection from early peer adversity among AS children is needed.

Article:

AS children are conceptualized as desiring contact with familiar peers but, paradoxically, keeping a distance from them out of fear of poor social performance and negative peer evaluations. Children are identified as AS when they regularly display shy, verbally inhibited, and solitary behavior among familiar peers (Coplan, 2000; Coplan & Rubin, 1998). Evidence confirms that these behaviors are manifestations of social anxiety and social evaluative concerns (i.e., worry about how one may be evaluated and treated by others; Coplan, Rubin, Fox, Calkins, & Stewart, 1994). This study uses the term anxious solitude because it is concrete and descriptive—referring to children who are anxious and play alone among familiar peers. These characteristics are often labeled anxious withdrawal, and we consider this a synonymous, if slightly less descriptive, term. Research on differential risk for peer adversity among AS children could improve in two respects. First, because AS and peer adversity often co-occur rapidly at school entry (Gazelle & Ladd, 2003), researchers need to assess children's AS tendencies prior to school entry to strengthen evidence for direction of effect. Second, examination of moderators of the relation between AS and peer adversity must include the immediate interpersonal environment in which peer adversity takes place: the classroom.

Temporal Precedence and Direction of Effect in the Relation Between Anxious Solitude and Peer Adversity

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Evidence suggests both that peer adversity increases or maintains children's AS behavior and the reverse—that AS behavior renders children vulnerable to peer adversity. In support of the effect of peer adversity on AS, evidence indicates that peer exclusion co-occurs with AS as early as kindergarten and that AS children who are excluded versus nonexcluded in the early school years demonstrate more subsequent stability in AS during middle childhood (Gazelle & Ladd, 2003). Furthermore, the ability of peer exclusion to predict subsequent stability and change in adjustment is not limited to early middle childhood. When peer exclusion is assessed in early adolescence, it forecasts change in behavioral and emotional adjustment among AS youths over time (Gazelle & Rudolph, 2004).

Support for the reverse direction of effect—the effect of AS on peer adversity—was provided by an experimental play group study in which fourth grade girls who were identified as AS at school subsequently interacted with a playgroup of 4 novel girls and another playgroup of 4 familiar female classmates in a laboratory setting for 1 hr on 5 consecutive days. Results indicated that AS girls, in comparison with other girls, were less well liked and more mistreated by novel (unfamiliar) playmates (Gazelle et al., 2005; see also Stewart & Rubin, 1995), supporting the notion that AS contributes to poor peer acceptance. Yet this experimental work also indicated that AS girls were nonetheless better treated by unfamiliar than by familiar peers and that this relative amelioration in treatment contributed to improvement in the girls' AS behavior over the course of five play sessions (Gazelle et al., 2005). Thus, AS children appear to be capable of demonstrating improvement in social behavior when they encounter less anxiety-provoking peer treatment. Taken together, evidence indicates bidirectional transactions between AS and peer adversity once they have come to co-occur. Yet examining transactions among AS and peer adversity once children have already experienced peer adversity (even with a different set of peers) is not the same as examining the initial onset of peer adversity in the early school years, because children may carry expectations and behavior based on previous experiences with them into new situations. Consequently, there is a need to examine the relation between AS tendencies that predate school entry and subsequent peer adversity in the early school years.

Because AS is defined by the nature of children's interactions with familiar peers, a “chicken or egg” puzzle arises. Is it possible to measure AS with familiar peers before the child has classmates? Although this presents as an unsolvable conundrum in a pure logical sense, there are opportunities for developmentally earlier assessment of AS. Because child-care provides many children with a regular set of peers prior to school entry, this may be the earliest common, naturally occurring context in which AS occurs. The present study includes early assessment of AS at child care to examine direction of effect in the AS–peer adversity relation.

Environmental Moderation of the Relation Between Anxious Solitude and Both Peer Adversity and Emotional Adjustment

When children with shared social behavioral characteristics differ in risk for interpersonal adversity, researchers often look for additional individual characteristics to explain differential risk. Indeed, at least one individual-level factor—child gender—has demonstrated some ability to moderate risk for peer adversity in AS children, with AS boys in comparison with girls at greater risk for peer adversity in the early school years (Gazelle & Ladd, 2003; although not in early adolescence Gazelle & Rudolph, 2004). This relation may occur because AS violates male gender norms emphasizing self-assurance (e.g., Caspi, Elder, & Bem, 1988). However, children of both genders are represented among AS children who encounter peer adversity and those who do not (Cillessen, Van Ijzendoorn, Van Lieshout, & Hartup, 1992; French, 1988, French, 1990; Gazelle & Ladd, 2003; Gazelle et al., 2005; Gazelle & Rudolph, 2004). Thus, a good deal of variance in risk for peer adversity among AS children is yet to be explained.

Although additional individual-level factors may play a role in differential risk for peer adversity among AS children, understanding interpersonal phenomena challenges investigators to look beyond the individual. Child × Environment models (Cairns, Elder, & Costello, 1996; Magnusson, 1988; Sameroff, 1993) posit that development results from the dynamic interaction of individual and context. Although knowledge exists about features of ephemeral situations that momentarily affect the functioning of shy individuals (e.g., novel and evaluative situations; Cheek & Busch, 1981; Crozier, 2001), little is known about features of enduring

environments that moderate adjustment in AS individuals over time. In modern developmental science, the child is conceptualized in the context of a series of embedded environments that range from proximal to distal, including family, school, neighborhood, and culture (Bronfenbrenner & Evans, 2000). Ironically, recent years have seen a surge in interest in distal cultural context as a moderator of AS children's risk for peer adversity (Chen, Rubin, & Li, 1995a, Chen, Rubin, & Li, 1995b, Chen, Rubin, & Li, 1999; Chen, Rubin, & Sun, 1992; Hart et al., 2000; Schwartz, Chang, & Farver, 2001), but the proximal school environment in which peer adversity occurs—the classroom and its emotional climate—is virtually unexplored.

Classroom emotional climate refers to global classroom atmosphere and the degree to which the classroom as a whole functions smoothly and harmoniously and is characterized by interactions with a positive tone or, conversely, by frequent disruption, conflict, and disorganization. Thus, positive as well as negative interactions (e.g., excitement and humor vs. conflict) contribute to climate. Because emotional climate is an evaluation of the classroom as a whole, the teacher's behavior, students' responses to the teacher, the teacher's response to students, and interactions among students all contribute to emotional climate. Classroom emotional climate is more than the sum of evaluations of single actors and includes evaluations that refer explicitly to group functioning (e.g., the classroom functions as a well-oiled machine). American elementary school classrooms have been shown to vary considerably in emotional climate (National Institute of Child Health and Human Development [NICHD] Early Child Care Research Network [ECCRN], 2003). Evidence suggests that negative emotional climate is detrimental to children's concurrent psychosocial adjustment. Children in first-grade classrooms with negative versus more positive emotional climate demonstrated more concurrent maternally rated internalizing symptoms (NICHD ECCRN, 2003). Although the impact of classroom emotional climate on AS children in particular is unknown, children with preexisting vulnerability to social anxiety, relative to other children, may be more strongly affected by potentially anxiety-provoking classroom contexts.

AS children may be at particular risk for peer adversity in classrooms with negative emotional climate. In environments characterized by frequent conflict, disruption, and disorganization, anxious peer-interactional style may be particularly ineffective. Consequently, negative classroom emotional climate may foster peer rejection and poor acceptance of AS children. Although linkages between classroom emotional climate and peer adversity have yet to be explored, a few studies have examined whether the proportion of aggressive children in classrooms or camp groups affects the sociometric status of AS children (Boivin, Dodge, & Coie, 1995; Stormshak, Bierman, Bruschi, Dodge, & Coie, 1999; Werthamer-Larsson, Kellam, & Wheeler, 1991; Wright, Giammarino, & Parad, 1986) or predicts AS (Howes, 2000). Because several of these investigations indicated that AS children are at greater risk for poor peer acceptance or rejection in classrooms with larger proportions of aggressive children (Boivin et al., 1995; Werthamer-Larsson et al., 1991; Wright et al., 1986), this factor was controlled in the present investigation. Classroom emotional climate was expected to moderate AS children's risk for peer adversity and emotional maladjustment beyond the classroom prevalence of aggressive students, because multiple dimensions of classroom emotional climate are not captured by the sum of individual students' aggressive behaviors.

Negative classroom emotional climate may also influence AS children's depressive symptoms, both directly and indirectly. In regard to direct effects of negative classroom climate, AS children may be particularly ill equipped to cope with chaotic, aversive social environments by virtue of their anxious vulnerability (Perry, Kusel, & Perry, 1988), lack of self-assertion, and tendency to give up in the face of social difficulty (Stewart & Rubin, 1995). Indirect effects, mediated via peer adversity, may also occur. Indeed, evidence indicates that peer adversity contributes to depressive symptoms in AS children (Gazelle & Ladd, 2003; Gazelle & Rudolph, 2004). In the context of negative classroom climate and peer adversity, AS children's propensity toward social helplessness (fearing that negative events may occur and doubting their ability to cope) may be supplemented by a sense of depressive hopelessness (feeling certain that negative events will happen and similarly doubting their ability to cope; see Alloy, Kelly, Mineka, & Clements, 1990).

Hypotheses

The present study examines the ability of classroom emotional climate to moderate the relation between early childhood AS and subsequent first-grade (a) peer rejection, (b) peer acceptance, (c) peer victimization, and (d) depressive symptoms as well as (e) the ability of peer relations to mediate relations between early AS and subsequent depressive symptoms. It was hypothesized that early childhood AS would predict more peer rejection and victimization and less acceptance in the context of negative rather than positive first-grade classroom climate. It was further anticipated that AS children would demonstrate elevated depressive symptoms in classrooms with negative emotional climate, in part because they would be prone to peer difficulties in these classroom contexts.

Method

Participants and Design

Participants in the NICHD Study of Early Child Care (SECC) were 1,364 children (48% female) and their mothers, child-care providers, and teachers. Participants were selected from 8,986 children born during sampling periods throughout 1991 in 24 hospitals near 10 U.S. research sites. Children were excluded from the sample if their mother was younger than 18 years of age at the child's birth, did not speak English, or had a substance abuse problem; if the family planned to move; or if the child was hospitalized for more than 7 days following birth or had obvious disabilities. Participants were selected by conditional random sampling, which ensured that they reflected the ethnic, economic, and educational diversity of each site's catchment area. Children of color composed 24% of participants. The average family income-to-needs ratio when children were 6–12 months was 3.64 times the poverty threshold.

Analyses were conducted with all available relevant information for the full sample. Because many relevant variables contained missing data (complete data were available for gender and ethnicity; all other variables were available for 71%–74% of children; see Table 1), analyses were conducted with full information maximum likelihood (FIML). FIML assumes that data are missing at random, which allows nonrandom patterns of missing data between particular subsamples (e.g., ethnic groups) but requires that patterns of missing data are random within subsamples. FIML uses all available information to estimate parameters for the full data set, thereby reducing the chance that results are influenced by selective attrition. Because there was higher attrition among children of color and poor children (NICHD ECCRN, 2003), FIML analyses maximized the generalizability of results to diverse populations. Although regression analyses are based on the full sample with FIML, FIML was not available for some analyses in the Method section (e.g., convergent validity correlations), and these analyses are therefore reported for only a subset of children.

Table 1

Means, Standard Deviations, and Correlations Among Predictor, Criterion, and Control Variables

Variable	1	2	3	4	5	6
Sample mean (SD)	0.00 (0.82)	22.46 (4.14)	1.79 (1.26)	4.95 (1.25)	0.23 (0.70)	0.13 (0.19)
Girls' mean (SD)	-0.03 (0.81)	22.80 (3.97)	1.65 (1.20)	5.01 (1.27)	0.17 (0.55)	0.11 (0.19)
Boys' mean (SD)	0.03 (0.84)	22.12 (4.28)	1.92 (1.31)	4.89 (1.23)	0.29 (0.81)	0.14 (0.19)
n (% nonmissing)	992 (73)	967 (71)	1,006 (74)	1,006 (74)	966 (71)	1,008 (74)
Primary predictor						
1. Child anxious solitude 2-4.5 years (cg)	—					
2. Class emotional climate first grade (ob)	-.01	—				
Criterion						
3. Peer rejection first grade (t)	.08*	-.10**	—			
4. Peer acceptance first grade (t)	-.14***	.08*	-.60***	—		
5. Peer victimization first grade (ob)	.01	-.08*	.07*	-.05	—	
6. Child depressive symptoms first grade (t)	.12***	-.13***	.33***	-.42***	.03	—
Control						
7. Child gender	.04	-.08*	.11***	-.05	.09**	.09**
8. Child ethnicity (m)	-.07*	.14***	-.08**	.07*	-.01	-.14***
9. Family income-to-needs first grade (m)	-.04	.16***	-.11**	.13***	-.08*	-.19***
10. Child aggression 2-4.5 years (cg)	.26***	-.14***	.27***	-.20***	.10**	.26***
11. Child attention problems 2-4.5 years (cg)	.25***	-.13***	.27***	-.24***	.09*	.25***
12. Child aggression first grade (t)	.00	-.07*	.64***	-.38***	.06	.26***
13. Class behavior problems first grade (t)	.02	-.22***	.07*	-.07*	.03	.17***

Note. N = 1,364 (659 girls); for pairwise correlations, n = 820-1,364. Informant: caregiver (cg), observe (ob), teacher (t), mother (m). Unstandardized means are reported.

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

Means, Standard Deviations, and Correlations Among Predictor, Criterion, and Control Variables

	7	8	9	10	11	12	13
	0.03 (1.00)	0.53 (0.85)	3.95 (3.03)	-0.02 (0.83)	0.00 (0.87)	1.82 (1.44)	2.23 (0.79)
	-1.00 (0.00)	0.52 (0.85)	3.98 (3.10)	-0.10 (0.77)	-0.12 (0.79)	1.54 (1.20)	2.19 (0.78)
	1.00 (0.00)	0.53 (0.85)	3.93 (2.95)	0.04 (0.87)	0.11 (0.92)	2.11 (1.59)	2.26 (0.80)
	1,364 (100)	1,364 (100)	982 (72)	992 (73)	992 (73)	1,008 (74)	1,000 (73)
	—						
	.00	—					
	-.01	.24***	—				
	.08**	-.13***	-.11**	—			
	.13***	-.11***	-.17***	.59***	—		
	.20***	-.14***	-.08*	.31***	.29***	—	
	.04	-.14***	-.18***	.09*	.09**	.08**	—

Means, Standard Deviations, and Correlations Among Predictor, Criterion, and Control Variables

Most children (99%) attended kindergarten in their 1st year of formal schooling. The majority of these children proceeded to first grade in their 2nd year of formal schooling, but 35 children repeated kindergarten. Assessments conducted in the 2nd year of formal schooling are referred to as first grade even when children were in their 2nd kindergarten year. The first assessment of classroom climate for the full sample was first grade. First-grade teachers were predominantly female (96%) and Caucasian (94%; 3% African American, approximately 1% each Asian, Latino, and other).

The birth to first-grade design of the NICHD SECC (Phases 1 and 2) is well suited for disentangling the effects of school environment from individual differences that predate school entry. Data in the present report are derived from five longitudinal assessment points: 24, 36, and 54 months; kindergarten; and first grade (or 2, 3, 4.5, 5, and 6 years of age). Relevant data were collected in the child's home and child-care arrangement prior to school entry (2-, 3-, and 4.5-year assessments); via questionnaires sent to the child's parents, child-care

arrangement, and teacher in kindergarten; and in the child's school classroom, home, and after-school child-care arrangement in first grade.

Measures

Primary Predictors

Anxious solitude in early childhood

Caregiver and maternal reports of AS were obtained at 2, 3, and 4.5 years of age, kindergarten (maternal only), and first grade, and teacher reports were obtained in kindergarten and first grade. The AS composite consists of items from the Child Behavior Checklist or Teachers' Report Form (1.5–5 and school-age forms; CBCL/TRF; Achenbach, 1991a, Achenbach, 1991b). The entire standard CBCL/TRF forms were administered, although only selected items were included in the composites calculated for this study. The AS composite demonstrates good psychometric properties (Gazelle & Ladd, 2003; Gazelle & Rudolph, 2004) and was slightly adapted for the present purposes. The following eight items make up the composite: “withdrawn, doesn't get involved with others,” “too shy or timid,” “self-conscious or easily embarrassed,” “avoids looking others in the eye,” “too fearful or anxious,” “worries,” “nervous, high-strung, or tense,” and “afraid to try new things.” The fourth and eighth items were replaced with “refuses to talk” and “would rather play alone than play with others,” respectively, starting in kindergarten (and in the maternal composite starting at 4.5 years of age) because the CBCL/TRF for older children contains these changes. Items were rated on a 3-point scale ranging from 0 (not true) to 2 (often true). Mean scores were calculated. Higher scores reflect more AS.

Child-care provider reports were gathered for children in child care at least 10 hr a week. Child-care provider and maternal report early childhood AS composites were computed if at least one of the three early childhood assessments was available. Child-care provider reports of AS were available at all three time points for 27% of children, at two time points for an additional 21% of children, at one time point for an additional 25% of children, and not at all for the remaining 27% of children. Variation in the number of child-care provider reports was primarily due to variation in children's attendance at child care—children begin and discontinue child care as their parents find work, stop working, or decide to have another child, for example. Maternal reports of AS were available at all three time points for 74% of children, at two time points for an additional 12% of children, at one time point for an additional 4% of children, and not at all for the remaining 10% of children. Neither number of child-care provider nor number of maternal reports was significantly related to the value of the early childhood AS composite ($r_s = .004-.025$, ns).

Caregiver and maternal AS composites demonstrated acceptable reliability and stability from 2 to 4.5 years (caregiver: $\alpha_s = .69-.77$, consecutive $r_s = .10-.29$, $p_s < .05-.001$; 1 maternal: $\alpha_s = .58-.67$, consecutive $r_s = .49-.53$, all $p_s < .001$). Early childhood AS composites were created for each informant via calculation of the mean of the three standardized assessments that predated school entry (2, 3, and 4.5 years). Early childhood AS composites do not include assessments contemporaneous with elementary school and therefore could not have been influenced by school context. The convergence between caregiver and maternal composites was modest ($r = .19$, $p < .001$), as expected, given that mothers and child-care providers observe children in different contexts (Achenbach, McConaughy, & Howell, 1987). Therefore, caregiver and maternal composites were computed and analyzed separately.

The teacher report AS composite also demonstrated adequate reliability and stability from kindergarten to first grade ($\alpha_s = .73-.76$, $r = .16$, $p < .001$). This composite demonstrated adequate convergence with concurrent (or near concurrent) child-care provider ($r_s = .22-.23$, $p < .001$) and maternal reports ($r_s = .18-.20$, $p < .001$). Child-care provider reports of early childhood AS were significantly associated with AS at school, as rated by kindergarten ($r = .20$, $p < .001$) and first-grade teachers ($r = .19$, $p < .001$). These associations were close to the same magnitude as concurrent (or near concurrent) associations between child-care provider and teacher reports of AS (childcare provider at 4.5 years–kindergarten teacher, $r = .23$, $p < .001$; child-care provider–teacher, both in first grade, $r = .22$, $p < .001$).

Classroom-level emotional climate in first grade

Classroom climate was assessed with the Classroom Observation System (COS-1; NICHD ECCRN, 2003) during winter to early spring of first grade. The COS-1 was developed by Robert Pianta and the SECC Steering Committee (NICHD ECCRN, 2003). Classroom-level COS-1 ratings were based on three 10-min observation cycles that were conducted at the beginning, middle, and end of a longer classroom observation period (approximately 2 hr) for a total of 30 min. Classroom climate was assessed with 7-point scales ranging from 1 (uncharacteristic) to 7 (extremely characteristic). The classroom-level emotional climate composite is composed of four ratings: positive emotional climate, negative emotional climate (reverse coded), effective classroom management, and classroom overcontrol (reverse coded). Positive climate captures the degree to which pleasant conversations, laughter, and excitement take place in the classroom and the teacher expresses positive, animated affect toward children. Negative climate captures the degree to which there is a hostile or punitive atmosphere in the classroom and the teacher is irritable or yells. Effective classroom management captures the degree to which children seem to understand and follow the rules with few reminders from the teacher. Ineffectively managed classrooms are chaotic: Children are out of control, and the teacher seems unaware of the chaos, or his or her attempts to discipline the class are unsuccessful. In classrooms that are overly controlled, children are not allowed to leave their seat or talk for long periods, complete uniform assignments with no individuation, and have no choice of activity. The four classroom-level items demonstrated good internal consistency ($\alpha = .83$) and adequate interrater reliability ($r_s = .66-.87$, computed from 46 rating pairs). See NICHD ECCRN (2003) for validity. Although there was only 1 study child per classroom in the majority of cases (86%), when there were multiple study children per class, a full set of class observations was gathered per study child, but all climate observations were averaged within classroom, such that classmates had the same classroom emotional climate score.

First-Grade Criterion Variables

Peer rejection and acceptance

Peer rejection and acceptance were assessed by teachers in kindergarten and first grade and child-care providers in first grade on a measure developed by Cillessen, Terry, Coie, and Lochman (1992). Informants reported the number of “disliked” and “well liked” votes children would receive from classmates on a 7-point scale ranging from 1 (almost no votes) to 7 (unusually large amount). Although peers are preferred as sociometric informants, research indicates that teachers' assessments of peer rejection and acceptance on this scale demonstrate adequate convergent validity with peer reports (rejection: $r = .38$, $p < .001$; acceptance: $r = .49$, $p < .001$; Cillessen, Terry, et al., 1992). In the present data, first-grade teachers' ratings of peer rejection and acceptance at school demonstrated moderate convergence with child-care providers' concurrent ratings of rejection ($r = .32$, $p < .001$) and acceptance ($r = .25$, $p < .01$) in after-school care. First-grade and kindergarten teachers' ratings of peer rejection ($r = .32$, $p < .001$) and acceptance ($r = .33$, $p < .001$) also demonstrated moderate convergence. First-grade teachers' ratings of rejection and acceptance were negatively correlated ($r = -.60$, $p < .001$; see Table 1), as expected, but capture conceptually distinct dimensions of peer status (Coie, Dodge, & Coppotelli, 1982).

Peer victimization

Peer victimization in first-grade classrooms was assessed by observers. Periods of whole-classroom observation in which climate was rated (as described in the Classroom-level emotional climate in first grade section) were alternated with two 34-min periods in which the study child was observed in the classroom. Each 34-min period consisted of three 10-min sections in which the presence of victimization was recorded in 30-s observe/30-s record intervals, and 10-min sections were followed by 2 min of note taking. Peer victimization was recorded when the study child was the recipient of any type of overt aggression (both physical and verbal) or other negative act from classmates. For example, teasing, name calling, and taking away materials were coded as victimization. This code demonstrated adequate interrater reliability ($r = .62$, computed from 282 rating pairs of master-coded videotapes).

Depressive symptoms

Teachers assessed children's depressive symptoms on an adaptation of the CBCL Depression scale (Clarke, Lewinsohn, Hops, & Seeley, 1992) appropriate for teachers, which is composed of TRF (school-age form) items (Achenbach, 1991b). Items include “unhappy, sad, or depressed,” “appears miserable, unhappy, tearful, or

distressed,” “sulks a lot,” “cries a lot,” “feels worthless or inferior,” “feels too guilty,” “apathetic or unmotivated,” “underactive, slow moving, or lacks energy,” “overtired,” “sleeps in class,” “deliberately harms self/attempts suicide,” “talks about killing self,” and “can’t concentrate, can’t pay attention.” Ratings were made on the same 3-point scale described earlier for AS. The 12-item scale demonstrated acceptable reliability and stability from kindergarten to first grade ($\alpha = .74$; $r = .27$, $p < .001$). Consistent with past investigations, evidence supports AS and depressive symptoms as positively correlated but distinct constructs (early childhood AS and first-grade depressive symptoms: $r = .12$, $p < .001$; see Table 1).

Covariates

Child gender

Gender was effect coded (1 = boy, -1 = girl) such that positive gender coefficients indicated higher levels of the criterion for boys and negative coefficients represented higher levels for girls. Therefore, the intercept represents the prototypical gender-neutral child in the sample.

Child race–ethnicity

Ethnicity was effect coded (1 = White non-Hispanic, -1 = other) such that positive ethnicity coefficients indicated higher levels of the criterion for White children and negative coefficients represented higher levels for children of color.

Family income-to-needs ratio in first grade

Mothers reported family income and household size throughout the study, and this study uses first-grade data. Income-to-needs ratios were computed according to standard procedures: the ratio of income to the concurrent governmental poverty threshold for family size.

Child aggression in early childhood and first grade

Child-care providers assessed aggression in early childhood. The aggression composite comprised 15 CBCL (1.5–5 and school-age form) items, including “hits others,” “gets in many fights,” and “has temper tantrums.” Ratings were made on the same 3-point scale described earlier for AS. This scale demonstrated acceptable reliability and stability ($\alpha = .88–.95$; $r_s = .31–.41$, $p_s < .001$). Early childhood aggression composites were calculated as the mean of the three standardized assessments that predated school entry (2, 3, and 4.5 years). Higher scores represent more aggression.

Aggression was assessed by teacher report in kindergarten and first grade and by child-care provider report in first grade according to methods developed by Cillessen, Terry, et al. (1992). Teachers and child-care providers reported the number of “starts fights, picks on other kids, and teases them” votes the child would receive from classmates on the same 7-point scale described for rejection. First-grade teachers' ratings of aggression at school demonstrated moderate convergence with child-care providers' concurrent ratings of aggression in the after-school care context ($r = .35$, $p < .001$) and with kindergarten teachers' ratings of aggression at school ($r = .37$, $p < .001$).

Child attention problems in early childhood

Child-care providers rated children on the CBCL (1.5–5) Attention Problems Syndrome subscale. The subscale includes “can’t concentrate,” “can’t sit still,” and “quickly shifts from one activity to another.” Ratings were made on the same 3-point scale described earlier for AS. The 5-item scale demonstrated acceptable reliability and stability across early childhood ($\alpha = .60–.72$; $r_s = .25–.38$, $p_s < .001$). The early childhood attention problems composite was calculated as the mean of the three standardized assessments that predated school entry (2, 3, and 4.5 years). Higher scores represent more attention problems.

Prevalence of behavior problems in the first-grade classroom

Teachers reported the extent to which behavior problems (e.g., disruptiveness) in their classroom as a whole were an obstacle to preparing students for academic success on the School Teacher Survey (National Center for

Educational Statistics, 1994). Ratings ranged from 1 (not a problem) to 4 (serious problem). This teacher report was only modestly correlated with observed classroom emotional climate ($r = -.22, p < .001$; see Table 1).

Site

Site was statistically controlled via nine dummy-coded variables entered in all regression analyses.

Results

Preliminary Analyses

Before the primary analyses, site differences in primary variables were examined. Although most variables did not demonstrate site differences, a few significant site differences were found for classroom emotional climate and peer acceptance. Therefore, site was statistically controlled in regression analyses.

It was not necessary to control for child-care provider or classroom-level nesting because the majority of children were the only target child in their child-care arrangement (over 96% at 2, 3, and 4.5 years) and first-grade classroom (86%). The majority of children were also the only target child in their school.

Analytic Plan

To test first-grade classroom emotional climate as a moderator of the relation between early childhood AS and first-grade psychosocial criteria (peer rejection, peer acceptance, peer victimization, depressive symptoms), separate regression analyses were performed. The primary predictors of each criterion were early childhood AS, first-grade classroom emotional climate, and their interaction. All interaction terms were computed with standardized variables. When significant Early Childhood AS \times First-Grade Classroom Emotional Climate interactions were found, the nature of the interaction was tested by follow-up simple slopes analyses, conducted as recommended by Aiken and West (1991).

In each regression analysis, child gender, race–ethnicity, first-grade family income-to-needs ratio, early childhood aggression and attention problems, first-grade aggression, prevalence of behavior problems in the first-grade classroom, and site were statistically controlled. Additionally, analyses tested all possible interactions between the primary predictors and gender and race–ethnicity. No significant race–ethnicity interactions were found. For the significant gender interactions, results are reported separately for boys and girls. Early Childhood AS \times Aggression and AS \times Attention Problems interactions were also tested but were nonsignificant in each case.

First-Grade Classroom Emotional Climate Moderated the Relation Between Early Childhood Anxious Solitude and First-Grade Peer Rejection

Regression analyses revealed that first-grade classroom emotional climate significantly moderated the relation between early childhood AS and first-grade peer rejection (Table 2). As hypothesized, results of follow-up simple slopes analyses indicated that children with early childhood AS were significantly more likely to be rejected by their first-grade peers in classrooms with a negative rather than positive emotional climate. Results indicated that a prototypical child who was high (one standard deviation above the mean) in AS was significantly more rejected in a classroom with negative (one standard deviation below the mean) than positive (one standard deviation above the mean) emotional climate (simple slope = $-.11, z = -4.37, p < .001$; see Figure 1).² In contrast, a prototypical child who was low in AS was no more rejected in a classroom with negative versus positive classroom climate (simple slope = $.01, z = 0.23$). Additional simple slopes analyses indicated that the prototypical child who was high in AS was significantly more rejected than the prototypical child who was low in AS in negative climate classrooms (simple slope = $.14, z = 5.48, p < .001$), but these prototypical children did not differ from each other significantly in positive climate classrooms (simple slope = $-.02, z = -0.89$). These results suggest that AS children's risk for peer rejection was significantly amplified or buffered by their classroom environment.

Table 2
Regression Analyses Testing First-Grade Classroom Emotional Climate as a Moderator of the Relation Between Early Childhood History of Anxious Solitude and First-Grade Peer Rejection

Variable	Peer rejection (t)		
	β	z	R^2
Primary predictor			
Child AS 2–4.5 years (cg)	.06	2.43*	
Class emotional climate first grade (ob)	-.05	-1.88†	
AS × Climate	-.08	-3.10**	
Control			
Gender	-.03	-1.28	
Child ethnicity (m)	.03	1.43	
Family income-to-needs first grade (m)	-.05	-2.11*	
Child aggression 2–4.5 years (cg)	.02	0.74	
Child attention problems 2–4.5 years (cg)	.06	2.23*	
Child aggression first grade (t)	.63	26.30***	
Class behavior problems first grade (t)	.01	0.31	.42

Note. $N = 1,364$ (659 girls). Informant: caregiver (cg), observer (ob), teacher (t), mother (m). All possible Primary Predictor × Gender and Ethnicity interactions and AS × Early Aggression and Attention Problem interactions were tested but were dropped when nonsignificant. Site was controlled, but these nine dummy codes are not shown to reduce clutter. All betas are standardized. AS = anxious solitude.
 † $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Regression Analyses Testing First-Grade Classroom Emotional Climate as a Moderator of the Relation Between Early Childhood History of Anxious Solitude and First-Grade Peer Rejection

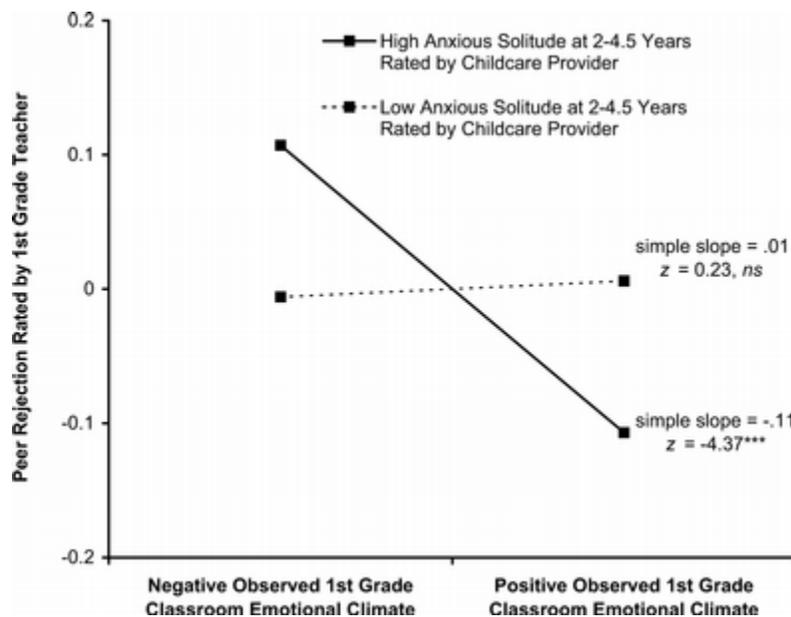


Figure 1. The prototypical child high (one standard deviation above the mean) in early childhood anxious solitude was significantly more rejected by peers in first-grade classrooms with negative (one standard deviation below the mean) versus positive (plus one standard deviation) emotional climate. In contrast, the prototypical child low (one standard deviation below the mean) in early childhood anxious solitude was no more or less rejected by peers in first-grade classrooms with negative (one standard deviation below the mean) versus positive (one standard deviation above the mean) emotional climate. *** $p < .001$

Results held after attention problems and aggression, correlates of peer rejection, were controlled. When both early childhood and contemporaneous first-grade aggression were entered, early childhood aggression was not a unique predictor of rejection, but if contemporaneous aggression was removed, then early childhood aggression significantly predicted peer rejection ($\beta = .17, z = 5.31, p < .001$). A variation on this analysis was performed with AS assessments from mothers rather than child-care providers. The same pattern of results was obtained, but effects were weaker; children with early childhood AS tended to become rejected by their peers in first-grade classrooms with negative emotional climate (AS \times Climate; $\beta = -.04, z = -1.58, p < .10$, one-tailed). Because child-care provider assessments of AS, relative to maternal assessments, demonstrated superior predictive strength, subsequent analyses used child-care provider assessments only. Nonetheless, the similarity in results across informants of AS lends confidence to this pattern of findings.

First-Grade Classroom Emotional Climate Moderated the Relation Between Early Childhood Anxious Solitude and First-Grade Peer Acceptance for Boys

Regression analyses revealed that first-grade classroom emotional climate significantly moderated the relation between early childhood AS and first-grade peer acceptance for boys but not girls, although there was a strong negative main effect of AS on acceptance for girls (see Table 2). Consistent with hypotheses, follow-up simple slopes analyses indicated that boys with early childhood AS were significantly more likely to be accepted by their first-grade peers in positive rather than negative emotional climate classrooms. The prototypical boy high in AS was significantly more accepted in classrooms with positive rather than negative climate (simple slope = .09, $z = 2.20, p < .05$; see Figure 2). In contrast, the prototypical boy low in AS was no more or less accepted in classrooms with positive versus negative climate (simple slope = $-.06, z = -1.63$). Additional simple slopes analyses indicated that the prototypical boy high in AS was significantly less accepted than the prototypical boy low in AS in negative climate classrooms (simple slope = $-.15, z = -3.67, p < .001$), but prototypical boys did not differ from each other significantly in positive climate classrooms (simple slope = .04, $z = 0.92$). These results suggest that AS boys were not only less at risk for peer rejection but also more likely to be accepted in classrooms with positive rather than negative emotional climate. Results held after early childhood and contemporaneous aggression and early childhood attention problems were controlled. Early childhood aggression was not a significant predictor of boys' acceptance even when contemporaneous aggression was removed from the model ($\beta = -.01, z = -0.22$).

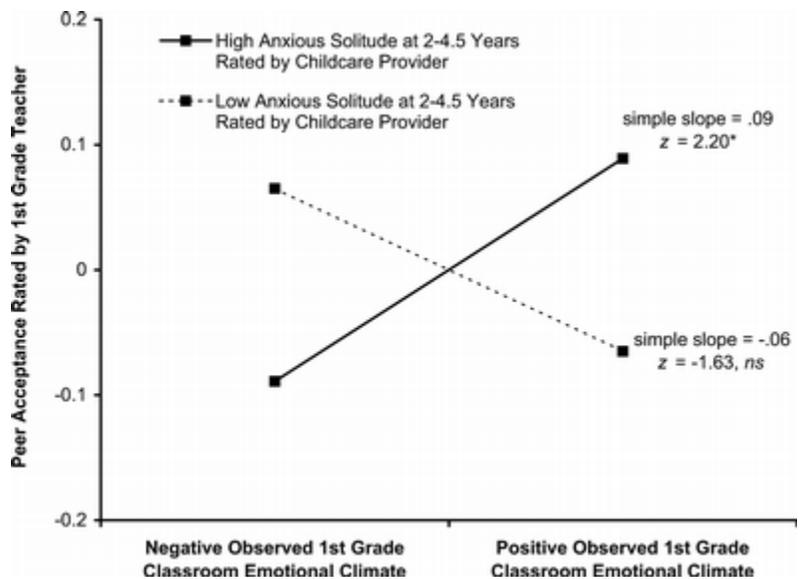


Figure 2. The prototypical boy high (one standard deviation above the mean) in early childhood anxious solitude was significantly more accepted by peers in first-grade classrooms with positive (one standard deviation above the mean) versus negative (one standard deviation below the mean) emotional climate. In contrast, the prototypical boy low (one standard deviation below the mean) in early childhood anxious solitude

was no more or less accepted by peers in first-grade classrooms with positive (one standard deviation above the mean) versus negative (one standard deviation below the mean) emotional climate. * $p < .05$

First-Grade Classroom Emotional Climate Moderated the Relation Between Early Childhood Anxious Solitude and First-Grade Peer Victimization for Girls

Regression analyses tested first-grade classroom emotional climate as a moderator of the relation between early childhood AS and first-grade peer victimization. For girls, results indicated that classroom emotional climate significantly moderated the relation between early childhood AS and first-grade peer victimization (see Table 3). The prototypical girl with high early childhood AS was significantly more likely to be victimized by first-grade peers in negative rather than positive emotional climate classrooms (simple slope = $-.16$, $z = -3.76$, $p < .001$). In contrast, the prototypical girl with low early childhood AS was not more likely to be victimized by first-grade peers in negative rather than positive climate classrooms (simple slope = $.05$, $z = 1.06$; see Figure 3). Additional simple slopes analyses indicated that the prototypical girl high in AS, in comparison with the prototypical girl low in AS, was significantly more victimized in negative climate classrooms (simple slope = $.09$, $z = 2.03$, $p < .05$) and significantly less victimized in positive climate classrooms (simple slope = $-.14$, $z = -3.05$, $p < .01$). For boys, classroom emotional climate did not significantly moderate the relation between early childhood AS and first-grade peer victimization (see Table 3). However, early childhood aggression and attention problems did predict first-grade peer victimization for boys.

Table 3

Regression Analyses Testing First-Grade Classroom Emotional Climate as a Moderator of Early Childhood History of Anxious Solitude and First-Grade Peer Acceptance, Victimization, and Depressive Symptoms for Girls and Boys

Variable	Peer acceptance (t)			Peer victimization (ob)			Depressive symptoms (t)					
	β	z	R^2	β	z	R^2	Without mediators			With mediators		
							β	z	R^2	β	z	R^2
Girls												
Primary predictor												
Child AS 2–4.5 years (cg)	-.17	-4.18***		-.02	-0.50		.14	3.27**		.07	1.62	
Class emotional climate first grade (ob)	.07	1.67 [†]		-.08	-1.93 [†]		-.07	-1.75 [†]		-.04	-1.03	
AS × Climate	.03	0.62		-.15	-3.13**		-.13	-2.85**		-.11	-2.47*	
Mediator												
Peer rejection first grade (t)										.03	0.76	
Peer acceptance first grade (t)										-.41	-10.39***	
Peer victimization first grade (ob)										.06	1.51	
Control												
Child ethnicity (m)	.01	0.18		-.08	-1.73 [†]		.01	0.21		.02	0.45	
Family income-to-needs first grade (m)	.07	1.79 [†]		-.02	-0.33		-.11	-2.64**		-.08	-1.98*	
Child aggression 2–4.5 years (cg)	-.08	-1.91 [†]		.11	2.33*		.14	3.17**		.09	2.25*	
Child attention problems 2–4.5 years (cg)	-.02	-0.45		-.06	-1.25		.01	0.32		.02	0.41	
Child aggression first grade (t)	-.31	-8.11***		.01	0.17		.18	4.40***		.04	0.99	
Class behavior problems first grade (t)	.01	0.31	.26	-.01	-0.22	.10	.13	3.15**	.16	.14	3.63**	.23
Boys												
Primary predictor												
Child AS 2–4.5 years (cg)	-.06	-1.43		.01	0.16		.04	0.86				
Class emotional climate first grade (ob)	.02	0.42		-.04	-0.86		-.03	-0.73				
AS × Climate	.11	2.54*		-.02	-0.37		-.02	-0.48				
Control												
Child ethnicity (m)	-.02	-0.46		-.02	-0.40		-.11	-2.68**				
Family income-to-needs first grade (m)	.09	2.25*		.02	0.45		-.12	-2.85**				
Child aggression 2–4.5 years (cg)	.07	1.63		-.18	-4.03***		.07	1.43				
Child attention problems 2–4.5 years (cg)	-.18	-4.28***		.28	6.57***		.14	3.01**				
Child aggression first grade (t)	-.37	-9.46***		.04	1.08		.21	4.96***				
Class behavior problems first grade (t)	-.04	-1.09	.23	.06	1.39	.22	.11	2.55*	.13			

Note. $N = 1,364$ (659 girls). Informant: caregiver (cg), observer (ob), teacher (t), mother (m). All possible Primary Predictor × Gender and Ethnicity interactions and AS × Early Aggression and Attention Problem interactions were tested. All betas are standardized. AS = anxious solitude.

[†] $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Regression Analyses Testing First-Grade Classroom Emotional Climate as a Moderator of Early Childhood

History of Anxious Solitude and First-Grade Peer Acceptance, Victimization, and Depressive Symptoms for Girls and Boys

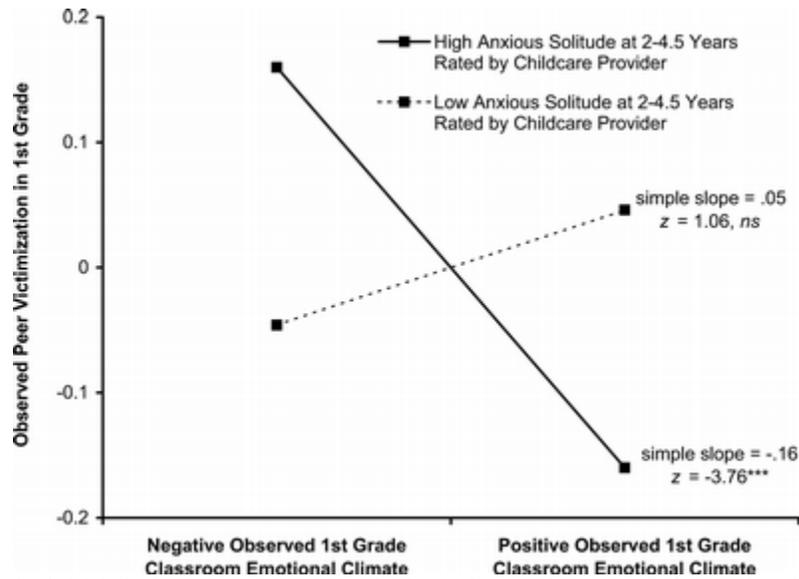


Figure 3. The prototypical girl high (one standard deviation above the mean) in early childhood anxious solitude was significantly more victimized by peers in first-grade classrooms with negative (one standard deviation below the mean) versus positive (one standard deviation above the mean) emotional climate. In contrast, the prototypical girl low (one standard deviation below the mean) in early childhood anxious solitude was no more or less victimized by peers in first-grade classrooms with negative (one standard deviation below the mean) versus positive (one standard deviation above the mean) emotional climate. *** $p < .001$

First-Grade Classroom Emotional Climate Moderated the Relation Between Early Childhood Anxious Solitude and First-Grade Depressive Symptoms for Girls

Regression analyses tested first-grade classroom emotional climate as a moderator of the relation between early childhood AS and first-grade depressive symptoms. For girls, results indicate that classroom emotional climate significantly moderated the relation between early childhood AS and first-grade depressive symptoms (see Table 3). The prototypical girl high in early childhood AS was significantly more likely to demonstrate depressive symptoms in first grade in negative rather than positive emotional climate classrooms (simple slope = $-.17$, $z = -4.01$, $p < .001$). In contrast, the prototypical girl with low early childhood AS was no more likely to demonstrate first-grade depressive symptoms in negative rather than positive emotional climate classrooms (simple slope = $.03$, $z = 0.65$; see Figure 4). Additional simple slopes analyses indicated that the prototypical girl high in AS demonstrated significantly more depressive symptoms than the prototypical girl low in AS in negative climate classrooms (simple slope = $.30$, $z = 7.22$, $p < .001$), but these prototypical girls did not differ from each other significantly in positive climate classrooms (simple slope = $-.01$, $z = -0.10$). In contrast, for boys, classroom emotional climate did not significantly moderate the relation between early childhood AS and first-grade depressive symptoms (see Table 3).

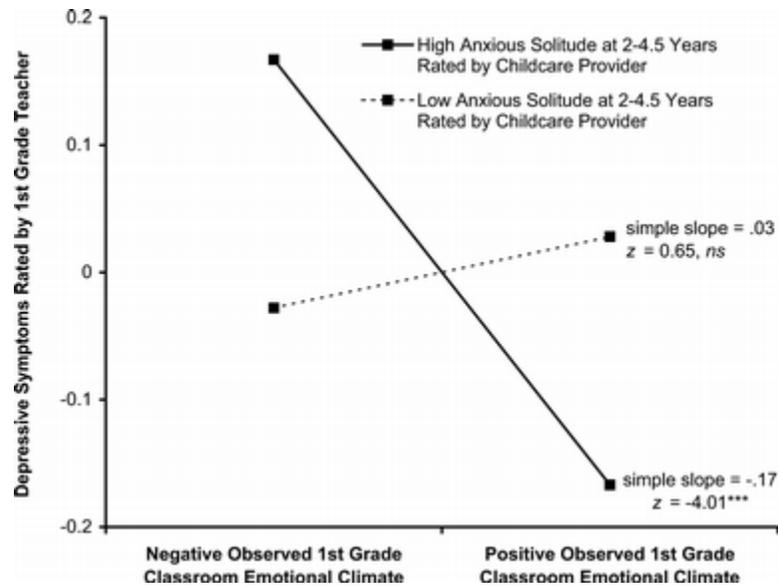


Figure 4. The prototypical girl high (one standard deviation above the mean) in early childhood anxious solitude demonstrated significantly more depressive symptoms in first-grade classrooms with negative (one standard deviation below the mean) versus positive (one standard deviation above the mean) emotional climate. In contrast, the prototypical girl low (one standard deviation below the mean) in early childhood anxious solitude demonstrated no more or fewer depressive symptoms in first-grade classrooms with negative (one standard deviation below the mean) versus positive (one standard deviation above the mean) emotional climate. *** $p < .001$

To test whether peer difficulties mediated the relation between early childhood AS and first-grade depressive symptoms for girls, a series of regressions was examined (Baron & Kenny, 1986). First, AS significantly predicted depressive symptoms for girls (see Table 3). Second, AS significantly predicted acceptance (see Table 3). Third, when acceptance was added to the model predicting depressive symptoms, AS dropped to nonsignificance (see Table 3), indicating mediation. Thus, consistent with the hypotheses, evidence suggests that early childhood AS predicted girls' first-grade depressive symptoms via its contribution to poor peer acceptance.

Discussion

Results support a Child \times Environment model in which children who are socially anxious prior to school entry, relative to other children, fare worse with peer relations and emotional adjustment when their classrooms are high in disruption, conflict, disorganization, and chaos. These results emphasize both that peer relations are embedded in larger social contexts that substantially influence their nature and that contextual variation most strongly affects the adjustment of children who enter such contexts with preexisting vulnerability. The practical significance of the influence of classroom emotional climate on AS children's adjustment is supported by AS \times Climate interactions that, when significant, equaled or exceeded the size of AS main effects. Thus, practically speaking, these results suggest that in classrooms with a strongly positive or negative emotional climate, emotional climate could either double or cancel out the effects of early AS on concurrent adjustment.

Classroom Emotional Climate as a Moderator of AS Children's Risk for Peer Adversity

Evidence suggests that negative classroom emotional climate not only is detrimental to children in general but also is a particular mismatch for AS children. After the classroom prevalence of behavior problems as well as other individual and contextual factors were controlled, AS children in negative climate classrooms were at particular risk for peer rejection, poor peer acceptance (for boys), and peer victimization (for girls). This evidence suggests that anxious interactional style may be especially ineffective in environments in which interactions are conflictual and chaotic, and children who display anxious vulnerability under these

circumstances are therefore particularly prone to peer difficulties. This is perhaps the most parsimonious mechanism of moderation. In the future, it will be important to examine additional mechanisms. For instance, negative emotional climate classrooms may foster more hierarchical relations and competitive attitudes among classmates, to the detriment of AS children. Peer adversity may also stand out less in chaotic classrooms and therefore garner less teacher intervention. These potential mechanisms are not mutually exclusive; rather, together they are likely to create a fuller picture of the social dynamics that transpire for AS children in negative emotional climate classrooms.

Classroom Emotional Climate as a Buffering and Promotive Factor

Not only did negative classroom emotional climate augment risk of peer adversity in AS children, but positive emotional climate buffered AS children from risk (AS girls were significantly less victimized than other girls in positive climate classrooms) and promoted positive adjustment (AS boys were better accepted in positive than in negative climate classrooms). Thus, classroom emotional climate has the potential not only to exacerbate risk in AS children but to buffer them from risk and promote their healthy peer relations.

Classroom Emotional Climate as a Moderator of AS Girls' Depressive Symptoms

Consistent with expectations, AS girls demonstrated more depressive symptoms in first-grade classrooms with a negative emotional climate. Furthermore, the effects of AS on depressive symptoms were mediated by poor peer acceptance. These results suggest a diathesis-stress process in which social fearfulness is most likely to activate depressive symptoms in the presence of interpersonal adversity. These findings are consistent with recent studies documenting similar diathesis-stress processes for depressive symptoms in AS youths in middle childhood (Gazelle & Ladd, 2003) and early adolescence (Gazelle & Rudolph, 2004). The present findings are novel, however, in indicating that AS tendencies can act as a diathesis or vulnerability to depressive symptoms in the face of interpersonal stress in early middle childhood. This may have implications for diathesis-stress theories of depression, which characterize anxious vulnerability to depression as a cognitive style in which the individual views himself or herself as helpless or unable to effectively manage negative events (Alloy et al., 1990; Nolen-Hoeksema, Girgus, & Seligman, 1992). Although it is unlikely that such a cognitive style could be fully developed in early childhood, it may be that the fear of social partners' negative reactions to the self, which is implicit in early social anxiousness, carries the seed of what may later develop into a hopeless depressogenic cognitive style, in which the self is perceived as powerless to change negative social circumstances.

Gender Differences in the Ability of Classroom Emotional Climate to Moderate the Relation Between Anxious Solitude and Adjustment

Results revealed that classroom climate moderated risk for both peer victimization and depressive symptoms among AS girls but not boys, although these gender differences had not been anticipated in this young sample. Main effect gender differences in depression are not typically found in this age range, although girls' rates of depression exceed those of boys' by 13–15 years of age (Hankin et al., 1998; Nolen-Hoeksema & Girgus, 1994; Speier, Sherak, Hirsch, & Cantwell, 1995). Greater contextual contingency in AS girls' relative to boys' victimization and depressive symptoms may be explained by several mechanisms. One could argue that the tendency for AS boys to be rejected by peers is strong enough to outweigh the effects of classroom climate in predicting boys' maladjustment. However, the present investigation reveals no gender differences in AS children's risk for peer rejection and does not support rejection or victimization as a mediator of the relation between AS and depressive symptoms. Therefore, evidence does not support this premise. A second possibility is that girls may be more sensitive to classroom social dynamics because they tend to develop closer ties with their teachers (Howes, Phillipsen, & Peisner-Feinberg, 2000). Finally, it may be that girls' preference for relatively quiet rather than rambunctious play (Maccoby, 1995) also translates into greater reactivity to classroom environments that are not conducive to this style of interaction. It may be that girls who enter the classroom with preexisting anxious vulnerability are particularly disadvantaged by these conditions. However, AS boys did demonstrate more contextual contingency in one respect—peer acceptance. Although AS children of both genders were more rejected in negative climate classrooms, only AS boys were more accepted in positive climate classrooms.

Yearly Fluctuation Versus Enduring Early Effects of Classroom Climate on Child Adjustment

The present findings raise the question of whether the adjustment of AS children (a) fluctuates from year to year according to the emotional climate of their classroom and associated peer experiences or (b) is relatively stable because of the enduring effects of early classroom climate and associated peer experiences. The presence of dynamic, contextually contingent fluctuation and enduring effects of early experiences in the school environment are not mutually exclusive, and both processes may contribute to children's adjustment trajectories. It is reasonable to speculate that most children may experience substantial differences in classroom climate as they make annual transitions from one classroom to the next and that these classroom changes may be accompanied by a degree of corresponding change in peer relations and emotional adjustment for AS children in particular. Yet there is also evidence that AS children who become rejected and excluded by peers in the early school years subsequently experience continued peer adversity throughout middle childhood (Gazelle & Ladd, 2003), perhaps because of correlated constraints (Cairns & Cairns, 1994). For instance, there is likely to be a good deal of continuity in children's classmates from year to year, and children's reputations may be transmitted by past classmates and teachers. Also, factors associated with societal disadvantage may be nested within schools and endure over time, thus constraining children's chances for ameliorating their early social situations. Children's adjustment trajectories may be a function of both relatively constant, early-emerging effects that are influenced in part by early classroom environment and time-varying, contextually dependent effects that include yearly fluctuation in classroom environment.

Caregiver Versus Maternal Reported Anxious Solitude in Predicting Social Adjustment at School

Although both child-care provider and maternal reports of AS demonstrated an interaction with classroom emotional climate in the prediction of peer rejection, child-care provider reports of AS were stronger predictors, as expected. The relative superiority of child-care provider reports in predicting subsequent social adjustment at school may occur because child-care providers observe children's interactions in contexts that more closely resemble school (e.g., availability of peers; Achenbach et al., 1987). It has been suggested that parents may more frequently observe their children's reactions to strangers than to familiar peers and consequently may be better reporters of inhibition to the unfamiliar than of AS with familiar partners (Eisenberg, Shepard, Fabes, Murphy, & Guthrie, 1998; see also Stevenson-Hinde, 2000, for a discussion of other biases in maternal shyness ratings). Additionally, child-care providers may benefit from a broader range of children on which to base their inferences and less bias in regard to their perceptions of particular children. Parental reports also have strengths—for example, knowledge of the child over longer spans of time than other informants. Nevertheless, contextual and personal bias factors likely contribute to the relative strength of child-care provider reports of AS in the prediction of outcomes in the school context.

Contributions and Limitations

The results contribute to the existing literature by making a stronger case for the temporal precedence of AS in relation to the onset of peer adversity at school and demonstrating that proximal school environments contribute to differential risk for peer adversity and emotional maladjustment in AS children, consistent with a Child \times Environment model of development. However, support for the effect of early AS on subsequent peer adversity does not preclude bidirectional transactions among AS and peer adversity. Furthermore, the results should be interpreted in the context of several limitations. Although it is possible that AS children could have encountered peer adversity with a different set of peers (e.g., in child-care settings) prior to school entry, assessment of AS prior to school entry and the onset of peer adversity in this context is an improvement over past studies (Gazelle & Ladd, 2003). Additionally, although peers rather than teachers are preferred informants of peer rejection and acceptance, a similar pattern of results was obtained with observed peer victimization. Similarly, although self-reports of depressive symptoms are desirable, teacher reports can be assumed to reflect observable behavior and affect. Thus, measurement of depressive symptoms may be somewhat conservative (not sensitive to nonobservable symptoms of depression), but similar AS–peer adversity diathesis-stress patterns have been documented regardless of whether depressive symptoms were reported by teachers (Gazelle & Ladd, 2003) or child self-report (Gazelle & Rudolph, 2004). Furthermore, the prospective, multimethod nature of the data lends strength to the findings.

Class Climate as a Contextual Moderator of AS Children's Social Adjustment

Currently, little is known about the influence of extrafamilial environments on the social and emotional adjustment of AS children, although recent research on cultural variation in the peer relations of AS children is a notable exception (Chen et al., 1995a, Chen et al., 1995b, Chen et al., 1992, Chen et al., 1999; Hart et al., 2000; Schwartz et al., 2001). However, comparatively less attention has been directed toward understanding the influence of within-culture environmental variation on AS children's adjustment. Therefore, the present evidence for classroom emotional climate as a moderator of AS children's early peer relations and emotional adjustment is novel and suggests that examination of further contextual factors may be a fruitful direction for future research. Results indicating that classroom emotional climate is correlated with family income (see also Pianta, La Paro, Payne, Cox, & Bradley, 2002) and ethnicity suggest that it may be a salient proximal environment through which more distal societal influences may affect vulnerable children. Fulfilling the potential of Child \times Environmental models of development requires the study of environments in which children's extrafamilial social relations take place and the contribution of such multilevel forces to continuity and change in individual development.

Footnotes

1 Changes in caregivers over time contributed to relatively lower stability coefficients for caregiver reports. Of children attending child care, 39% were rated by the same caregiver at 2 and 3 years of age and at 3 and 4 years of age.

2 Although some investigators follow the convention that the variable conceptualized as the moderator in a two-way interaction between continuous variables is graphed such that high and low levels are represented by different lines and high and low levels of the focal variable involved in the interaction appear on the x-axis, there is no reason that the graph and accompanying simple slopes tests must be done in this way (Aiken & West, 1991). In this article, high and low levels of the variable conceptualized as the moderator (class emotional climate) are shown on the x-axis, and high and low levels of the focal variable involved in the interaction are shown as separate slopes. The advantage of this is that the accompanying test of simple slopes examines the difference between high-AS children in negative versus positive classroom environments (and low-AS children in negative vs. positive classroom environments), as intended (rather than testing the difference between high- and low-AS children in negative classroom environments and between high- and low-AS children in positive classroom environments; however, these latter comparisons are also reported).

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