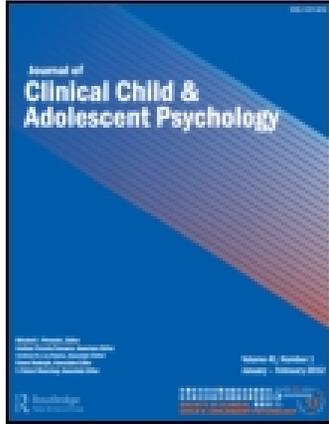


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Publisher: Routledge

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Journal of Clinical Child & Adolescent Psychology

Publication details, including instructions for authors and subscription information:
<http://www.tandfonline.com/loi/hcap20>

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Fan Yang^a, Xinyin Chen^a & Li Wang^b

^a Applied Psychology-Human Development Division, University of Pennsylvania

^b Department of Psychology, Peking University

Published online: 04 Apr 2013.

To cite this article: Fan Yang, Xinyin Chen & Li Wang (2014) Relations Between Aggression and Adjustment in Chinese Children: Moderating Effects of Academic Achievement, *Journal of Clinical Child & Adolescent Psychology*, 43:4, 656-669, DOI: [10.1080/15374416.2013.782816](https://doi.org/10.1080/15374416.2013.782816)

To link to this article: <http://dx.doi.org/10.1080/15374416.2013.782816>

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Relations Between Aggression and Adjustment in Chinese Children: Moderating Effects of Academic Achievement

Fan Yang and Xinyin Chen

Applied Psychology–Human Development Division, University of Pennsylvania

Li Wang

Department of Psychology, Peking University

The primary purpose of the study was to examine the moderating effects of academic achievement on relations between aggressive behavior and social and psychological adjustment in Chinese children. A sample of children ($N = 1,171$; 591 boys, 580 girls; initial M age = 9 years) in China participated in the study. Two waves of longitudinal data were collected in Grades 3 and 4 from multiple sources including peer nominations, teacher ratings, self-reports, and school records. The results indicated that the main effects of aggression on adjustment were more evident than those of adjustment on aggression. Moreover, aggression was negatively associated with later leadership status and positively associated with later peer victimization, mainly for high-achieving children. The results suggested that consistent with the resource-potentiating model, academic achievement served to enhance the positive development of children with low aggression. On the other hand, although the findings indicated fewer main effects of adjustment on aggression, loneliness, depression, and perceived social incompetence positively predicted later aggression for low-achieving, but not high-achieving, children, which suggested that consistent with the stress-buffering model, academic achievement protected children with psychological difficulties from developing aggressive behavior. The results indicate that academic achievement is involved in behavioral and socioemotional development in different manners in Chinese children. Researchers should consider an integrative approach based on children's behavioral, psychological, and academic functions in designing prevention and intervention programs.

Aggressive behavior emerges in early childhood and becomes a salient issue from the preschool years when children start to engage in extensive peer interactions (Dodge, Coie, & Lynam, 2006; Tremblay, 2010). Because it may inflict harm on others and threaten

group functioning, aggressive behavior is often perceived, and responded to, negatively by others. Empirical research indicates that children who display aggressive behavior are likely to be rejected by peers, to be regarded as incompetent by adults, and to display difficulties in social adjustment (Coie, Terry, Lenox, Lochman, & Hyman, 1995; Landsford, Malone, Dodge, Pettit, & Bates, 2010). From a developmental perspective, childhood aggression is a significant phenomenon due to its association with pervasive negative outcomes such as juvenile delinquency, low educational and occupational status, and poor quality of social relationships (e.g., Caspi, Elder, & Bem, 1987; Kokko, Tremblay, Locourse, Nagin, & Vitaro, 2006; Landsford et al., 2010).

The research was supported by grants from the Social Sciences and Humanities Research Council of Canada and National Natural Science Foundation of China (#31271103, 30500161). We are grateful to the children and teachers for their participation.

Correspondence should be addressed to Fan Yang or Xinyin Chen, Applied Psychology–Human Development Division, Graduate School of Education, University of Pennsylvania, 3700 Walnut Street, Philadelphia, PA 19104. E-mail: fanyang@gse.upenn.edu or xinyin@gse.upenn.edu

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Aggressive behavior is strictly prohibited in Chinese and perhaps many other group-oriented societies in which maintaining social harmony is the primary concern. There are many social constraints imposed on this prohibition in these societies (Chen & French, 2008; Luo, 1996). In China, children are required to learn to control their frustration, anger, and impulsive and defiant behaviors from the early years (Ho, 1986; Zhou, Main, & Wang, 2010). Aggression and other externalizing problems in children have been a particular issue in contemporary China since the country implemented the “one-child-per-family” policy in late 1970s, because it is believed that only children may have more negative behavioral qualities including impulsiveness, selfishness, and lack of constraint than sibling children (e.g., Tao & Chiu, 1985). Although the empirical evidence is mixed (e.g., Falbo & Poston, 1993; Jiao, Ji, & Jing, 1986), it remains a significant concern that only children in China may display heightened behavioral problems (Chen & He, 2004). It has been found in Chinese children that aggressive behavior is associated with low status in the peer group and other adjustment problems (e.g., Chang, 2004; Chen, Cen, Li, & He, 2005).

RELATIONS BETWEEN AGGRESSIVE BEHAVIOR AND ADJUSTMENT

Different models have been proposed to explain the associations between aggressive behavior and adjustment. The first model (Cicchetti & Toth, 2006; Dodge et al., 2006) suggests that aggressive behavior affects social, school, and psychological adjustment. The influence of aggression on adjustment may happen through interpersonal attitudes and reactions during interactions. Children who display aggressive behavior tend to cause harm to others and thus likely receive negative social evaluations and responses, which in turn may lead to adjustment difficulties. In other words, aggressive children may create an environment that promotes the development of problems (e.g., Chen, He, De Oliveira, et al., 2004; Rubin, Bukowski, & Parker, 2006). The second model indicates that adjustment problems elicit negative reactions of the child, which may be expressed in aggressive behavior. Researchers have found that peer rejection, school failure, and negative self-perceptions predict increased aggressive behavior for school-age children over time (Dodge et al., 2003; Prinstein & Cillessen, 2003; Taylor, Davis-Kean, & Malanchuk, 2007). It is possible that negative social and psychological experiences are a source of frustration, anger, and distress, which constitute a basis for the display of aggressive behavior (Berkowitz, 1983; Donnellan, Trzesniewski, Robins, Moffitt, & Caspi, 2005). Finally, aggression and adjustment may affect each other reciprocally (Hinshaw, 1992; Welsh, Parke, Widaman, & O’Neil, 2001). This bidirectional model is

believed to be conceptually plausible and useful for understanding the developmental processes involving coherently connected aspects of socioemotional functioning.

In recent years, researchers have made increasing effort to examine relations between aggression and adjustment in longitudinal studies (e.g., Boivin, Petitclerc, Feng, & Barker, 2010; Ladd & Troop-Gordon, 2003; Orue & Calvete, 2011; Palmen, Vermande, Deković, & van Aken, 2011; Rose, Swenson, & Waller, 2004; Zimmer-Gembeck, Geiger, & Crick, 2005), which provide important information about the reciprocal processes in the associations. With a few exceptions (e.g., Palmen et al., 2011), however, these studies have focused mainly on linear relations or “main effects” between aggression and adjustment. Moreover, the associations are generally weak to modest, especially after the stability effect was controlled, and vary substantially from one study to another (e.g., Chen, Huang, Chang, Wang, & Li, 2010; DeRosier, Kupersmidt, & Patterson, 1994; Landsford et al., 2010; Masten et al., 2005; Palmen et al., 2011). Therefore, it is necessary to investigate factors that affect the relations between aggression and adjustment. In the present study, we examined, in a sample of Chinese children, whether and how academic achievement moderated the relations between aggression and social and psychological adjustment from a developmental perspective.

ACADEMIC ACHIEVEMENT IN CHINESE CHILDREN

The attainment of academic achievement is one of the most important tasks for children from middle childhood to adolescence in the Chinese society. It has been consistently found that Chinese children outperform their counterparts in many other countries in academic areas and that the differences persist throughout the elementary and high school years (e.g., Mullis, Martin, & Foy, 2008; Stevenson, Chen, & Lee, 1993). Academic achievement has traditionally been highly valued and encouraged in Chinese culture, as implied in an ancient proverb “Gold is found in books.” Children’s academic achievement is closely linked to the reputation of the family; it is commonly believed that the child’s failure in academic achievement may bring disgrace and shame to parents and ancestors (Ho, 1986). The Confucian doctrine of filial piety, for example, emphasizes the obligation of children to maintain and enhance the status and reputation of the family, which is reflected mainly in school performance in childhood and adolescence (e.g., Fuligni, Tseng, & Lam, 1999). Although the Chinese society has changed considerably over the past century, many of the traditional ideologies, conventions, and values, including those concerning academic

achievement, have been retained in contemporary China. Parents and teachers place great pressure on children to perform optimally in school work; children who fail to meet standards of academic achievement are regarded as highly problematic, whereas children who perform well academically are often praised by teachers and parents and respected by peers (Phillipson & Phillipson, 2007).

Given this background, it is conceivable that academic achievement has significant implications for social and psychological functioning in Chinese children. It was found in China that academic achievement in elementary school children was positively associated with leadership status, peer acceptance, and positive self-regard. Moreover, academic achievement was negatively associated with socioemotional problems such as loneliness and depression (Chen, Rubin, & Li, 1997).

MODERATING EFFECTS OF ACADEMIC ACHIEVEMENT ON RELATIONS BETWEEN AGGRESSION AND ADJUSTMENT

Researchers who are interested in the importance of academic achievement have focused on its "main effects" on performance in social and other domains. Little attention has been paid to academic achievement as a moderator of children's development. As one of the most valued characteristics of school-age children in the Chinese society, academic achievement is likely to serve more comprehensive functions in development beyond its main effects. For children with behavioral or socioemotional problems, for example, academic achievement may mitigate the adverse effects of the problems. Relative to their academically poor counterparts, academically competent children may obtain more opportunities to interact with others, display their strengths in interactions, and receive social support because peers may approach and work with them for school tasks. Similarly, given the high emphasis of teachers and parents on academic achievement in China, children who are more academically competent may be more likely to receive guidance and specific assistance from adults. Opportunities to interact with others and social support may be particularly important for children with behavioral or adjustment problems to learn appropriate behaviors and to handle their problems. In addition, among children with behavioral or adjustment difficulties, those who are academically competent are more likely than others to learn effective strategies to cope with their frustration and distress (e.g., Wentzel, 2005). Thus, academically competent children may have better regulatory or control abilities to address their difficulties.

In the literature (Cohen & Wills, 1985; Masten & Wright, 1998), researchers have commonly used two

general models to specify the moderating effects involving various social and personal factors. The first model is the stress-buffering model (Cohen & Wills, 1985), which focuses on factors that affect people in the context of risk or adversity (e.g., children with behavioral or adjustment difficulties). According to this model, high academic achievement reduces the risk and protects children with initial difficulties from developing further problems. In contrast, low academic achievement serves as a vulnerability or exacerbating factor that makes children with initial difficulties to develop more problems. The different relations in children with high and low academic achievement are mainly due to its effects on aggressive or poorly adjusted children. Statistically, this model may be represented by significant relations (e.g., positive relations between aggression and later adjustment problems or between adjustment problems and later aggression) for low-achieving children and nonsignificant or weaker relations for high-achieving children.

The second model is the resource-potentiating model (Kupersmidt, Griesler, DeRosier, Patterson, & Davis, 1995). Rather than focusing on individuals at risk, this model is concerned mainly with personal or social conditions that facilitate the adaptive development of individuals who already have the advantage. According to this model, high academic achievement enhances the strengths of initially low-aggressive or well-adjusted children and facilitates their development of positive outcomes (increased strengths or decreased problems) but does not have a similar facilitating effect for high-aggressive or poorly adjusted children. Statistically, this model may be represented by significant relations (e.g., negative relations between aggression and later positive adjustment or between positive adjustment and later aggression) for children with high academic achievement and nonsignificant or weaker relations for children with low academic achievement (see Cohen & Wills, 1985; Kupersmidt et al., 1995; Masten & Wright, 1998, for further discussions of the interaction models).

THE PRESENT STUDY

The primary purpose of the present study was to examine predictive relations between aggression and adjustment and how academic achievement moderated the relations. We were interested in whether aggression and adjustment reciprocally contributed to each other. Moreover, we attempted to test two models, the stress-buffering model and the resource-potentiating model, concerning the moderating effects of academic achievement.

A sample of third-grade school children from elementary schools in China participated in this 1-year longitudinal study. The year from third grade to fourth grade represents an important period of social,

behavioral, and academic development in Chinese school-age children (e.g., Chen, 2010; Chen et al., 1997) as they start to engage in extensive social interactions and experience increased academic pressure. Previous studies (e.g., Chen, Rubin, & Li, 1995) have indicated substantial individual variations in development during this period; whereas some children become increasingly competent and achieve success in various areas, others develop extensive problems. It would be interesting to examine how aggression and adjustment affect each other in development and how academic achievement plays a role in shaping the relations. Data on children's aggression, academic achievement, and adjustment were collected from multiple sources. For the adjustment variables, we focused on two aspects that were important in school-age children: (a) social adjustment including peer relations, leadership status, teacher-rated school-related social competence, and victimization, and (b) psychological adjustment including self-perceptions of social competence, loneliness, and depression. The longitudinal study allowed us to examine mutual contributions of aggressive behavior and adjustment and the moderating role of academic achievement from a developmental perspective, with the stability effect controlled. Based on the literature (e.g., Hinshaw, 1992; Welsh et al., 2001), we hypothesized that aggressive behavior and adjustment would reciprocally contribute to each other over time, although contributions of aggressive behavior to adjustment might be more evident than the contributions of adjustment to aggressive behavior. We also hypothesized that academic achievement would moderate the relations between aggressive behavior and adjustment by serving as a stress-buffering or resource-potentiating factor. To our knowledge, this was the first study assessing individual academic achievement as a moderator of relations between aggressive behavior and adjustment. We believed that the study would provide valuable information about the significance of children's academic achievement for development in a context in which academic performance was highly emphasized.

Researchers have found in China and other countries that boys display more aggressive and other social-behavioral problems than girls (e.g., Chen et al., 2005; Whiting & Edwards, 1988). Chinese boys also tend to report more psychological problems such as loneliness and depression than girls, perhaps because the public evaluation processes in Chinese schools facilitate the associations between social and behavioral problems and negative self-perceptions and self-feelings (Chen et al., 1995). The findings concerning gender differences in the relations among aggression, academic achievement, and adjustment are largely mixed. The associations between aggression and adjustment problems, for example, were found to be more evident in boys than in girls (e.g., Chen et al., 2005; Coie et al., 1995), more

evident in girls than in boys (e.g., Chen, He, De Oliveira, et al., 2004; Salmivalli, Kaukiainen, & Lagerspetz, 2000), and similar in boys and girls (e.g., Boivin et al., 2010; Chen et al., 1997; Zimmer-Gembeck et al., 2005) in different studies. We attempted to explore the issue further in this study.

METHOD

Participants

The original sample consisted of 1,171 third-grade children (591 boys, 580 girls) in nine ordinary elementary schools in Beijing, P. R. China. Unlike a small number of "key" schools in the city in which students were often selected from different areas on the basis of their school performance, students in ordinary schools came from the residential areas in which the school was located. There were 30 classes in the study, with about 40 students in each class. The mean age of children was 9 years 4 months ($SD = 8$ months). The core curriculum, which was identical in the region, consisted of Chinese, mathematics, and English. The structure and organization of elementary schools are similar in China. Students are encouraged to participate in a variety of extracurricular social and academic activities in school, which provides extensive opportunities for children to interact with each other. One teacher is designated to be in charge of a class. This head teacher often teaches one major course and takes care of the social and daily activities of the class. Students are not allowed to switch classrooms. Students spend roughly the same amount of time in the classroom. The schedule of courses and other activities is typically identical for students in the same class.

Almost all of the children (98%) were from intact families. Due to the "one-child-per-family" policy that was implemented in the late 1970s, 92% of the children were only children in the family; others had one or more siblings. The children were from families with mostly low to middle socioeconomic status backgrounds. Preliminary analyses indicated nonsignificant differences between the different types of families on the variables or relations of interest in the study.

From the original sample, 1,155 (98.6%) children in the fourth grade participated in the follow-up study. There were nonsignificant differences on the Time 1 variables between children who participated in the follow-up study and those who did not.

Procedure

We group administered to the children a peer assessment measure of aggression, a sociometric nomination measure, and a peer victimization measure. Children

completed self-report measures of self-perceptions of social competence, loneliness, and depression. Teachers were asked to complete a rating scale for each participant concerning his or her school-related social competence. In addition, data concerning children's leadership and academic achievement were obtained from school records. The same data were collected in a follow-up study 1 year later. The data were collected near the end of the school year (May and June) at each time.

The members of our research team carefully examined the items in the measures that were initially developed in the United States, using a variety of formal and informal strategies (e.g., repeated discussion in the research group, interviews with children and teachers, psychometric analysis). We translated and then back-translated the measures to ensure comparability with the English versions. The measures have proved valid and appropriate in Chinese as well as some other cultures (e.g., Casiglia, Lo Coco, & Zappulla, 1998; Chen et al., 1995). Extensive explanations of the procedure were provided during administration. No evidence was found that the children had difficulties understanding the procedure or the items in the measures. The participants were recruited through their schools. Written consent was obtained from all children and their parents. No incentives were provided for participating in the study. The participation rate was 95% at each time.

Measures

Academic achievement. Information on academic achievement in three main subjects—Chinese, mathematics, and English—was obtained from the school records. The scores of academic achievement were based on objective examinations conducted by the school. Grades in these subjects have proved to be a valid measure of academic achievement in Chinese children (e.g., Chen et al., 1997). In the present study, scores on Chinese, mathematics, and English were significantly correlated ($r = .72-.74, ps < .001$) and thus were summed to form a single index of academic achievement. To control for differences in the criteria for evaluation across classes, the measure of academic achievement was standardized within the class.

Peer assessments of aggression. We administered to the children a peer assessment measure of aggression, adopted from the Revised Class Play (Masten, Morison, & Pelligrini, 1985). During administration, the research assistant read each of the behavioral descriptors, and children were asked to nominate up to three classmates who could best play the role if they were to direct a class play. Children were asked to nominate students in their own class. Subsequently, nominations received from all classmates were used to compute each item score for each

child. The item scores were standardized within the class at each wave to adjust for differences in the number of nominators. Items in the measure were concerned with overt physical and verbal aggressive behaviors (e.g., "gets into a lot of fights," "picks on other kids"). Factor analysis indicated that the items represented the corresponding factor (also see Chen et al., 2005). The measure has proved to be reliable, valid, and appropriate in Chinese children (see Chen et al., 2005, for test-retest reliabilities). Internal reliability was .91 in the present study.

Sociometric nominations. Children were asked to nominate up to three classmates with whom they most liked to be and three classmates with whom they least liked to be (positive and negative nominations). The nominations received from all classmates were totaled and then standardized within each class to permit appropriate comparisons. As suggested by other researchers (e.g., Coie et al., 1995), cross-gender nominations were allowed. Test-retest reliabilities (interval of 2 weeks) were .77 and .93 for positive and negative sociometric nominations, respectively, in a different sample ($N = 132$) of Chinese children. Following Coie, Dodge, and Coppotelli's procedure (1982), an index of peer preference, which indicates how well a child is liked by peers in the classroom, was formed by subtracting negative nomination scores from positive nomination scores. The procedure has been used and proved valid with Chinese children (e.g., Chen et al., 1995).

Leadership. There are formal student organizations, which are often hierarchical in nature, in Chinese schools. The leaders of these organizations, elected by peers and teachers, are usually believed to be good students in social and school performance. Leadership at a higher level such as school level is considered indicating greater competence than that at a lower level such as the class or within-class group level. Leadership was coded as follows: Students who were group leaders within the class received a score of 1; students who held leadership positions at the class level and at the school level received scores of 2 and 3, respectively. Students who did not hold leadership positions were given a score of 0. Leadership scores were standardized within the class to control for differences in the process of selection of leaders across classes. This information has proved to be a useful and reliable indicator of school competence in Chinese children (e.g., Chen et al., 1995).

Teacher ratings. The head teacher of each class rated each child in his or her class on school-related social competence. Teachers were asked to rate, on a 5-point scale, how well each item in the measure described the

child, ranging from 1 (*not at all*) to 5 (*very well*). The measure (Hightower et al., 1986) tapped several overlapping areas of school-related social competence including frustration tolerance, assertive social skills, task orientation, and peer social skills (e.g., “participates in class discussion,” “copes well with failure”). Exploratory and confirmatory factor analyses of the data in the Chinese sample revealed a single competence factor. Therefore, consistent with the procedure used in previous studies (e.g., Chen et al., 1995), a global score of teacher-rated competence was calculated. The teacher-rating scores were standardized within the class to control for the teacher’s response style and to allow for appropriate comparisons. The internal reliabilities were .94 and .96 in this study. Test–retest reliability was .86 for teacher-rated competence in Chinese children.

Victimization by peers. A measure of victimization by peers (Schwartz, Chang, & Farver, 2001) was used to assess children’s experiences of victimization. Children were asked to nominate up to three peers to fit each of the four descriptors. The items tapped direct, overt, and indirect, relational types of victimization (e.g., “Get picked on or teased by other kids,” “Get left out on purpose during activity or play time”). Nominations received from all classmates were used to compute each item score for each child. The item scores were summed and standardized within the class to form an index of victimization by peers. The measure has proved to be reliable and valid in Chinese children (Schwartz et al., 2001). The internal reliabilities of the measure were .81 and .85 at Times 1 and 2, respectively, in the present study.

Self-perceptions of social competence. Children’s self-perceptions of social competence were assessed by a self-report measure adapted from the Self-Perception Profile for Children (Harter, 1985). Children were requested to respond to statements concerning self-perceptions of competence in the social domain (e.g., “I find it’s easy to make friends,” “I get along with other kids”) using a 5-point scale from 1 (*not at all true*) to 5 (*always true*). The average scores of their responses were calculated, with higher scores indicating more positive self-perceptions. The measure has proved to be reliable and valid in Chinese children (Chen, He, & Li, 2004). Internal reliabilities of this measure were .67 and .74 at Times 1 and 2, respectively.

Loneliness and social dissatisfaction. Children’s loneliness and social dissatisfaction were assessed by a self-report measure, adapted from Asher, Hymel, and Renshaw (1984). Children were requested to respond to

self-statements (e.g., “I have nobody to talk to,” “I feel lonely,” “I don’t have anybody to play with at school”) using a 5-point scale from 1 (*not at all true*) to 5 (*always true*). The average score of the responses was calculated, with higher scores indicating greater loneliness. The measure has been used and proved reliable and valid in previous studies in Chinese children (e.g., Chen, He, De Oliveira, et al., 2004). Internal reliabilities were .86 and .91 at Times 1 and 2, respectively, in the present study.

Depression. Children’s depression was measured by administering a Chinese version of the Childhood Depression Inventory (Kovacs, 1992). There are three alternative responses to each item from which the participant chooses the one that best describes his or her experience in the past 2 weeks. The items center on a given thought, feeling, or behavior associated with depression, including self-deprecation, reduced social interest, anhedonia, self-hate, self-blame, sleep disturbance, fatigue, somatic concerns, and reduced appetite. The items were scored 0, 1, or 2, with a higher score indicative of greater depression. The measure has proved reliable and valid in Chinese children (e.g., Chen & Li, 2000; Dong, Yang, & Ollendick, 1994). Following the procedure outlined by Kovacs (1992), the average score of the responses was computed. Internal reliabilities were .86 and .83 at Times 1 and 2, respectively, in the present study.

RESULTS

Descriptive Data

Full information maximum likelihood was used to estimate missing data for those who did not participate in the follow-up study. We conducted a repeated measure multivariate analysis of variance to test the overall effects of gender and grade on the adjustment variables, aggression, and academic achievement in Time 1 and Time 2. A significant effect of gender was found, Wilks’s $\Lambda = .87$, $F(9, 1161) = 17.95$, $p < .001$, $\eta^2 = .14$, for all the variables. No significant effects of grade or Gender \times Grade interactions were found. Follow-up univariate analyses indicated that boys had lower scores on peer preference, leadership, teacher-rated competence, self-perceptions of social competence, and academic achievement, and higher scores on victimization, loneliness, depression and aggression ($\eta^2 = .01-.08$). Means and standard deviations of the variables for boys and girls are presented in Table 1. Intercorrelations among the adjustment variables are presented in Table 2. The magnitudes of the correlations were generally weak to moderate, suggesting that these measures tapped different, overlapping aspects of social, school, and psychological adjustment.

TABLE 1
Means and Standard Deviations of Variables for Boys and Girls

Variables	Time 1		Time 2		F Value
	Boys	Girls	Boys	Girls	
Peer Preference	-.11 (1.01)	.27 (.92)	-.03 (1.00)	.14 (1.01)	36.55***
Leadership	-.12 (.91)	.26 (1.13)	-.13 (.90)	.29 (1.10)	39.79***
TR-Competence	-.17 (1.01)	.33 (.88)	-.16 (1.04)	.35 (.82)	36.61***
Victimization	.08 (1.05)	-.12 (.86)	.08 (1.03)	-.14 (.88)	3.42*
SP-Social Competence	3.88 (.90)	4.01 (.83)	3.98 (.93)	4.17 (.79)	6.99***
Loneliness	1.85 (.76)	1.65 (.63)	1.71 (.76)	1.55 (.63)	17.58***
Depression	.37 (.31)	.28 (.29)	.29 (.27)	.24 (.25)	8.30***
Aggression	.23 (1.16)	-.29 (.48)	.18 (1.13)	-.25 (.62)	30.91***
Academic Achievement	-.07 (1.03)	.19 (.84)	-.12 (.94)	.23 (.74)	16.13***

Note: TR = teacher ratings; SP = self-perceptions.

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

Longitudinal Analyses

Path analysis was conducted through Mplus 6 (Muthén & Muthén, 2010) to examine the reciprocal relations between aggression and adjustment variables. The analysis was conducted separately for each adjustment variable. Following the procedure by Kline (2005), the moderating effects of academic achievement, as represented by the interactions between academic achievement and aggression and between academic achievement and the adjustment variable were included in the model, along with the main effects (see the conceptual model in Figure 1). Therefore, the model included

aggression, the adjustment variable, academic achievement, and the interactions in Grade 3 as predictors, and aggression and the adjustment variable in Grade 4 as outcomes. Child gender was controlled as a covariate. The overall model fit indices were satisfactory, $\chi^2(2) = 2.63-9.27$, $p < .01$, $\chi^2/df = 1.32-4.64$, comparative fit indexes = .98, Tucker-Lewis index = .90-.99, root mean square error of approximation = .02-.08, and standardized root mean square residual $< .01-.02$. The total amounts of variances accounted for by the variables in the model were significant, $R^2 = .32-.68$, F values = 11.22-33.54, $ps < .001$.

TABLE 2
Intercorrelations Among Variables

	1	2	3	4	5	6	7	8
Time 1								
1. Peer Preference								
2. Leadership	.36***							
3. TR-Comp.	.40***	.42***						
4. Victimization	-.51***	-.16***	-.22***					
5. SP of Social Comp.	.25***	.21***	.27***	-.15***				
6. Loneliness	-.28***	-.22***	-.27***	.18***	-.75***			
7. Depression	-.26***	-.20***	-.21***	.21***	-.54***	.59***		
8. Aggression	-.48***	-.10**	-.20***	.49***	-.06	.14***	.09**	
9. Academic Achievement	.42***	.33***	.46***	-.30***	.21***	-.26***	-.26***	-.18***
Time 2								
1. Peer Preference								
2. Leadership	.35***							
3. TR-Comp.	.49***	.49***						
4. Victimization	-.51***	-.14***	-.29***					
5. SP of Social Comp.	.29***	.25***	.27***	-.21***				
6. Loneliness	-.31***	-.23***	-.28***	.26***	-.82***			
7. Depression	-.21***	-.22***	-.22***	.17***	-.63***	.65***		
8. Aggression	-.48***	-.13**	-.33***	.52***	-.09**	.09**	.12***	
9. Academic Achievement	.44***	.39***	.56***	-.33***	.28***	-.26***	-.32***	-.23***

Note: TR = teacher ratings; SP = self-perceptions; comp. = competence.

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

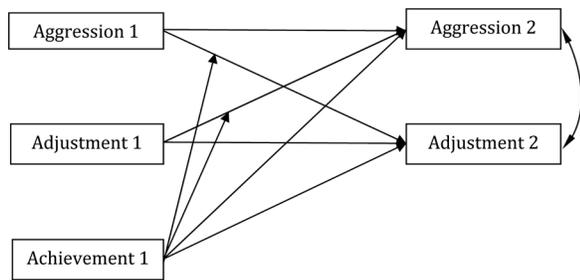


FIGURE 1 The conceptual model of path analysis.

Stability and cross-lagged relations. The results first indicated that the stabilities of aggression and the adjustment variables were all significant. Concerning the cross-lagged paths, Time 1 aggression had unique and negative contributions to the prediction of Time 2 peer preference, leadership, teacher-rated competence, and self-perceived social competence. Time 1 aggression also had positive effects on Time 2 victimization and loneliness. On the other hand, Time 1 peer preference had a negative effect on Time 2 aggression, and depression had a positive effect on Time 2 aggression.

TABLE 3
Effects of Time 1 Variables and Interactions in Predicting Time 2 Outcomes in Path Analyses

Time 2 Variable	Time 2 Aggression					Time 2 Adjustment Variable				
	β	B	SE	95% CI	t Value	β	B	SE	95% CI	t Value
Peer Preference (PP2)										
Aggression (AG1)	.80	.80	.02	(.75, .81)	33.95***	-.17	-.28	.05	(-.21, -.12)	-6.14***
Peer Preference (PP1)	-.07	-.05	.02	(-.11, -.04)	-2.84**	.56	.58	.03	(.51, .60)	18.29***
Academic Achievement (AA1)	.01	.01	.03	(-.03, .05)	.37	.10	.16	.05	(.06, .12)	3.61***
AG1 × AA1	—	—	—	—	—	.01	.00	.04	(-.04, .05)	.09
PP1 × AA1	.03	.02	.01	(-.01, .07)	1.27	—	—	—	—	—
Leadership (LEA2)										
Aggression (AG1)	.82	.83	.02	(.80, .84)	35.91***	-.09	-.09	.04	(-.14, -.03)	-2.48*
Leadership (LEA1)	-.00	.00	.03	(-.05, .05)	-.01	.48	.48	.03	(.43, .53)	13.89***
Academic Achievement (AA1)	-.03	-.03	.03	(-.08, .02)	-1.05	.16	.17	.04	(.10, .21)	4.43***
AG1 × AA1	—	—	—	—	—	-.07	-.07	.03	(-.13, -.02)	-2.15*
LEA × AA1	-.03	-.03	.04	(-.08, .02)	-.87	—	—	—	—	—
Teacher-Rated Competence (TRC2)										
Aggression (AG1)	.81	.83	.02	(.79, .83)	38.36***	-.18	-.18	.03	(-.22, -.13)	-5.92***
Teacher-Rated Competence (TRC1)	-.01	-.01	.02	(-.04, .03)	-1.04	.35	.36	.03	(.30, .40)	11.12***
Academic Achievement (AA1)	-.04	-.04	.03	(-.08, .01)	-1.44	.25	.26	.03	(.20, .30)	7.75***
AG1 × AA1	—	—	—	—	—	-.03	-.03	.03	(-.08, .02)	-1.0
TRC1 × AA1	-.02	-.02	.02	(-.06, .01)	-1.04	—	—	—	—	—
Victimization (VIC2)										
Aggression (AG1)	.78	.81	.02	(.75, .82)	30.18***	.14	.14	.03	(.09, .19)	4.38***
Victimization (VIC1)	.05	.05	.03	(.01, .10)	1.91	.59	.59	.03	(.54, .63)	18.53***
Academic Achievement (AA1)	-.03	-.04	.02	(-.07, .00)	-1.49	-.11	-.12	.03	(-.16, -.07)	-4.29***
AG1 × AA1	—	—	—	—	—	.15	.11	.02	(.05, .14)	5.07***
VIC1 × AA1	.04	.03	.02	(.01, .07)	1.87	—	—	—	—	—
Self-Perceptions of Social Competence (SP2)										
Aggression (AG1)	.81	.82	.02	(.79, .84)	37.36***	-.11	-.10	.03	(-.17, -.06)	-3.47***
SP-Social Competence (SP1)	-.01	-.01	.02	(-.05, .02)	-.47	.49	.51	.03	(.45, .54)	16.00***
Academic Achievement (AA1)	-.01	-.01	.02	(-.05, .02)	-.47	.15	.14	.03	(.09, .20)	4.51***
AG1 × AA1	—	—	—	—	—	-.03	-.03	.03	(-.09, .02)	-.94
SP1 × AA1	.05	.05	.02	(.02, .09)	2.24*	—	—	—	—	—
Loneliness (LON2)										
Aggression (AG1)	.81	.83	.02	(.79, .83)	37.34***	.13	.10	.03	(.08, .19)	3.87***
Loneliness (LON1)	.03	.04	.03	(-.01, .07)	1.27	.39	.40	.03	(.34, .44)	11.71***
Academic Achievement (AA1)	-.01	-.00	.02	(-.04, .03)	-.11	-.17	-.14	.03	(-.23, -.12)	-5.03***
AG1 × AA1	—	—	—	—	—	.01	.01	.02	(-.05, .06)	.25
LON1 × AA1	-.05	-.06	.03	(-.08, -.01)	-1.98*	—	—	—	—	—
Depression (DEP2)										
Aggression (AG1)	.81	.82	.02	(.78, .83)	36.47***	.00	.00	.02	(-.05, .05)	-.01
Depression (DEP1)	.04	.14	.07	(-.01, .07)	1.95*	.53	.51	.08	(.49, .58)	16.81***
Academic Achievement (AA1)	-.00	-.01	.01	(-.04, .03)	-.04	-.12	-.04	.02	(-.19, -.08)	-3.80***
AG1 × AA1	—	—	—	—	—	.00	.00	.06	(-.05, .06)	.05
DEP1 × AA1	-.05	-.14	.06	(-.09, -.02)	-2.30*	—	—	—	—	—

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

In addition, Time 1 academic achievement had positive effects on Time 2 peer preference, leadership, teacher-rated competence, and self-perceptions of social competence, and negative effects on Time 2 peer victimization, loneliness, and depression. The path coefficients and tests are presented in Table 3.

Moderating effects of academic achievement. The main goal of the study was to investigate whether academic achievement moderated the relations between aggression and adjustment variables. There were significant interactions between aggression and academic achievement in predicting leadership and victimization. Moreover, there were significant interactions between self-perceptions of social competence, loneliness, and depression, on the one hand, and academic achievement, on the other, in predicting aggression. These interaction effects are also presented in Table 3.

To understand the nature of the interactions, we examined simple slopes of the regression of each of the outcome variables on aggression at a high value and a low value (1 standard deviation above and 1 standard deviation below the mean) of academic achievement, as described by Aiken and West (1991). The regression lines are shown in Figure 2. The results indicated that Time 1 aggression was positively associated with Time 2 victimization, and was negatively associated with Time 2 leadership, for children with high academic achievement. The relations were weaker or nonsignificant for children with low academic achievement. We also examined simple slopes of the regression of aggression on each of the

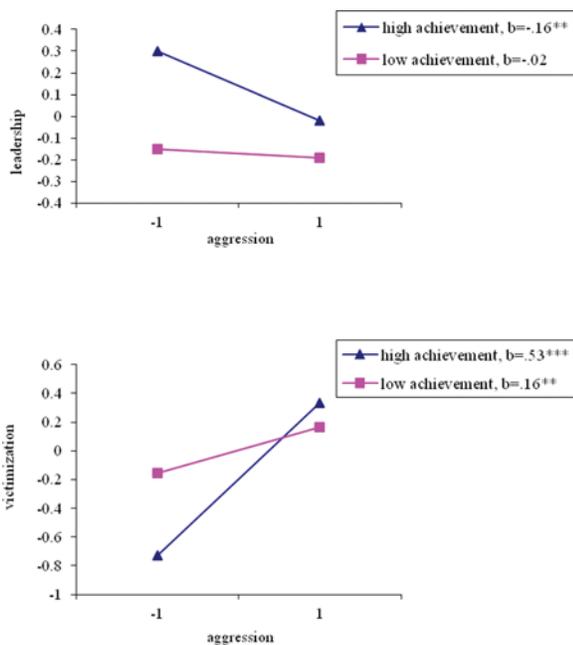


FIGURE 2 Interactions between aggression and academic achievement in predicting later adjustment.

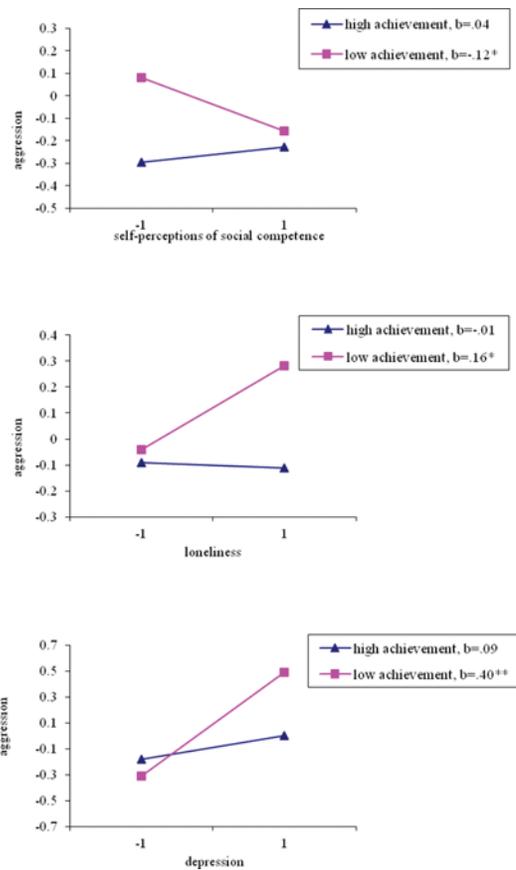


FIGURE 3 Interactions between adjustment and academic achievement in predicting later aggression.

adjustment variables at 1 standard deviation above and 1 standard deviation below the mean of academic achievement. The regression lines are shown in Figure 3. The results indicated that Time 1 self-perceptions of social competence was negatively associated with Time 2 aggression, and Time 1 loneliness and depression were positively associated with Time 2 aggression, for children with low academic achievement. The relations were nonsignificant for children with high academic achievement.

Gender invariance test. We examined whether there were gender differences in the relations using a multi-group invariance analysis (Joreskog, 1971). No significant differences were found between models in which the paths were constrained to be equal across gender and models in which the paths were unconstrained. The results suggested that the associations including the main effects and moderating effects were consistent for boys and girls.

DISCUSSION

As one of the major developmental tasks in childhood and adolescence, academic achievement has been

emphasized in most contemporary societies (e.g., Wigfield & Eccles, 2002). The importance of academic achievement has been demonstrated largely in terms of its direct associations with social, behavioral, and psychological adjustment (e.g., Chen et al., 1997; Welsh et al., 2001; Wentzel, 2005). The results of the present study suggest that children's academic achievement may serve a comprehensive function in human development beyond its direct contributions. Academic achievement not only uniquely predicted later social and psychological adjustment, over and above the stability effect, but also moderated the predictive relations between aggression and adjustment. These results help understand the significance of academic achievement in the Chinese society where academic achievement is highly valued. The results also shed some light on how academic achievement facilitates or constrains the relations between social behaviors and adjustment.

Gender Differences and Relations Between Aggression and Adjustment

Our results indicated gender differences in social, behavioral, and school areas. Boys had lower scores than girls on peer preference, school competence, and self-perceptions of social competence and higher scores than girls on behavioral, social, and psychological problems. These results are consistent with what was found in previous studies in China, North America, and other countries (e.g., Chen et al., 1995; Dodge et al., 2006; Eisenberg, Fabes, & Spinrad, 2006; Whiting & Edwards, 1988). To what extent the gender differences are cross-culturally universal is an interesting issue that requires further study.

We were interested in the predictive relations between aggression and adjustment. The results indicated that aggression significantly predicted later social, school, and psychological adjustment, with the stability of the adjustment variable controlled. Specifically, aggression negatively predicted later peer preference, leadership, teacher-rated competence, and self-perceptions of social competence and positively predicted later victimization and loneliness. The results suggested that aggressive children developed increased difficulties in peer relationships, school performance, and psychological adjustment with time. These results support the argument that aggression is an important aspect of social functioning that has a pervasive negative impact on children's performance and adjustment in various areas (e.g., Dodge et al., 2006). On the other hand, we also found that peer preference negatively predicted later aggression and depression positively predicted later aggression. Thus, children who were accepted by peers were less aggressive, whereas children who were depressed were more aggressive over time. These results support the

bidirectional model concerning the relations between aggressive behavior and social and psychological adjustment.

It should be noted that the effects of adjustment variables on aggression were not as evident as those of aggression on adjustment variables, suggesting that the reciprocal contributions of aggression and adjustment were not balanced or equivalent to each other. The relatively weaker effects of adjustment on aggressive behavior may be related to the high stability of aggression; the behavior may be established in the early years and then become relatively unsusceptible to the influence of other factors (e.g., Dodge et al., 2006; Rothbart & Bates, 2006). Despite this general pattern, our results concerning interactions between academic achievement and adjustment indicate that, for children who are academically incompetent, psychological distress such as negative self-perceptions and self-feelings likely contribute to increased aggression, an issue we discuss in the following section.

Moderating Effects of Academic Achievement

The primary purpose of the present study was to examine how academic achievement moderated the relations between aggression and adjustment. A series of moderating effects of academic achievement was found. First, academic achievement moderated the contributions of aggression to later adjustment. Aggression negatively contributed to later leadership for high-achieving children but not for low-achieving children. Aggression was positively associated with later peer victimization for both high- and low-achieving children; however, the association was stronger for high-achieving children than for low-achieving children. The results indicated that for children who were academically incompetent, aggressive behavior was not particularly relevant to social development. However, for children who were academically competent, aggressive behavior played a significant role in predicting social adjustment. From a different perspective, the results suggested that academic achievement did not have significant effects on adjustment for children who were initially high on aggression. For children who were initially low on aggression, however, those who were academically competent became better adjusted in social areas than those who were relatively poor academically. The results supported the "resource-potentiating" model (Kupersmidt et al., 1995). Unlike an "additive model," which would be reflected by similar patterns of relations between aggression and adjustment for high- and low-achieving children, the resource-potentiating model was represented in this study by the different relations between aggression and later adjustment, mainly due to the effects of academic achievement on low-aggressive children. Relative to their

high-aggressive counterparts, low-aggressive children possess more initial personal and social strengths. Academic achievement serves to enhance or reinforce the strengths and facilitate the development of positive outcomes.

The enhancing or potentiating function of academic achievement in the positive development of low-aggressive children might occur through their daily activities in social interactions in the school. For example, peers are likely to seek help from low-aggressive and academically competent children for schoolwork. As a result, these children have more opportunities than their academically weak counterparts to interact with others and to display their strengths in interactions. The favorable social environment of low-aggressive and high-achieving children including social support they receive from others helps prevent adverse experiences such as victimization. It is also possible that due to the high values of academic achievement in Chinese schools, high-achieving students gain peer approval and respect, which increase the opportunity to acquire a leadership status in school. Academic achievement does not have similar facilitating effect for children who are high in aggression, which may be due to the prohibition of aggressive behavior in China. When aggressive behavior is associated with highly negative social evaluations, it may be difficult for aggressive children to obtain positive experiences in the school, even if they may perform well in academic areas.

Academic achievement also moderated the relations between psychological adjustment variables and later aggression, but in a different manner. Specifically, self-perceptions of social competence were negatively associated with aggression, and loneliness and depression were positively associated with aggression, for low-achieving children but not for high-achieving children. These results were consistent with the stress-buffering model (Cohen & Wills, 1985); academic achievement served as a buffering factor that protected children with psychological problems from developing aggressive behavior. For children who were academically incompetent, those with more negative self-perceptions and higher loneliness and depression became more aggressive with time. However, such developmental trends were not found for children who were academically competent.

The links between psychological problems including negative self-perceptions, loneliness, and depression and later increased aggression in academically poor children are important findings. It has been argued that social dissatisfaction and emotional distress such as feelings of inferiority, isolation, failure, and helplessness may lead to anger, hostility, and aggression toward others. Individuals with negative self-perceptions and emotional suffering may attribute their difficulties to the environment (e.g., blaming others) and externalize

their dissatisfaction and other negative emotions or strike out by displaying aggressive and antisocial behaviors (e.g., Berkowitz, 1983; Donnellan et al., 2005; Tracy & Robins, 2003). Our results suggest that children with psychological problems may engage in these processes, which facilitate the development of aggressive behavior. However, our results also indicate that the effects of negative self-perceptions and emotions on later aggression are evident mainly among those who are academically incompetent. It has been argued that the failure of emotionally distressed individuals to undertake effective and meaningful actions to solve the problem may lead to anger and aggressive behavior (Berkowitz, 1983; Donnellan et al., 2005). Perhaps due to their poor social-cognitive and self-regulatory abilities (e.g., Wentzel, 2005), children who have psychological problems and are academically incompetent are more likely than others to develop maladaptive external attributions and problem-solving strategies and consequently are particularly inclined to display hostile feelings and behaviors in interactions. In addition, because academic achievement is highly valued in Chinese schools, it may be difficult for these academically incompetent children to obtain social support and favorable social evaluations from adults and peers, which in turn may undermine their ability to cope with psychological problems and exacerbate their hostile reactions toward others.

The experiences of children with psychological adjustment problems and high academic achievement may be different. Academically competent children may be capable of understanding social norms for appropriate behaviors and the consequences of deviant behaviors including aggression. At the same time, they may learn self-regulatory and other strategies to handle their emotions in social settings (e.g., constraining their emotions toward self). Moreover, given the emphasis on academic achievement in Chinese schools, these children are less likely than their low-achieving counterparts to experience negative social interactions and encounter adverse situations that elicit anger and aggression. The approval and support they obtain from parents, teachers, and peers for their academic achievement may also help them develop the motivation to control their behavior according to social norms. Thus, through the social-cognitive and social-interactive processes, academic achievement buffers against the development of aggressive behavior in children with psychological difficulties.

In summary, the results of the present study indicate that academic achievement is an important factor in the socioemotional development of school-age children in China. Academic achievement serves to enhance the strengths of children low in aggression and help them develop positive social adjustment. Moreover, academic achievement serves a buffering function in the development of aggressive behavior for children with

psychological difficulties such as negative self-perceptions and self-feelings. These results contribute to the literature by highlighting the moderating effects of academic achievement on the relations between aggressive behavior and adjustment and by demonstrating different ways in which academic achievement affected children with behavioral and psychological problems. From a practical perspective, our results suggest that it may be a useful strategy to incorporate the promotion of academic competence into remedial programs for children to achieve better social and psychological adjustment and to reduce their behavioral problems. Moreover, researchers should consider an integrative approach based on children's specific behavioral, socioemotional, and academic strengths and weaknesses in designing the programs.

Limitations and Future Directions

There were several limitations and weaknesses in this study. First, although our results indicated that academic achievement might moderate the relations between aggression and adjustment, the specific processes of moderation were not examined. The processes may involve various factors at multiple social and personal levels such as evaluations and responses in peer group interactions and social-cognitive abilities (e.g., Chen & French, 2008). It will be important to explore in the future how academic achievement facilitates or undermines the relations.

Second, the present study was conducted in a sample of children from third to fourth grades. It is unclear whether the results can be generalized to children in other developmental periods. As academic achievement becomes a more important, if not the most important, task in high school (e.g., Liu & Lu, 2011), for example, it may play a more comprehensive and substantial role in children's social, behavioral, and psychological development.

Third, no significant gender differences were found in this study in the relations between aggression and adjustment and in the moderating effects of academic achievement, which was consistent with some of the previous findings in the literature (e.g., Boivin et al., 2010; Chen et al., 1995). An issue related to gender differences in aggression and its relations with adjustment is that our assessment focused on overt or physical and verbal forms of aggression. Although boys may be more likely to display overt aggression than girls (e.g., Crick, Ostrov, & Kawabata, 2007), the functional meaning of this type of aggression may be similar for boys and girls because of its salient harmful consequences on others. It will be interesting to examine relational and other types of social aggression, which may be more relevant to adjustment in girls (Crick et al., 2007), and the role of academic achievement in moderating their effects.

Finally, the present study was conducted in China. One needs to be cautious in generalizing the results to other societies. In societies where academic achievement is less emphasized, it may not have as evident effects on social and psychological adjustment as in Chinese children. Even in societies such as North American societies where academic achievement affects children's social relationships (e.g., Wentzel, 1991), the specific traditions and conditions of the society and the community may shape the ways in which academic achievement interacts with socioemotional functioning in determining developmental outcomes. Despite the weaknesses, the present study demonstrates that academic achievement plays a significant role in social, behavioral, and psychological development in Chinese children.

REFERENCES

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Asher, S., Hymel, S., & Renshaw, P. D. (1984). Loneliness in children. *Child Development, 55*, 1456–1464.
- Berkowitz, L. (1983). Aversively stimulated aggression: Some parallels and differences in research with animals and humans. *American Psychologist, 38*, 1133–1135.
- Boivin, M., Petitclerc, A., Feng, B., & Barker, E. (2010). The developmental trajectories of peer victimization in middle to late childhood and the changing nature of their behavioral consequences. *Merrill-Palmer Quarterly, 56*, 231–260.
- Casiglia, A. C., Lo Coco, A., & Zappulla, C. (1998). Aspects of social reputation and peer relationships in Italian children: A cross-cultural perspective. *Developmental Psychology, 34*, 723–730.
- Caspi, A., Elder, G. H. Jr., & Bem, D. J. (1987). Moving against the world: Life-course patterns of explosive children. *Developmental Psychology, 23*, 308–313.
- Chang, L. (2004). The role of classrooms in contextualizing the relations of children's social behaviors to peer acceptance. *Developmental Psychology, 40*, 691–702.
- Chen, X. (2010). Socioemotional development in Chinese children. In M. H. Bond (Ed.), *Handbook of Chinese psychology* (pp. 37–52). Oxford, UK: Oxford University Press.
- Chen, X., Cen, G., Li, D., & He, Y. (2005). Social functioning and adjustment in Chinese children: The imprint of historical time. *Child Development, 76*, 182–195.
- Chen, X., & French, D. (2008). Children's social competence in cultural context. *Annual Review of Psychology, 59*, 591–616.
- Chen, X., & He, H. (2004). The family in mainland China: Structure, organization, and significance for child development. In J. L. Roopnarine & U. P. Gielen (Eds.), *Families in global perspective* (pp. 51–62). Boston: Allyn and Bacon.
- Chen, X., He, Y., De Oliveira, A. M., Lo Coco, A., Zappulla, C., Kaspar, V., et al. (2004). Loneliness and social adaptation in Brazilian, Canadian, Chinese and Italian children: A multi-national comparative study. *Journal of Child Psychology and Psychiatry, 45*, 1373–1384.
- Chen, X., He, Y., & Li, D. (2004). Self-perceptions of social competence and self-worth in Chinese children: Relations with social and school performance. *Social Development, 13*, 570–589.
- Chen, X., Huang, X., Chang, L., Wang, L., & Li, D. (2010). Aggression, social competence, and academic achievement in Chinese children: A 5-year longitudinal study. *Development and Psychopathology, 22*, 583–592.

- Chen, X., & Li, B. (2000). Depressed mood in Chinese children: Developmental significance for social and school adjustment. *International Journal of Behavioral Development, 24*, 472–479.
- Chen, X., Rubin, K. H., & Li, B. (1995). Depressed mood in Chinese children: Relations with school performance and family environment. *Journal of Consulting and Clinical Psychology, 63*, 938–947.
- Chen, X., Rubin, K. H., & Li, D. (1997). Relation between academic achievement and social adjustment: Evidence from Chinese children. *Developmental Psychology, 33*, 518–525.
- Cicchetti, D., & Toth, S. L. (2006). A developmental perspective on internalizing and externalizing disorders. In D. Cicchetti & S. Toth (Eds.), *Internalizing and externalizing expressions of dysfunction* (pp. 1–19). Hillsdale, NJ: Erlbaum.
- Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*, 310–357.
- Coie, J. D., Dodge, K. A., & Coppotelli, H. (1982). Dimensions and types of social status: A cross-age perspective. *Developmental Psychology, 18*, 557–570.
- Coie, J. D., Terry, R., Lenox, K., Lochman, J., & Hyman, C. (1995). Childhood peer rejection and aggression as predictors of stable patterns of adolescent disorder. *Development and Psychopathology, 7*, 697–713.
- Crick, N. R., Ostrov, J. M., & Kawabata, Y. (2007). Relational aggression and gender: An overview. In D. J. Flannery, A. T. Vazsonyi, & I. D. Waldman (Eds.), *The Cambridge handbook of violent behavior* (pp. 245–259). New York: Cambridge University Press.
- DeRosier, M., Kupersmidt, J., & Patterson, C. (1994). Children's academic and behavioral adjustment as a function of the chronicity and proximity of peer rejection. *Child Development, 65*, 1799–1813.
- Dodge, K. A., Coie, J. D., & Lynam, D. (2006). Aggression and antisocial behavior in youth. In N. Eisenberg, D. William, & R. M. Lerner (Eds.), *Handbook of child psychology: Vol. 3, Social, emotional, and personality development* 6th ed., (pp. 719–788). New York: Wiley.
- Dodge, K. A., Lansford, J. E., Burks, V. S., Bates, J. E., Pettit, G. S., Fontaine, R., et al. (2003). Peer rejection and social information processing factors in the development of aggressive behavior problems in children. *Child Development, 74*, 374–393.
- Dong, Q., Yang, B., & Ollendick, T. H. (1994). Fears in Chinese children and adolescents and their relations to anxiety and depression. *Journal of Child Psychology and Psychiatry, 35*, 351–363.
- Donnellan, B., Trzesniewski, K., Robins, R., Moffitt, T., & Caspi, A. (2005). Low self-esteem is related to aggression, antisocial behavior, and delinquency. *Psychological Science, 16*, 328–335.
- Eisenberg, N., Fabes, R. A., & Spinrad, T. L. (2006). Prosocial development. In N. Eisenberg (Ed.), *Handbook of child psychology: Vol. 3. Social, emotional, and personality development* (pp. 646–718). New York: Wiley.
- Falbo, T., & Poston, D. L. (1993). The academic, personality, and physical outcomes of only children in China. *Child Development, 64*, 18–35.
- Fulgini, A. J., Tseng, V., & Lam, M. (1999). Attitudes toward family obligations among American adolescents from Asian, Latin American, and European backgrounds. *Child Development, 70*, 1030–1044.
- Harter, S. (1985). *Manual for the self-perception profile for children*. Denver, CO: University of Denver.
- Hightower, A. D., Work, W. C., Cohen, E. L., Lotyczewski, B. S., Spinell, A. P., Guare, J. C., et al. (1986). The Teacher–Child Rating Scale: A brief objective measure of elementary children's school problem behaviors and competences. *School Psychology Review, 15*, 393–409.
- Hinshaw, S. P. (1992). Externalizing behavior problems and academic underachievement in childhood and adolescence: Causal relationships and underlying mechanisms. *Psychological Bulletin, 111*, 127–155.
- Ho, D. Y. F. (1986). Chinese pattern of socialization: A critical review. In M. H. Bond (Ed.), *The psychology of the Chinese people* (pp. 1–37). New York: Oxford University Press.
- Jiao, S., Ji, G., & Jing, Q. (1986). Comparative study of behavioral qualities of only children and sibling children. *Child Development, 57*, 357–361.
- Jöreskog, K. (1971). Simultaneous factor analysis in several populations. *Psychometrika, 36*, 409–426.
- Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). New York: Guilford.
- Kokko, K., Tremblay, R. E., Locourse, E., Nagin, D. S., & Vitaro, F. (2006). Trajectories of prosocial behavior and physical aggression in middle childhood: Links to adolescent school dropout and physical violence. *Journal of Research on Adolescence, 16*, 403–428.
- Kovacs, M. (1992). *The Children's Depression Inventory*. Toronto: Multi-Health Systems.
- Kupersmidt, J. B., Griesler, P. C., DeRosier, M. E., Patterson, C. J., & Davis, P. W. (1995). Childhood aggression and peer relations in the context of family and neighborhood factors. *Child Development, 66*, 360–375.
- Ladd, G. W., & Troop-Gordon, W. (2003). The role of chronic peer difficulties in the development of children's psychological adjustment problems. *Child Development, 74*, 1344–1367.
- Landsford, J. E., Malone, P. S., Dodge, K. A., Pettit, G. S., & Bates, J. E. (2010). Developmental cascades of peer rejection, social information processing biases, and aggression during middle childhood. *Development and Psychopathology, 22*, 593–602.
- Liu, Y., & Lu, Z. (2011). The Chinese high school student's stress in the school and academic achievement. *Educational Psychology, 31*, 27–35.
- Luo, G. (1996). *Chinese traditional social and moral ideas and rules*. Beijing, China: The University of Chinese People Press.
- Masten, A. S., Morison, P., & Pellegrini, D. S. (1985). A revised class play method of peer assessment. *Developmental Psychology, 21*, 523–533.
- Masten, A. S., Roisman, G. I., Long, J. D., Burt, K. B., Obradović, J., Riley, J. R., et al. (2005). Developmental cascades: Linking academic achievement and externalizing and internalizing symptoms over 20 years. *Developmental Psychology, 41*, 733–746.
- Mastern, A., & Wright, M. O. (1998). Cumulative risk and protection models of child maltreatment. *Journal of Aggression, Maltreatment & Trauma, 2*, 7–30.
- Mullis, I., Martin, M., & Foy, P. (2008). *TIMSS 2007 International Mathematics Report: Findings from IEA's international mathematics and science study at the fourth and eighth grades*. Boston: Centre for the Study of Testing, Evaluation and Educational Policy, Boston College.
- Muthén, B., & Muthén, L. (2010). *Mplus user's guide* (6th ed.). Los Angeles, CA: Muthén & Muthén.
- Orue, I., & Calvete, E. (2011). Reciprocal relationships between socio-metric indices of social status and aggressive behavior in children: Gender differences. *Journal of Social and Personal Relationships, 28*, 963–982.
- Palmen, H., Vermande, M. M., Deković, M., & van Aken, M. A. G. (2011). Competence, problem behavior, and the effects of having no friends, aggressive friends, or nonaggressive friends: A four-year longitudinal study. *Merrill-Palmer Quarterly, 57*, 186–213.
- Phillipson S., & Phillipson, S. N. (2007). Academic expectations, belief of ability, and involvement by parents as predictors of child achievement: A cross-cultural comparison. *Educational Psychology, 27*, 329–348.
- Prinstein, M. J., & Cillessen, A. H. N. (2003). Forms and functions of adolescent peer aggression associated with high levels of peer status. *Merrill-Palmer Quarterly, 49*, 310–342.

- Rose, A. J., Swenson, L. P., & Waller, E. M. (2004). Overt and relational aggression and perceived popularity: Developmental differences in concurrent and prospective relations. *Developmental Psychology, 40*, 378–387.
- Rothbart, M. K., & Bates, J. E. (2006). Temperament. In W. Damon & R. Lerner (Series Eds.), & N. Eisenberg (Vol. Ed.), *Handbook of child psychology, Vol. 3. Social, emotional, and personality development* 6th ed., (pp. 99–166). New York: Wiley.
- Rubin, K. H., Bukowski, W., & Parker, J. (2006). Peer interactions, relationships, and groups. In N. Eisenberg (Ed.), *Handbook of child psychology (6th edition): Social, emotional, and personality development* (pp. 571–645). New York: Wiley.
- Salmivalli, C., Kaukiainen, A., & Lagerspetz, K. (2000). Aggression and sociometric status among peers: Do gender and type of aggression matter? *Scandinavian Journal of Psychology, 41*, 17–24.
- Schwartz, D., Chang, L., & Farver, J. M. (2001). Correlates of victimization in Chinese children's peer groups. *Developmental Psychology, 37*, 520–532.
- Stevenson, H. W., Chen, C., & Lee, S. (1993). Mathematics achievement of Chinese, Japanese, and American children: Ten years later. *Science, 259*, 53–58.
- Tao, K., & Chiu, J. (1985). The one-child-per-family policy: A psychological perspective. In W. Tseng & D. Y. H. Wu (Eds.), *Chinese culture and mental health* (pp. 153–165). New York: Harcourt Brace Jovanovich/Academic Press.
- Taylor, L. D., Davis-Keane, P., & Malanchuk, O. (2007). Self-esteem, self-concept, and aggression in school: A longitudinal exploration. *Aggressive Behavior, 33*, 130–136.
- Tracy, J. L., & Robins, R. W. (2003). "Death of a (narcissistic) salesman": An integrative model of fragile self-esteem: Comment. *Psychological Inquiry, 14*, 57–62.
- Tremblay, R. E. (2010). Developmental origins of disruptive behaviour problems: The "original sin" hypothesis, epigenetics and their consequences for prevention. *Journal of Child Psychology and Psychiatry, 51*, 341–367.
- Welsh, M., Parke, R. D., Widaman, K., & O'Neil, R. (2001). Linkages between children's social and academic competence: A longitudinal analysis. *Journal of School Psychology, 39*, 463–482.
- Wentzel, K. R. (1991). Relations between social competence and academic achievement in early adolescence. *Child Development, 62*, 1066–1078.
- Wentzel, K. R. (2005). Peer relationships, motivation, and academic performance at school. In A. J. Elliot & C. S. Dweck (Eds.), *Handbook of competence and motivation* (pp. 279–296). New York: Guilford.
- Whiting, B. B., & Edwards, C. P. (1988). *Children of different worlds*. Cambridge, MA: Harvard University Press.
- Wigfield, A., & Eccles, S. J. (Eds.). (2002). *Development of achievement motivation*. San Diego, CA: Academic.
- Zhou, Q., Main, A., & Wang, Y. (2010). The relations of temperamental effortful control and anger/frustration to Chinese children's academic achievement and social adjustment: A longitudinal study. *Journal of Educational Psychology, 102*, 180–196.
- Zimmer-Gembeck, M. J., Geiger, T. C., & Crick, N. R. (2005). Relational and physical aggression, prosocial behavior, and peer relations: Gender moderation and bidirectional associations. *Journal of Early Adolescence, 25*, 421–452.