

Relations between Shyness-Sensitivity and Internalizing Problems in Chinese Children: Moderating Effects of Academic Achievement

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Abstract Shy-sensitive children are likely to develop adjustment problems in today's urban China as the country has evolved into an increasingly competitive, market-oriented society. The main purpose of this one-year longitudinal study was to examine the moderating effects of academic achievement on relations between shyness-sensitivity and later internalizing problems in Chinese children. A sample of 1171 school-age children (591 boys, 580 girls) in China, initially at the age of 9 years, participated in the study. Data on shyness, academic achievement, and internalizing problems were collected from multiple sources including peer evaluations, teacher ratings, self-reports, and school records. It was found that shyness positively and uniquely predicted later loneliness, depression, and teacher-rated internalizing problems, with the stability effect controlled, for low-achieving children, but not for high-achieving children. The results indicate that, consistent with the stress buffering model, academic achievement may be a buffering factor that serves to protect shy-sensitive children from developing psychological problems.

Keywords Shyness · Internalizing problems · Academic achievement · Chinese children

Introduction

As one of the major socioemotional characteristics, shyness-sensitivity plays an important role in social and psychological adjustment in childhood and adolescence (see Rubin et al. 2009). In Western societies, preschool and school-age children who display shy and sensitive behavior are likely to experience difficulties in peer interactions and relationships (Asendorpf 2010; Coplan et al. 2004; Gazelle and Ladd 2003). Moreover, when they realize their difficulties in social situations, typically from 8 or 9 years, shy-sensitive children may develop negative self-perceptions and other psychological problems such as loneliness and depression (e.g., Coplan et al. 2004; Rubin et al. 1995). Longitudinal research has also indicated that shyness in childhood predicts later adjustment problems in a variety of areas such as educational attainment, career stability, and mental health (e.g., Caspi et al. 1988; Rubin, et al. 1995). In the literature (Asendorpf 1991; Stevenson-Hinde and Shouldice 1993), children's shy-sensitive behavior is taken to reflect internal anxiety, fearfulness, and a lack of self-confidence in social settings. It has been argued that shyness and social anxiety represent a significant risk factor in the development of internalizing problems (Achenbach and Edelbrock 1981; Rubin et al. 2009).

The difficulties that shy-sensitive children experience may be related to the emphasis on assertiveness, competitiveness, and self-expression in the society (e.g., Larson 1999; Oyserman et al. 2002). Social evaluations of children's behaviors may depend, in part, on specific personal and contextual factors such as age or developmental stage (e.g., shyness may be regarded as less maladaptive in preschool children than in school-age children). During development, however, children in the West are generally expected and socialized to be increasingly assertive rather than reserved and restrained (e.g., Greenfield et al. 2006; Maccoby and Martin 1983). Shy-sensitive behavior in children and adolescents is often considered socially immature,

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incompetent, and deviant (Rubin et al. 2009). As a result, this behavior tends to be responded to by peers and adults with negative emotions and actions such as rejection and disappointment (e.g., Chen et al. 2006; Coplan et al. 2004). The negative social evaluations and responses constitute an environment that facilitates the development of psychological problems in shy-sensitive children.

In the traditional Chinese society where behavioral restraint and wariness are considered indications of social maturity and accomplishment (e.g., Kulich and Zhang 2010; Liang 1987), the reserved and wary behavioral tendencies displayed by shy children may help them obtain social approval and support, which in turn are conducive to the development of self-confidence and positive feelings about self and others. Indeed, it has been found that shyness-sensitivity was positively associated with social and psychological well-being and negatively associated with problems in Chinese school-age children in the early 1990s (e.g., Chen et al. 1995; Chen et al. 2004). Over the past two decades, however, China has changed dramatically towards a market-oriented society, particularly in urban regions. New behavioral qualities such as initiative-taking and exploration are now required for adjustment in the competitive environment and thus are increasingly appreciated by individuals, especially in the young generations (Wang and Huang-pu 2007). Many schools have started to encourage students to develop such social skills as expression of personal opinions and self-direction, which have traditionally been neglected in Chinese society. The massive social change and the requirements in the new environment have led to a decline in the adaptive values of shyness. Chen et al. (2005) found in urban samples of elementary school children that the relations between shyness and psychological adjustment were generally nonsignificant or mixed in 1998. Furthermore, by the early part of the 21st century as the country became more deeply immersed in a market economy, shyness was positively associated with psychological problems; shy children were more likely than others to display psychopathological symptoms such as depression. Similar results have been reported in other studies concerning relations between shyness or similar phenomena and adjustment including social relationships, academic achievement, and emotional wellbeing (e.g., Chang et al. 2005; Cheah and Rubin 2004; Chen et al. 2009; Hart et al. 2000).

Given that shy-sensitive children are at risk for psychological problems in today's urban China, similar to their Western counterparts (e.g., Coplan et al. 2004), an important question is whether there are buffering factors that protect these children from developing the problems. An exploration of this issue would not only help us understand the variation in the developmental outcomes of shy-sensitive behavior, but also help professionals design effective remediation programs for children who display this behavior. Despite its potential value, there has been inadequate research on this issue in both

Western and Chinese societies. As suggested by Rubin et al. (2009), protective factors in the development of shy children may include a variety of social and cognitive factors such as emotion regulation, expressiveness, and school competence. Consistent with this suggestion, Gazelle (2008) found that agreeable anxious-solitary children who were perceived by others as intelligent and academically successful had higher scores on positive peer relationships than their counterparts who were perceived as academically incompetent. Asendorpf (1994) also found in a longitudinal study that socially inhibited children, initially at the age of 4 years, who were competent as assessed by standardized tests and rated by teachers showed positive adjustment over time including decreased solitude. In the present study, we investigated in a longitudinal project whether academic achievement, a highly valued attribute in Chinese children, moderated the relations between shyness and later internalizing problems.

Academic Achievement in Chinese Children

The attainment of academic achievement is one of the most important tasks for school-age children in the Chinese society (Li 2011). Researchers have 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 et al. 2008; Stevenson et al. 1993; Zhao and Singh 2011). Academic achievement has traditionally been highly valued and encouraged in the Chinese culture (Wang and Pomerantz 2009), as implied in an ancient proverb "Gold is found in books". According to the Confucian doctrine of filial piety, the obligation of children to enhance the status and reputation of the family is reflected mainly in school achievement in childhood and adolescence; failure in academic achievement may bring disgrace and shame to parents and ancestors (e.g., Fuligni et al. 1999). Although the Chinese society has changed considerably over the past century, the traditional ideologies and values concerning academic achievement have been retained in contemporary China. Parents and teachers place great pressure on children to perform optimally on school work; children who perform well academically are often praised by teachers and parents and respected by peers (Phillipson and Phillipson 2007).

Given this background, it seems reasonable to argue that academic achievement may have pervasive implications for social and psychological functioning in Chinese children. It has been found in China that children's academic achievement is positively associated with leadership status, teacher-rated competence, and other indexes of adjustment (Chen et al. 1997). In the present study, we postulated that the importance of academic achievement in Chinese children might be reflected not only in its main effects on, or direct contributions to, social and psychological adjustment, but

also in its moderating effects on the relations between social behaviors and adjustment outcomes.

Moderating Effects of Academic Achievement on Relations between Shyness and Internalizing Problems

We were interested in whether and how academic achievement moderated the relations between shyness and later internalizing problems. As indicated earlier, shy children in urban China today tend to experience psychological difficulties because their wary and anxious behavior may impede exploration and self-expression that are increasingly encouraged in schools. However, the difficulties that shy children encounter in adjustment may be reduced if they acquire high academic achievement and resultant social approval, respect, and prestige. For example, peers may seek help from them with academic work, which provides opportunities for them to display their strengths and establish supportive relationships. Thus, academic achievement may help shy children create and maintain a relatively benign environment for their social activities.

Moreover, adults including teachers and parents in China are encouraged to be highly involved and provide directions in children's activities and consequently exert a great influence on children's socioemotional adjustment. Relative to peers, teachers and parents in China are more likely to emphasize academic achievement and their evaluations of children are more academically oriented (e.g., Yang 2007). Thus, academic achievement may also help shy children receive support from their teachers and parents. In addition, it has been shown that how shy and anxious children regulate their emotions in challenging situations may affect their adjustment outcomes (e.g., Asendorpf 1991; Rubin et al. 1995). Academically competent children may be more likely than others to learn effective strategies to cope with stress and distress in adjustment (e.g., Wentzel 2005). As such, shy children who are more academically competent may be more capable of developing regulatory strategies to cope with difficulties. Taken together, it seems reasonable to argue that academic achievement is a protective factor that serves to reduce maladaptive outcomes of shyness-sensitivity (Findlay and Coplan 2008).

Our perspective on the role of academic achievement in shaping the relations between shyness-sensitivity and internalizing problems is consistent with the stress-buffering model (Cohen and Wills 1985) that researchers commonly use to specify the processes of moderation or interaction involving social and personal factors in psychopathological development. According to this model, high academic achievement may be a protective factor that buffers against the development of maladaptive outcomes of shyness. In contrast, low academic achievement may serve as an exacerbating factor that reinforces the association between shyness and problems, rendering shy children particularly vulnerable to the development of increased problems in

the later years. Statistically, this model may be represented by significant positive relations between shyness and later problems for children with low academic achievement and nonsignificant or weaker relations for children with high academic achievement (see Cohen and Wills 1985; Masten and Wright 1998 for further discussions of the models).

The Present Study

Previous studies indicated that shyness was associated with socioemotional problems among urban Chinese children in recent years (Chen et al. 2005). However, these studies were cross-sectional, providing little information about the directions of the relations. In the present study, we examined the unique contributions of shyness to later internalizing problems over and above the stability effect, which would help us further understand the nature of children's shy-sensitive behavior in urban China today from a developmental perspective.

It should be noted that, in keeping with the previous research conducted by Chen and his colleagues (e.g., Chen et al. 1992; Chen et al. 2005), we used the term "shyness-sensitivity" (or "shyness" in a short form) in this paper to capture the internal psychological process in reaction to challenging social situations; sensitivity such as "feelings get hurt easily" is an integral part of the construct as indicated in previous studies (e.g., Chen et al. 1992; Masten et al. 1985; Rubin et al. 1995). The behavioral manifestations of shyness-sensitivity may be similar to those assessed in the studies of conflicted shyness (e.g., Coplan et al. 2004), wariness (Stevenson-Hinde and Shouldice 1993), and social inhibition or reticence (e.g., Asendorpf 1994; Hart et al. 2000; see Rubin et al. 2009). However, shyness-sensitivity may be different from the constructs in the study of social withdrawal such as unsociability in Chinese and Western children (e.g., Chang et al. 2005; Cheah and Rubin 2004; Gazelle and Ladd 2003); whereas the former represents anxious reaction to social situations, derived from an internal conflict of approach and avoidance motives, the latter involves aspects of solitary behavior or social disinterest that are driven by the low approach motive (Asendorpf 1990), although they are often empirically related in Western children and start to merge in contemporary urban Chinese children (e.g., Chen et al. 2005). It should also be noted that, largely due to the empirical associations, the measures used in many studies of shyness, social withdrawal, or similar constructs in the literature include mixed items.

The primary purpose of the study was to examine how academic achievement moderated the relations between shyness-sensitivity and later internalizing problems. We were particularly interested in testing the stress-buffering model in which academic achievement served as a buffering factor that protected shy children from developing internalizing problems such as loneliness and depression. It has been found that Chinese children experience an equal, or

even higher, level of emotional problems, compared with their North American counterparts (e.g., Chen, et al. 1995; Dong et al. 1994). This study provided an opportunity to examine how shyness and academic achievement jointly contributed to the development of internalizing problems in Chinese children. We first expected that shyness would predict later internalizing problems. Moreover, we expected that academic achievement would mitigate the maladaptive outcomes of shyness-sensitivity. To our knowledge, this was the first study assessing how academic achievement moderated relations between shyness and later internalizing problems. The longitudinal panel data also allowed us to examine the relations between academic achievement and internalizing problems and later shyness although these relations were not a main issue of interest in the study.

Method

Participants

The original sample consisted of 1171 third grade children (591 boys, 580 girls) in nine ordinary elementary schools that were randomly selected 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 is 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 only child phenomenon has been an integral part of the family and socio-cultural background for child development in contemporary China. The participants came from families with mostly low to middle socioeconomic status. 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, 1155 (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 shyness-sensitivity and a set of self-report measures of loneliness and depression. Teachers were asked to complete a rating scale for each participant concerning his or her internalizing behavioral problems. In addition, data concerning children’s academic achievement were obtained from school records. The same data were collected from the sample 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 version. The measures have proved valid and appropriate in Chinese as well as some other cultures (e.g., Casiglia et al. 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 administration of all measures was carried out by a group of psychology teachers and graduate students in China. The study was approved by the institutional review board. Written consent was obtained from all children and their parents through the school. The participation rate (of all students who were invited, those who agreed to participate) was 95 % at each time.

Measures

Peer assessments of shyness-sensitivity We conducted peer assessments of shyness-sensitivity adopted from the *Revised Class Play* (RCP, Masten et al. 1985). The RCP is widely used in the U.S. and other countries. This technique has been found particularly useful in assessing children’s social functioning in different contexts because it taps the insiders’ perspectives. Consistent with the procedure outlined by Masten et al. (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. When all children in the class completed their nominations, they turned to the next item. Subsequently, nominations received from all classmates were used to compute each item score for each child.

The original Class Play measure consisted of items in broad areas of social functioning. Only the shyness-sensitivity subscale was of interest in this study. The measure consisted of three items assessing shy-sensitive behavior in social context (“Very shy”, “Feelings get hurt easily,” and “Usually sad”)¹; the constellation of the items indicates social wariness and sensitivity from the peers’ perspective (Masten et al. 1985) (see Chen et al. 1992 for further detail about the measure in Chinese children). The nomination scores were standardized within the class ($M=0$ and $SD=1$ for each class) to adjust for differences in the number of nominators and other class-level characteristics, and z-scores were used in the analyses. The measure has proved to be reliable and valid in previous studies in China (e.g., Chen et al. 2005; Chen et al. 1997). The internal reliabilities were 0.71 and 0.76 at Times 1 and 2, respectively, in the present study. Test-retest reliability (interval of 2 weeks) of the measure was 0.84 in a different sample ($N=132$) of Chinese children.

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. Maximum score for each subject was 100, and usually a score below 60 was considered as failure in the course. Grades in these subjects have proved to be a valid measure of school academic achievement in Chinese children (e.g., Chen et al. 1997). In the present study, scores on Chinese, mathematics, and English were significantly correlated, $r=0.72$ to 0.74 , $ps<0.001$, and thus were summed and standardized within the class to form a single index of academic achievement.

Loneliness and social dissatisfaction Children’s loneliness and social dissatisfaction were assessed by a self-report measure, adapted from Asher et al. (1984). Children were requested to respond to 16 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 (1=*not at all true*; 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 et

al. 2004). Internal reliabilities were 0.86 and 0.91 at Times 1 and 2, respectively, in the present study.

Depression Children’s depression was measured by administering a Chinese version of the *Children’s Depression Inventory* (CDI; 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, loneliness, 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 and Li 2000; Dong et al. 1994). The item on suicidal ideation was deleted due to the concern of the school and the item on sadness was deleted to reduce overlap with the shyness measure, resulting in a total of 25 items in the measure. Following the procedure outlined by Kovacs (1992), the total score of the responses was computed. Internal reliabilities were 0.86 and 0.83 at Times 1 and 2, respectively, in the present study.

Teacher ratings of internalizing problems The head teacher of each class rated each child in his/her class on a measure of internalizing problem, adapted from Hightower et al. (1986). Teachers were asked to rate, on a 5-point scale (1=*not at all*; 5=*very well*), how well each of the items described the child. The item “Unhappy, sad” in the original measure were not included and some other items were rephrased to focus on internalizing problems and to reduce overlap with the shyness measure. Factor analysis indicated that the 5 items (“Nervous, frightened, tense,” “Anxious, worried,” “Timid, concerned,” “Does not express feelings”, and “Emotionally disturbed, fearful”) loaded on a single factor, with loadings ranging from 0.58 to 0.74, and were used to form the variable of internalizing problems. The average scores were calculated and used in the analyses. The measure has proved to be reliable and valid in Chinese children (e.g., Chen et al. 1995; Chen et al. 1997). The internal reliabilities of the measure were 0.78 and 0.75 at Times 1 and 2, respectively.

Results

Descriptive Data

As suggested by other researchers (e.g., Graham 2009), the Markov Chain Monte Carlo algorithm (MCMC) was applied to impute the missing values for children who participated in the study at Time1 but not Time 2. We then conducted a repeated-measure multivariate analysis of variance (*MANOVA*) to test

¹ We analyzed the data with the sadness item taken out from the shyness-sensitivity composite. The results concerning the main effects and interactions were similar but a little weaker. The major difference was that among the three interactions between shyness-sensitivity and academic achievement, which were the main focus of the study, the one in predicting depression was significant with the original 3-item composite but non-significant with the 2-item composite. The generally weaker results were mainly due to decreased reliabilities (from 0.71 to 0.60 at Time 1 and from 0.76 to 0.68 at Time 2) of the measure because similar changes in the results occurred when any of the other items was taken out.

the overall effects of gender and grade on all the variables. A significant effect of gender was found, $Wilks=0.88$, $F(5, 1165)=19.36$, $p<0.001$, $\eta^2=0.12$. No significant effects of grade or gender X grade interactions were found. Follow-up univariate analyses indicated that boys had lower scores in shyness and academic achievement and higher scores on loneliness and depression, with η^2 ranging from 0.01 (depression) to 0.08 (shyness). Means and standard deviations of the variables for boys and girls are presented in Table 1. The skewness of the variables ranged from 0.29 (Time 1 teacher ratings) to 2.65 (Time 2 shyness). Intercorrelations among the variables are presented in Table 2.

Relations between Shyness and Academic Achievement and Later Internalizing Problems

A series of multiple regression analyses was conducted mainly to examine relations between shyness and academic achievement and later internalizing problems. Child gender was first entered into the equation to control for its effect. Time 1 internalizing problem variable was entered into the equation next to control for the stability effect. Then, Time 1 shyness and academic achievement were entered simultaneously into the equation. After the main effects, the interaction between shyness and academic achievement was entered to examine the moderating effect of academic achievement on the relations between shyness and later internalizing problems. As suggested by Aiken and West (1991), the predictor variables were centered to reduce multicollinearity in the analyses.

The results concerning gender effects were consistent with those in MANOVA. All the Time 1 internalizing problems significantly predicted the corresponding Time 2 internalizing problems. The results indicated that these variables were stable over time. Concerning the main effects, Time 1 shyness had positive and unique contributions to the prediction of Time 2 loneliness and teacher-rated internalizing problems, over and above gender and stability effects. Academic achievement negatively and uniquely predicted later loneliness and depression. There were significant interactions between shyness and

academic achievement in predicting loneliness, depression, and teacher-rated internalizing problems. The main effects of Time 1 variables and the interaction between shyness and academic achievement in predicting Time 2 internalizing problems and 95 % confidence intervals for the effects are presented in Table 3. The results about ΔR^2 and F value for the block of control variables (gender and stability) and the block of shyness and academic achievement and their interaction are also presented in Table 3. The total R^2 were 0.28, 0.33, and 0.11, $F=64.70$, 63.96, and 21.92, $ps<0.001$, for loneliness, depression, and teacher-rated internalizing problems, respectively. In addition, we tested three-way interactions among gender, shyness, and academic achievement in predicting internalizing problems, and no significant three-way interactions were found. The results suggested that the relations among shyness, academic achievement, and the outcome variables were equivalent for boys and girls.

To understand the nature of the interactions, we examined simple slopes of the regression of each of the outcome variables on shyness at a high value and a low value (one standard deviation above and one standard deviation below the mean) of academic achievement, as described by Aiken and West (1991). The simple slopes are shown in Fig. 1. The results indicated that Time 1 shyness was positively associated with Time 2 loneliness, depression, and teacher-rated internalizing problems for children with low academic achievement. The relations were nonsignificant for children with high academic achievement.

Relations between Internalizing Problems and Academic Achievement and Later Shyness

We conducted similar regression analyses predicting Time 2 shyness based on child gender, Time 1 shyness, internalizing problems, academic achievement, and internalizing problems X academic achievement interaction. Shyness was significantly stable, $\beta=0.64$, $B=0.64$, $SE=0.03$, $t=24.69$, $p<0.001$. No significant main effects of internalizing problems, academic achievement, or their interactions were

Table 1 Means and standard deviations of variables for boys and girls

Variables	Time 1		Time 2		<i>F</i> value for gender
	Boys (<i>n</i> =591)	Girls (<i>n</i> =580)	Boys (<i>n</i> =582)	Girls (<i>n</i> =573)	
Loneliness	1.93 (0.71)	1.74 (0.64)	1.84 (0.80)	1.65 (0.64)	15.22***
Depression	9.02 (7.88)	7.21 (6.52)	7.54 (7.81)	6.30 (6.64)	9.34**
TR-internalizing problems	1.71 (0.59)	1.72 (0.61)	1.81 (0.65)	1.81 (0.64)	0.01
Shyness	-0.16 (0.78)	0.35 (1.19)	-0.19 (0.80)	0.34 (1.18)	56.96***
Academic achievement	88.07 (7.83)	90.84 (5.28)	87.69 (7.24)	90.01 (5.50)	30.35***

N=1171. *TR* teacher ratings

** $p<0.01$ *** $p<0.001$

Table 2 Intercorrelations among variables

	1	2	3	4	5	6	7	8	9
<i>Time 1</i>									
1. Loneliness									
2. Depression	0.61***								
3. TR-internalizing problems	0.17***	0.08							
4. Shyness	0.04	0.03	0.12***						
5. Academic achievement	-0.26***	-0.26***	-0.16***	-0.04					
<i>Time 2</i>									
6. Loneliness	0.49***	0.61***	0.17***	0.07	-0.29***				
7. Depression	0.40***	0.56***	0.08	0.05	-0.25***	0.67***			
8. TR-internalizing problems	0.11***	0.09	0.31***	0.13***	-0.10**	0.10**	0.10**		
9. Shyness	-0.01	-0.02	0.02	0.67***	-0.04	0.07	0.05	0.14***	
10. Academic achievement	-0.23***	-0.23***	-0.12***	-0.04	0.66***	-0.32***	-0.26***	-0.07	-0.06

N=1171. TR teacher ratings

p<0.01 *p<0.001

found in predicting later shyness, $\beta = -0.07$ (teacher-rated internalizing problems) to 0.01 (loneliness X academic achievement), $p > 0.05$, $\Delta R^2 = 0.00$ and 0.01, 95 % confidence intervals included zero for all variables except teacher-rated internalizing problems ($CI = -0.17$ to -0.03).

Discussion

As China has evolved into a more competitive, market-oriented society over the past two decades, shyness-sensitivity, a major socioemotional characteristic that has been traditionally valued,

Table 3 Effects of Time 1 variables in predicting Time 2 internalizing problems

Time 1 predictor	β	B	SE	95 % CI	t value	ΔR^2	F value
<i>Time 2 Internalizing problems</i>							
<i>Loneliness</i>							
Gender	-0.11	-0.17	0.06	(-0.27, -0.07)	-3.09**		
Stability	0.49	0.50	0.03	(0.44, 0.56)	15.23***	0.25	133.67***
Shyness (SH)	0.07	0.05	0.02	(0.01, 0.09)	1.99*		
Academic achievement (AA)	-0.17	-0.12	0.02	(-0.17, -0.08)	-5.10***		
SH x AA	-0.09	-0.05	0.02	(-0.08, -0.02)	-2.92**	0.04	14.36***
<i>Depression</i>							
Gender	-0.08	-1.27	0.56	(-2.37, -0.18)	-2.29*		
Stability	0.55	0.54	0.03	(0.48, 0.60)	18.11***	0.31	177.30***
Shyness (SH)	0.04	0.29	0.23	(-0.17, 0.75)	1.23		
Academic achievement (AA)	-0.11	-0.81	0.24	(-1.27, -0.35)	-3.46***		
SH x AA	-0.08	-0.44	0.19	(-0.81, -0.08)	-2.37*	0.02	5.35***
<i>Teacher-rated internalizing problems</i>							
Gender	0.02	0.02	0.05	(-0.07, 0.12)	0.51		
Stability	0.31	0.28	0.03	(0.22, 0.34)	9.18***	0.09	45.33***
Shyness (SH)	0.09	0.06	0.02	(0.02, 0.10)	2.63**		
Academic achievement (AA)	-0.05	-0.03	0.02	(-0.08, 0.01)	-1.45		
SH x AA	-0.09	-0.04	0.02	(-0.07, -0.01)	-2.68**	0.02	5.81***

N=1171. CI confidence interval. Shyness and academic achievement were entered simultaneously after gender and Time 1 internalizing problems (stability effect) were controlled in the analyses

*p<0.05 **p<0.01 ***p<0.001

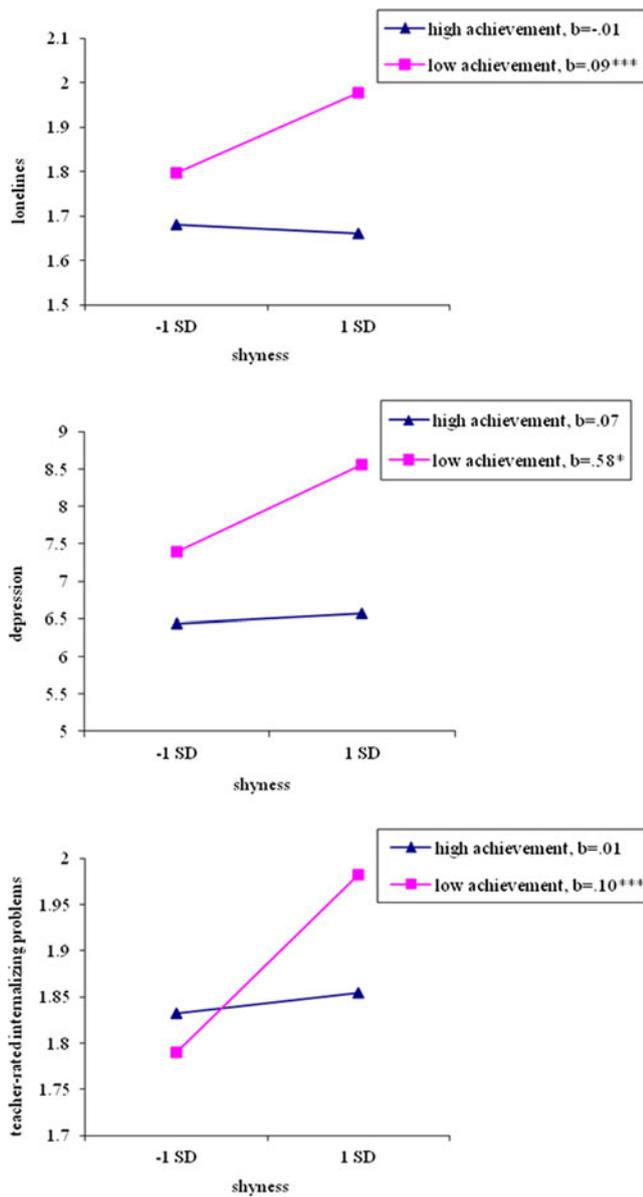


Fig. 1 Interactions between Time 1 (Grade 3) shyness and academic achievement in predicting Time 2 (Grade 4) internalizing problems

becomes increasingly incompatible with the requirements for adjustment in the new environment and is no longer regarded as adaptive (e.g., Chen 2010). The results of this longitudinal study indicated that shyness contributed to the development of adjustment problems. However, the predictive relations between shyness and later problems were moderated by academic achievement. Academic achievement appeared to be a buffering factor in the formation and escalation of the problems in shy children. Academic achievement is one of the major developmental tasks in childhood and adolescence in most contemporary societies (e.g. Stevenson et al. 1993; Wigfield and Eccles 2002). Researchers have found that academic achievement is associated with, and predictive of, social and psychological

adjustment (e.g., Chen et al. 1997; Welsh et al. 2001; Wentzel 2005). The results of the present study suggested that academic achievement might play a comprehensive role in socioemotional development among Chinese children, beyond its “main effects”.

Gender Differences

Our results first indicated gender differences in academic, behavioral, and psychological areas. Boys had lower scores than girls on academic achievement and shyness, and higher scores than girls on internalizing problems. The results concerning the lower academic achievement of boys are consistent with what was found in previous studies in China and Western results (e.g., Chen et al. 2005). Similar gender differences in shyness have also been found in other studies (e.g., Chen et al. 1995; Rubin, et al. 2009). To what extent these gender differences are cross-culturally universal is an interesting issue that requires further study.

A more interesting finding is the gender differences in self-reported psychological problems. Research conducted in Western societies (e.g., Kovacs 1992) has shown that boys tend to display fewer internalizing symptoms such as loneliness and depression than do girls, which may be because boys who display social and behavioral problems tend to overestimate their competencies and develop biased or inflated self-perceptions (Asher et al. 1990; Dodge et al. 2006). However, we found in the present study that Chinese boys had more negative feelings about themselves than did Chinese girls. Similar results were found in previous studies in Chinese children (Chen, et al. 1995; Chen et al. 2005). These results may be conceivable considering that boys have more problems than girls in social, behavioral, and school areas and that these problems are associated with negative self-feelings in Chinese children (e.g., Chen et al. 2005; Chen et al. 2004). The associations between social and school performance and internalizing problems may be related to the regular public evaluation process in Chinese schools; the repeated exposure to negative feedback in the process about social and cognitive competencies inhibits the emergence of positive self-schemata and facilitates the development of loneliness and depression (e.g., Cole 1991).

Moderating Effects of Academic Achievement

Shyness-sensitivity significantly and positively predicted later loneliness and teacher-rated internalizing problems, over and above the stability effect, suggesting that shy-sensitive children developed increased problems in psychological adjustment with time. The results were consistent with those from previous cross-sectional studies (Chang et al. 2005; Chen et al. 2005). The significant contributions of shyness to later internalizing problems found in this study

further demonstrated the maladaptive nature of children's shy-sensitive behavior in urban China today from a developmental perspective.

A main purpose of the present study was to examine whether and how academic achievement moderated the relations between shyness and later internalizing problems. A series of moderating effects of academic achievement was found on the relations. Specifically, shyness was positively associated with later loneliness, depression, and teacher-rated internalizing problems for low-achieving children; the associations were not significant for high-achieving children. The results indicated that for children who were academically poor, shyness-sensitive behavior contributed significantly to the development of problems in psychological adjustment. For academically competent children, however, shyness-sensitive behavior was not associated with these problems. Thus, academic achievement appeared to be a protective factor that buffered against the development of internalizing problems in shy-sensitive children, which was consistent with the "stress-buffering" model (Cohen and Wills 1985; Masten and Wright 1998).

The protective function of academic achievement in the development of shyness-sensitivity may involve processes at both social and personal levels. First, given the strong emphasis on academic achievement in China, shy children who perform well academically are likely to obtain approval and support from parents and teachers, which may enhance their self-confidence and positive views about the self, others, and the school milieu. Through adult involvement and guidance in children's activities that are highly encouraged in China, parents and teachers' approval and support may further influence peers' attitudes towards shy children. Moreover, peers may be more inclined to interact with shy children who are more academically competent to obtain help for schoolwork; this creates opportunities for shy children to work with others and to display their strengths in activities, which is conducive to psychological adjustment. Second, academically competent children may learn self-regulatory and other strategies to handle their social and emotional difficulties. Thus, shy children who are more academically competent are more likely to cope well with psychological distress (Asendorpf 1991; Rubin et al. 1995). In addition, the interaction between shyness and academic achievement may occur in a complicated, transactional manner during development. For example, initial shyness may result in and merge with impaired academic functioning, which together may make children particularly vulnerable to heightened internalizing problems. Regardless of the underlying processes, our results indicate that academic achievement is a significant phenomenon in school-age children in China that serves to mitigate the maladaptive outcomes of shyness-sensitivity. The Fast Track intervention program for conduct problems made the attempt to include

the academic tutoring component, which was effective for reducing aggressive behavior and improving positive adjustment outcomes for high-risk school children (e.g., Bierman et al. 2004). Our results suggest that it may be a useful strategy to incorporate the enhancement of academic competence into prevention and intervention programs for shy children as well.

It should be noted that we controlled for the stability effect (i.e., initial level) of each variable in the analyses. Thus, the potential overlap between shyness-sensitivity (e.g., the sadness item) and internalizing problems (e.g., depression) was partialled out, and the regression results represented unique effects of shyness-sensitivity on the outcomes over and above the overlap. Researchers (e.g., Chen et al. 1992; Masten et al. 1985; Rubin et al. 1995) have developed the construct of shyness-sensitivity based on children's peer nominations in the RCP. The sadness item, like the other items in this measure, is believed to reflect social sensitivity from the peers' perspective. The three items in the measure have been found to be highly correlated and load on the same factor robustly in studies in many countries (e.g., Casiglia et al. 1998). Moreover, research findings indicate that shyness-sensitivity formed by these items is not inherently associated with self-reported depression or other internalizing problems. In our studies among children in China, for example, we found that the relation between shyness-sensitivity and depression was negative, rather than positive, in urban areas in the early 1990s when shyness-sensitivity was positively valued (e.g., Chen et al. 1995) and non-significant in urban areas in more recent years (e.g., Chen, et al. 2005) or in rural areas today (Chen, et al. 2011). The cross-cultural differences and the historical changes in China are the background for the present study. Nevertheless, it will be important in the future to use different items or measures to assess shyness-sensitivity, particularly in cross-sectional studies of its relations with internalizing problems when it is difficult to control for the potential overlap.

Limitations and Future Directions

There were several limitations and weaknesses in this study. First, although the results were consistent with the literature (e.g., Rubin et al. 2009) and meaningful, most of them were weak to modest, especially after controlling for gender and stability effects. Thus, our discussion focused mainly on the general patterns, rather than specific results. It will be important to further examine the issues in future research. Moreover, the study was conducted in a sample of children from third to fourth grades in elementary schools. It remains to be examined whether the results can be generalized to children in other developmental periods. It is possible that as children enter high school where academic achievement is

more important (e.g., Liu and Lu 2011), academic achievement continues to maintain, and perhaps strengthen, its protective function in the development of psychological difficulties. However, it is unclear whether academic achievement serves this function among children in lower grades in elementary school.

Second, the present study was concerned mainly with the effects of academic achievement on the developmental outcomes of shyness-sensitivity. It will be important to investigate whether academic achievement has similar moderating effects on the development of other social behaviors such as unsociability or preference for solitude. It has been found that shyness and unsociability are two major aspects of social withdrawal that may be associated differently with psychological adjustment (e.g., Asendorpf 1990; Chen et al. 2011; Coplan and Armer 2007). There is also evidence in the West that academic achievement might buffer against the development of social difficulties of anxious-solitary children (e.g., Gazelle 2008). In Chinese and some other group-oriented societies that emphasize interdependence and group affiliation, relative to shyness, unsociability or preference for solitude seems to be related to more negative peer and adult evaluations because it does not fit with group orientation and is considered anti-collective, selfish, and deviant (Chen 2010). It will be interesting to examine whether and how academic achievement affects the relations between unsociability or anxious solitude and adjustment problems in Chinese children.

Third, we analyzed contributions of academic achievement and internalizing problems to the prediction of later shyness, although they were not our main focus in this study. No significant main effects of academic achievement and internalizing problems or their interactions were found in predicting shyness. The results seem to suggest that shyness-sensitivity, which may be a behavioral characteristic of a dispositional nature (e.g., Rubin et al. 2009), is relatively insusceptible to the influence of other factors. Nevertheless, it has been reported that social experiences such as peer exclusion may predict change in children's withdrawn behavior (e.g., Gazelle and Ladd 2003; Oh et al. 2008). Therefore, further research is clearly needed on this issue, and conclusions should be drawn with caution before the results are replicated in other studies.

Finally, the present study was conducted in China. One needs to be careful in generalizing the results to other societies. In societies where academic achievement is less emphasized, for example, it may not have as evident effects on children's adjustment and development as in China. Even in societies such as North America where academic achievement is valued (e.g., Wentzel 2005), the specific traditions and conditions of the society may affect the ways in which academic achievement interacts with social behaviors in contributing to children's development. Despite the weaknesses, the

present study indicates that academic achievement plays an important role in shaping the developmental outcomes of shyness-sensitivity in Chinese children.

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