


## RESEARCH ARTICLE

# Relations between shyness and psychological adjustment in Chinese children: The role of friendship quality

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## Abstract

The goal of this study is to examine the role of friendship quality in the links between shyness and children's psychological adjustment, and the potential moderating role of gender. Participants were  $N = 787$  children in Grades 4–8 ( $M_{\text{age}} = 12.69$  years,  $SD = 1.54$ ) in Shanghai, People's Republic of China. They completed peer nomination items assessing shyness, and self-report measures on friendship quality and the psychological outcome measures of loneliness, self-esteem and depressive symptoms. Moderated-mediation analyses revealed that shyness was associated positively while friendship quality was correlated negatively with psychological maladjustment, and that friendship quality mediated the associations between shyness and the outcomes. These mediation effects, however, were moderated by gender, such that friendship quality was a significant mediator for boys, but not for girls. Taken together, the findings highlight the oftentimes overlooked importance of friends in the lives of shy children.

## Highlights

- The study evaluated a model linking shyness, gender and psychological adjustment in Chinese children.

- Assessments of shyness, friendship quality and psychological adjustment were obtained from multiple sources, including peer nominations and self-reports.
- Friendship quality mediated the associations between shyness and the outcomes in boys, but not in girls.

**KEYWORDS**

China, friendship quality, moderated mediation, psychological adjustment, shyness

## 1 | INTRODUCTION

Shyness refers to the dispositionally based behavioural tendency to withdraw in the face of social novelty and perceived social-evaluation (Rubin, Coplan, & Bowker, 2009). According to approach and avoidance models of social withdrawal (Asendorpf, 1990), shy individuals withdraw from peers and in social situations because they are trapped in a psychological conflict between strong approach and strong avoidance motivations. That is, they want to approach and engage with others, but are too fearful and anxious to do so (Asendorpf, 1990; Rubin & Asendorpf, 1993). Over the past 30 years, it has become clear that shyness is a strong individual risk factor for maladjustment during childhood, adolescence and into young adulthood, in both Western societies (such as the United States and Canada; Hughes & Coplan, 2010; Ladd, Kochenderfer-Ladd, Eggum, Kochel, & McConnell, 2011) and contemporary urban Chinese societies (such as Beijing and Shanghai; Chen, Cen, Li, & He, 2005; Liu, Chen, Li, & French, 2012). Shyness is an especially strong risk factor for psychological maladjustment, such as loneliness, depressive symptoms and anxiety (Clauss & Blackford, 2012; Coplan, Liu, Cao, Chen, & Li, 2017; Liu et al., 2017). Despite consistent evidence linking shyness to psychological maladjustment, the underlying mechanisms that help to explain these psychological risks remain poorly understood, especially during the early adolescent developmental period (10–14 years) when psychological maladjustment oftentimes first emerge and can persist into young adulthood. Drawing from contextual-developmental perspectives (Chen, 2010), and informed by past research findings (Markovic & Bowker, 2017), this study evaluates, for the first time, friendship quality as one potential explanatory mechanism for the associations between shyness and psychological difficulty outcomes of loneliness, depressive symptoms and poor self-esteem, as well as the moderating role of gender in the mediation effects, in a large sample of Chinese urban young adolescents.

### 1.1 | Shyness and psychological maladjustment: The role of peer relations

Recent studies on shyness utilize contextual-developmental perspectives (Chen, 2010) to explain why shy youth, in some societies, face psychological adjustment difficulties. Contextual-developmental perspectives emphasize how peer interactions provide a unique context that mediates the associations between cultural values and norms and individual development. More specifically, such perspectives suggest that during social interaction, youth evaluate whether their peers' social behaviours are consistent with the values and norms endorsed by the larger society in which they reside. Such evaluations, in turn, are thought to guide the ways in which youth react and respond to social behaviours. These social evaluations and reactions, in turn, may ultimately influence youth individual psychological functioning and well-being (Chen, 2012; Liu et al., 2017).

Such perspectives further suggest that in more individualistic or independent societies, where assertiveness, expressiveness and competitiveness are strongly encouraged, shy and timid social behaviours should be judged as non-normative and undesirable, especially during childhood and adolescence when peer interactions and relationship involvement are strongly valued and expected. Such negative peer evaluations should, in turn, lead to negative peer responses, and psychological distress in the shy youth (Chen, 2012). Findings from numerous studies in Western societies, such as the United States and Canada, support these perspectives and the critical role of peer experiences, such as peer exclusion (i.e., being actively left out of group activities), in explaining the psychological risks associated with shyness during childhood and adolescence (Boivin, Hymel, & Bukowski, 1995; Gazelle & Ladd, 2003). Most recently, supporting evidence has also emerged in samples of youth in *urban* regions of China, which are argued to have growing Western values and socialization goals, and thus, elicit similar negative evaluations of shyness and negative peer responses (Coplan et al., 2017; Liu et al., 2019).

## 1.2 | A focus on friendship

While the peer context is clearly important in studies of shyness, most research on shyness and peers in China and elsewhere has focused exclusively on peer experiences at the group-level of social complexity, such as peer acceptance, peer rejection and peer exclusion (Coplan et al., 2017; Gazelle & Rudolph, 2004; Liu et al., 2019). It should be noted, however, that children's and young adolescents' peer experiences comprise a multi-level complex system that include group experiences *and* dyadic experiences (such as friendships; Rubin, Bukowski, & Bowker, 2015). Importantly, both group-level and dyadic-level peer experiences have been shown to be uniquely and predictively associated with youths' psychological adjustment (Rubin et al., 2015). Thus, past work has been informative regarding the impact of one developmentally significant part of shy youth's peer worlds, but has mostly neglected another aspect (i.e., their friendships). This is especially the case with regard to research in China, a country that emphasizes interdependent cultural values such as close relationships and harmony (Greenfield, Suzuki, & Rothstein-Fisch, 2006; Ho, 1986), and therefore, in which friendships may be particularly influential.

### 1.2.1 | Friendship

Despite the relative neglect of friendship by shyness researchers, a large body of research clearly shows the importance of friendship in the lives of children and adolescents. For example, numerous studies demonstrate that involvement in friendships during childhood and adolescence is associated with positive indices of psychological well-being (i.e., high levels of self-esteem, low levels of loneliness; Colarossi & Eccles, 2003; Graber, Turner, & Madill, 2016; Raboteg-Saric & Sakic, 2014). However, not all friendships are positive relationship experiences. Indeed, some friendships can be characterized by more positive friendship qualities, such as companionship and intimacy, than others. Such variability in friendship quality is notable because evidence indicates that youth benefit the most when their friendships are high in friendship quality (Kendrick, Jutengren, & Stattin, 2012). Moreover, there is a large body of research linking low quality friendships with indices of psychological maladjustment, such as high levels of loneliness and low levels of self-worth (Kingery, Erdley, & Marshall, 2011; Liu, Li, Purwono, Chen, & French, 2015; Rubin et al., 2015). This is especially the case during the early adolescent developmental period (10–14 years) when friendships become increasingly intimate and necessary to fulfil growing social needs for intimacy (Sullivan, 1953).

### 1.2.2 | Friendship and shyness

In the limited research on *shy* youths' friendships, it is clear that their tendencies to avoid and withdraw from peers do not interfere with their ability to form friendships. For example, Ladd et al. (2011) found that shy youth often have one or more mutual friendships, although they have relatively fewer mutual friendships than their non-anxious-withdrawn peers. In another study, Rubin, Wojslawowicz, Rose-Krasnor, Booth-LaForce, and Burgess (2006) found that nearly 60% of shy adolescents had at least one mutual best friend, a percentage similar to that of their more socially competent peers.

Despite being able to form friendships, shy youths' friendships do appear to be relatively low in support and relationship quality, perhaps because it appears that they tend to form friendships with similarly shy peers (Menzer et al., 2012; Ponti & Tani, 2015; Rubin et al., 2006). For example, Rubin et al. (2006) found that shy young adolescents and their friends both perceived their friendships to be lacking in relationship quality. Moreover, it was reported that the friends of shy young adolescents were similarly shy and also similarly victimized, which was suggested to foster a misery-loves-company scenario (Rubin et al., 2006). It was further suggested that when two shy youth share a friendship, it is likely that the shared shyness, and its associated verbal reticence, interferes significantly with intimate disclosure, which is a hallmark of high-quality friendships, especially during early adolescence (Bruch, 2001; Rubin et al., 2015). Observational research conducted by Schneider (1999) also found that the verbal communication between shy young adolescents and their good friends lacked emotional expression and responsiveness, which also likely interferes with offerings of social support and intimate exchange.

We were able to locate only one study of shyness in *China* that considered friendship. In this study, Liu et al. (2019) found that friend support could moderate the indirect effects of shyness on internalizing difficulties vis-à-vis group-level peer difficulties. But, it is heretofore not known whether friendship quality might mediate the associations between shyness and psychological functioning, in China, or elsewhere. However, given the aforementioned links between shyness and friendship quality (Rubin et al., 2006), friendship quality and psychological outcomes (Parker & Asher, 1993), and shyness and psychological outcomes (Crozier, 1995), mediation seems plausible. In other words, the extant research suggests that one reason why shy youth might suffer psychologically is that their friendships have poor quality. To our knowledge, our study is the first to evaluate this proposed hypothesis, which is consistent with contextual-developmental perspectives, but novel with it focusing on friendship.

### 1.3 | Moderating role of gender

There are several compelling reasons to suspect that the effect of shyness on friendship quality, as well as the mediating effect of friendship quality between shyness and psychological maladjustment, may be moderated by gender. For one, research consistently shows that shy boys experience greater peer difficulties relative to shy girls (Doey, Coplan, & Kingsbury, 2014). Such gender differences have been found in studies conducted in the United States and Canada, as well as China (Bowker, Santo, & Adams, 2019; Zhou & Liu, 2015). It is suggested that shyness may contrast more sharply with male gender norms, which tend to more strongly emphasize independence, assertiveness and competitive behaviours (Liu et al., 2019; Prentice & Carranza, 2002). Such difficulties might also extend to the friendships of shy boys and interfere with the acceptance and support of their relationships. Most of the studies showing gender differences in the peer experiences of shy youth have focused on peer rejection and exclusion, but we know of one study conducted in China showing that youths are less willing to make friends with shy boys than girls (Zhou, Sun, Zhao, Tian, & Fan, 2015). More explicitly, Zhou et al. (2015) investigated the impact of social withdrawal on friendships and found that compared with girls, boys were more likely *not* to choose shy boys as their friends. Moreover, research conducted by Coplan, Zheng, Weeks, and Chen (2012) showed that Chinese children reported more negative attitudes toward shy boys as compared with shy girls.

In addition, gender role identification may also affect the interactions between shy boys and shy girls and their friends. For instance, Bruch (2002) found that masculine role ideology moderated the associations between shyness and interpersonal interaction ability such that shy individuals with strong male role awareness tended to inhibit their emotional expression in the process of interpersonal interaction, thereby affecting the quality of their social interaction (Bruch, Berko, & Haase, 1998). With the socialization of gender roles, shy boys are more convinced of masculine characteristics such as silence and tolerance, which makes them less emotional and more difficult to obtain emotional support in their interaction with friends. One observational study conducted by Garcia, Stinson, Ickes, Bissonnette, and Briggs (1991) confirmed this view. The study found that shy men performed significantly less in verbal expression, eye contact and smiled less often than shy women. They also spent less time communicating with each other. Accompanied by this, they had a lower evaluation of the quality of interaction. In this sense, the negative impact of shyness on friendship quality is likely to be stronger among boys.

We examine in this study whether the mediating effect of friendship quality on the relations between shyness and the psychological outcomes is especially strong for boys in China. We reason that because shyness appears to impact friendship quality more so for boys than girls, the psychological consequences of such peer experiences, which are likely stressful, may be more salient and impactful on the outcomes for boys.

Finally, we expect that the direct path of shyness on psychological adjustment will also be moderated by gender. Characteristics associated with shyness, such as submissiveness, withdrawal and timidity, are easily perceived as feminine characteristics (Kimmel, 2004), which likely makes it difficult for shy boys to be accepted and otherwise perceived positively by peers (Bosacki, 2008). Such negative peer responses likely make it challenging for shy boys, in any society, to feel positively about themselves and their social worlds (Fussner, Luebbe, Mancini, & Becker, 2018; Reijntjes, Stegge, & Terwogt, 2006). Studies have confirmed that shyness is more closely related to psychological maladjustment in boys than girls (Doey et al., 2014), and we expect similar findings in this investigation.

## 1.4 | The current study

In summary, the purpose of the current study is to investigate the possible mediating role of friendship quality in the expected relations between shyness and psychological difficulties during early adolescence. We do so in a large sample of young adolescents from an urban area in China, which as stated above, are argued to have growing Western individualistic/independent cultural values caused by relatively recent market-oriented economic reform in China, and thus, elicit similar negative perceptions of shyness to Western countries (Liu, Harkness, & Super, 2020). That said, we do view *friendship* as potentially having a special importance in urban and rural areas of China, given its long history of interdependent goals and values. In this regard, unique to this study is its exploration of friendship quality as a potential mediating mechanism that explains why many shy Chinese youth struggle psychologically. Discovering new mechanisms of influence could reveal new targets for clinical intervention with shy youth, which to date, are rare in China and tend to be ineffective.

We also consider gender as a potential moderator, and consistent with the previous research (Chen, Wang, & Cao, 2011; Juvonen, Nishina, & Graham, 2000), we focus on three of the most commonly studied psychological outcomes in studies of shyness and peers during early adolescence: loneliness, depression and self-esteem. We evaluate the following two specific hypotheses:

**Hypothesis 1** Friendship quality will mediate the relations between shyness and psychological maladjustment.

**Hypothesis 2** The mediation model will be moderated by gender. That is the mediating effect of friendship quality on the relation between shyness and psychological adjustment will be stronger among boys, and the relations between shyness and psychological adjustment will be also stronger among boys.

The complete moderated-mediation theoretical model is displayed in Figure 1. We also evaluate, in an exploratory fashion without any a priori expectations, *age* as a potential moderator, in light of age-related increases in regulatory capacities (Murphy, Eisenberg, Fabes, Shepard, & Guthrie, 1999) as well as age-related increases in friendship quality (Rubin et al., 2015).

## 2 | METHOD

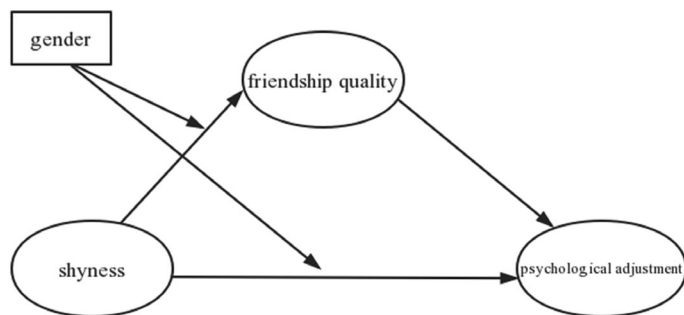
### 2.1 | Participants

Participants in the study were  $n = 787$  (444 boys,  $M_{\text{age}} = 12.71$ ,  $SD = 1.55$ ; 343 girls,  $M_{\text{age}} = 12.67$  years,  $SD = 1.53$ ) fourth-to-eighth grade students in two primary ( $n = 451$ , age range = 9–12) and two middle schools ( $n = 336$ , age range = 12–15) in Shanghai, People's Republic of China, selected via consultation with the school board, without any specific exclusion criteria. There were about six classes in each school, with approximately 30 students in each class. Consent forms were sent home to parents, and 98% of parents provided written consent. Of those youths with parental consent, 100% assented to participate. Ninety-one percent of participants were only children and 92% were from intact families. Seven percent of participants were rural migrant students, and the others were non-migrant students. Among parents, 56.7% had high school education and 43.3% had attended university. Almost all children were of Han nationality, a predominant ethnic group (over 90% of the population) in China. The demographic data for the sample were similar to those reported by the China State Statistics Bureau for urban populations in China (National Bureau of Statistics of China, 2011).

### 2.2 | Measures

#### 2.2.1 | Shyness

Shyness was measured by peer nominations using an adapted Chinese version of the Revised Class Play (RCP; Chen et al., 2011; originally developed by Masten, Morison, & Pellegrini, 1985). Consistent with the Masten et al. (1985) procedure, administrators read each behavioural descriptor and children nominated up to three classmates who could best play the role if they were to direct a class play. As suggested by Terry and Coie (1991), both same sex and cross-sex nominations were allowed. The RCP includes items assessing broad areas of social functioning. Only the items assessing shyness was of interest in this study. The shyness subscale consisted of five items assessing anxious reactivity and social wariness (e.g., 'Very shy', 'Feelings get hurt easily'). The number of nominations received for each item were first summed, and then standardized within the class to adjust for differences in the number of



**FIGURE 1** Theoretical models of moderated-mediation effects linking shyness and psychological adjustment

nominators. The measure has been shown to be reliable and valid in previous studies of shyness and peer difficulties in China (Chen et al., 2005). The internal reliability of this measure was  $\alpha = .76$  in the present sample.

### 2.2.2 | Friendship quality

The quality of relationships with best friend was measured using the Chinese version of the Network of Relationships Inventory (NRI; Furman & Buhrmester, 1985; Tian, Chen, Wang, Liu, & Zhang, 2012). Participants were asked to first write down the name of a best friend (in or out of class), and then to complete the friendship quality measure about that person. In this study, the measure consists of eight items from the original NRI, five of which assess friend support (e.g., 'How much does this person like or love you?'), and the other three assess friend conflict (e.g., 'How much do you and this person get upset with or mad at each other?'). Participants answered each item on a five-point scale (1 = *not at all true*; 5 = *always true*). According to the existing research (see Furman, 1998), friend support was selected as an indicator of positive friendship quality. The Chinese version of the NRI has been used previously, with excellent evidence of reliability and validity in large samples of Chinese youth (Liu et al., 2015; Tian et al., 2012). The internal reliability of this measure was  $\alpha = .79$  in the present sample.

### 2.2.3 | Loneliness

Participants' loneliness was assessed by a self-report measure, adapted from Asher, Hymel, and Renshaw (1984), which has been previously shown to be reliable and valid with Chinese children and young adolescents (Liu et al., 2012). The participants were asked to respond to 16 statements (e.g., 'I feel lonely', 'I have nobody to talk to') using a five-point scale (1 = *not at all true*; 5 = *always true*). Scores were averaged to form an index of loneliness, with higher scores indicating greater feelings of loneliness. The internal reliability of this measure was  $\alpha = .90$  in the present sample.

### 2.2.4 | Depressive symptoms

Depressive symptoms were assessed using a 14-item measure (Chen, Yang, & Wang, 2013), adapted from the *Children's Depression Inventory* (CDI; Kovacs, 1992). The measure included all 10 items in the original short version of the CDI (CDI-S) and 4 additional items from the full version that were considered useful by the research team in assessing Chinese children's depressed mood (e.g., 'I can never be as good as other kids'; 'I can be as good as other kids if I want to'; 'I am just as good as other kids'). Each of the items provides three alternative responses (e.g., 'I feel like crying every day', 'I feel like crying most days', 'I feel like crying once in a while') from which the participants were instructed to choose one that best describes him or her in the past 2 weeks. Each item was scored as 0, 1 and 2, with higher scores indicating greater depression. The average score of depression was computed and used in the study. Shown to be reliable and valid in past studies with Chinese and North American youth (Liu et al., 2015), the internal reliability of this measure was  $\alpha = .82$  in the present sample.

### 2.2.5 | Self-esteem

Participants' self-esteem was assessed using a self-report measure, adapted from the *Self-Perception Profile for Children* (Harter, 1999), which previously has been shown to be reliable and valid for Chinese youth (Chen et al., 2005). Youth rated six items describing general self-worth (e.g., 'I am happy with the way I do a lot of things', 'I am proud of

myself in many ways') on a five-point scale, ranging from 1 (*not at all true*) to 5 (*always true*). The item scores were averaged to form a mean self-esteem scale, with higher scores reflecting higher or more positive self-esteem. The internal reliability of this measure was  $\alpha = .78$  in the present sample.

### 2.3 | Procedures

The design of this study was reviewed and approved by the institutional review board at East China Normal University. Prior to data collection, approvals from schools and written informed consent from parents and children were obtained. Assessments were conducted by trained postgraduate students of developmental and educational psychology. All measures were group-administered in the unit of the class. Researchers first introduced the purpose of the study and promised confidentiality of participants' responses. Next, participants were reminded to keep their answers to themselves. Questionnaire booklets ensured presentation of questionnaires in a random order allowing counterbalancing against order effects. The questionnaire booklets were collected immediately after completion, and the existence of writing irregularities and omissions was checked. Participants were able to ask the researcher any questions related to the research. If they felt the study might cause them upset or they did not want to participate, they could withdraw at any time. All participants received a small gift in return after completing the questionnaires successfully.

### 2.4 | Data analysis

Data analysis was performed using IBM SPSS for Windows (version 23) and Mplus (version 7.4 Muthén & Muthén, 1998–2011). The intra-class correlations at the classroom and school levels were lower than the suggested value of 0.01, indicating that the issue of students-nested-within-classroom-within-school was not serious in this study (Preacher, Zhang, & Zyphur, 2011). Preliminary analysis included descriptive statistics, tests for gender and age differences (with MANOVAs), and correlation analyses.

To evaluate our hypothesized effects (see Figure 1), latent structural equation models were first used to evaluate the mediating effect of friendship quality using Mplus 7.4. A shyness latent variable was created using the original five items, and a friendship quality latent variable was created using the five items from the NRI. The outcome indices of psychological maladjustment were loneliness, depression and self-esteem. Confirmatory factor analysis was first conducted to test measurement model of three latent variables (shyness, friendship quality and psychological maladjustment). Then the direct and mediating effect of friendship quality was tested for significance using the Bootstrap estimation procedure. Robust standard error estimates and confidence intervals were generated by randomly resampling the observed data set with replacement.

Finally, on the basis of mediation model, latent moderated structural equation models (LMS; Klein & Moosbrugger, 2000) were used to test the potential moderating role of gender. There are two steps to test the moderating effect of gender by LMS. The first step was to estimate the structural model without the latent interaction term. This model will hence be referred to as Model 0. The second step was to estimate the structural model with the latent interaction term. This model will hence be referred to as Model 1. It should be noted that the latent moderated-mediation model does not report fit indices (i.e., comparative fit index [CFI], Tucker-Lewis index [TLI], root mean square error of approximation [RMSEA]); however, the latent interaction term does not affect the fit of the measurement model (for discussion, see Muthén & Asparouhov, 2012). The log-likelihood ratio test was used to determine whether the more parsimonious Model 0 represents a significant loss in fit relative to the more complex Model 1 (Maslowsky, Jager, & Hemken, 2015). If Model 0 fits well and the log-likelihood ratio test is significant, then the researcher can conclude that Model 1 is also a well-fitted model and the moderated mediations are supported.



Missing data were treated using full information maximum likelihood estimation in Mplus (Enders & Bandalos, 2001; Graham, 2009).

## 3 | RESULTS

### 3.1 | Preliminary analyses

A multivariate analysis of variance (MANOVA) was first conducted to explore for potential effects of gender (0: female, 1: male) and age group (0: age range = 9–12 years old, 1: age range = 12–15 years old) and their interaction on the study variables. Means and standard deviations for the main study variables are presented in Table 1. Results indicated significant multivariate main effects of both gender, Wilks'  $\lambda = .92$ ,  $F(5,704) = 11.88$ ,  $p < .001$ ,  $\eta^2 = .08$ , and age group, Wilks'  $\lambda = .98$ ,  $F(5, 704) = 2.39$ ,  $p < .05$ ,  $\eta^2 = .02$ , as well as a significant interaction effect involving gender and the age variable, Wilks'  $\lambda = .98$ ,  $F(5,704) = 3.30$ ,  $p < .01$ ,  $\eta^2 = .02$ .

Follow-up univariate analyses revealed significant effects of gender on shyness,  $F(1,708) = 16.72$ ,  $p < .001$ ,  $\eta^2 = .02$ , with girls being rated by peers as more shy than boys, and on friendship quality,  $F(1,708) = 33.79$ ,  $p < .001$ ,  $\eta^2 = .05$ , with girls reporting greater friendship quality than boys. For age group, a significant univariate effect was found for depressive symptoms,  $F(1,708) = 7.93$ ,  $p < .01$ ,  $\eta^2 = .01$ , with older age group students reporting greater depressive symptoms relative to those in younger age group. For the gender  $\times$  age group interaction, results from follow-up simple-effect analyses indicated that girls reported more depressive symptoms than boys in older age group,  $F(1,708) = 8.68$ ,  $p < .01$ ,  $\eta^2 = .01$ , whereas there was no difference in depressive symptoms in younger age group. In addition, it was found that girls reported significantly higher self-esteem than boys in younger age group,  $F(1,708) = 9.26$ ,  $p < .01$ ,  $\eta^2 = .01$ , whereas there was no significant gender difference in self-esteem among older age group boys and girls.

Zero-order correlations among the study variables are presented in Table 2. Of note, shyness was associated positively with depressive symptoms and loneliness, and associated negatively with self-esteem. Friendship quality was related negatively to each of the indices of psychological maladjustment. We also found that shyness was associated negatively with friendship quality.

### 3.2 | Relations between shyness and indices of adjustment: Moderated-mediation analyses

Results of the confirmatory factor analysis indicated that the measurement model evaluated in our primary analysis fit the data well,  $\chi^2 = 159.34$ ,  $df = 62$ , CFI = .95, TLI = .94, RMSEA = .05, SRMR = .04. Preliminary analyses indicated

**TABLE 1** Mean and standard deviation for study variables

Variable	Primary school M (SD)		Middle school M (SD)	
	Boy	Girl	Boy	Girl
Shyness <sup>a</sup>	−0.17 (0.80)	0.20 (0.20)	−0.09 (0.97)	0.16 (1.06)
Friendship quality	4.13 (0.80)	4.43 (0.58)	4.08 (0.72)	4.40 (0.59)
Loneliness	1.95 (0.75)	1.84 (0.74)	1.84 (0.66)	1.94 (0.72)
Depression	0.41 (0.31)	0.35(0.32)	0.41 (0.30)	0.49 (0.34)
Self-esteem	3.45 (0.88)	3.73 (0.82)	3.61 (0.77)	3.49 (0.94)

<sup>a</sup>Standardized score.

**TABLE 2** Correlations among study variables

	Shyness	Friendship quality	Loneliness	Depression	Self-esteem
Shyness	1.00				
Friendship quality	−0.10**	1.00			
Loneliness	0.38***	−0.27***	1.00		
Depression	0.28***	−0.25***	0.56***	1.00	
Self-esteem	−0.15***	0.23***	−0.52***	−0.49***	1.00
Gender	−0.16***	−0.22***	0.01	0.00	−0.06
Age	0.01	−0.00	0.01	0.12**	−0.00

Note: Gender is a dummy variable (0 = girl, 1 = boy).

\*\* $p < .01$ .

\*\*\* $p < .001$ .

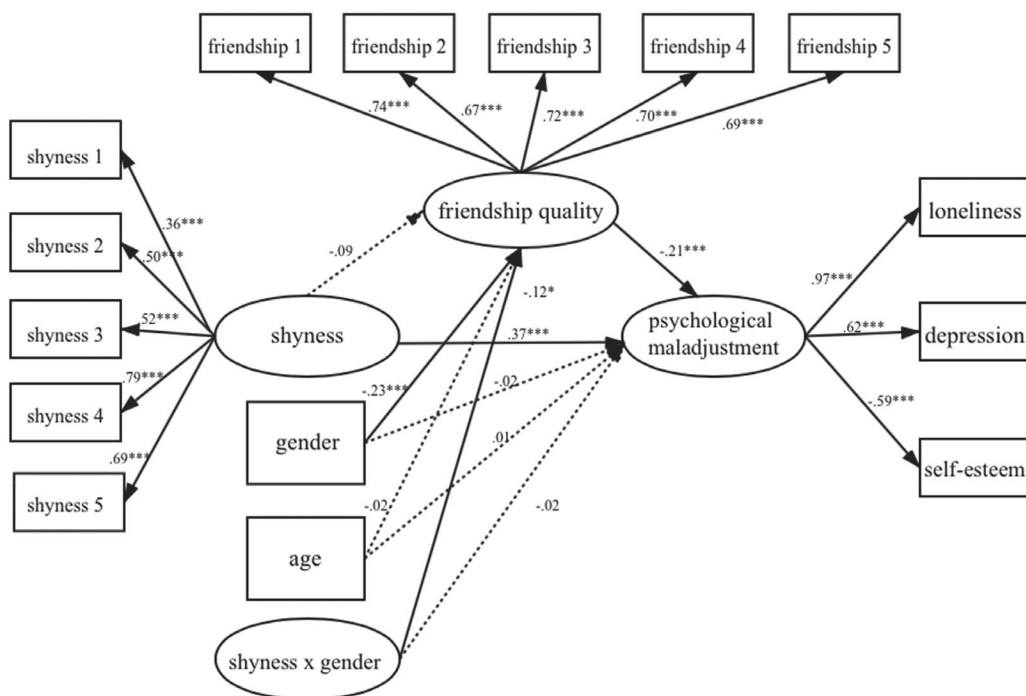
no significant effects of age on the relations between shyness and friendship quality, and between shyness and psychological maladjustment (output available from the first author by request). However, given the several differences in the data from primary school students and middle school students, age was included as a covariate in the following analyses.

The direct effect of shyness on psychological maladjustment was then tested. Results indicated that the model fit the data well,  $\chi^2 = 182.16$ ,  $df = 33$ , CFI = .91, TLI = .88, RMSEA = .08, SRMR = .05. After controlling for gender and age, shyness was related positively to the psychological difficulties ( $\beta = .51$ ,  $p < .001$ , 95% CI = [.39, .60]). The mediating variable was next added. Results indicated that the mediation model fit the data well,  $\chi^2 = 200.88$ ,  $df = 62$ , CFI = .94, TLI = .92, RMSEA = .06, SRMR = .04. Shyness was related negatively to friendship quality ( $\beta = -.17$ ,  $p < .01$ , 95% CI = [−.29, −.06]), friendship quality was related negatively to psychological maladjustment ( $\beta = -.30$ ,  $p < .001$ , 95% CI = [−.39, −.21]), and shyness was associated positively with psychological difficulties ( $\beta = .45$ ,  $p < .001$ , 95% CI = [.32, .55]). Importantly, the mediating effect of friendship quality was significant,  $\beta = .05$ , with 95% CI = [.02, .09], accounting for 8.92% of the total effect.

Results of LMS indicated that the Model 0 with the main effect of gender fit the data well,  $\chi^2 = 282.24$ ,  $df = 84$ , CFI = .91, TLI = .89, RMSEA = .06, SRMR = .05. As noted above, the Model 1 included the latent interaction terms (shyness  $\times$  gender) on the basis of Model 0. Via the log-likelihood ratio test, the fit of Model 1 (likelihood value = −11,971.77) was better than the fit of Model 0 (likelihood value = −11,936.30),  $D(df = 2) = 70.94$ ,  $p < .001$ . The results indicated that the interactive effect of shyness and gender on friendship quality was significant,  $\beta = -.12$ ,  $p < .05$ . Furthermore, simple slopes test indicated that shyness was associated significantly and negatively with friendship quality in boys ( $\beta = -.23$ ,  $p < .01$ ), but not in girls ( $\beta = -.08$ ,  $p > .05$ ). The interactive effect of shyness and gender on psychological adjustment was not significant ( $\beta = -.02$ ,  $p > .05$ ). Finally, we tested the indirect effect of shyness on psychological maladjustment via friendship quality in different genders. For boys, the indirect effect of shyness on psychological adjustment via friendship quality was significant,  $\beta = .07$ ,  $p < .01$ , and the mediating effect accounted for 12.73% of the total effect. For girls, the indirect effect of shyness on psychological adjustment via friendship quality was not significant,  $\beta = .02$ ,  $p > .05$ . See Figure 2 for model test results.

## 4 | DISCUSSION

Previous research, in the United States, Canada and China, has indicated that peer experiences at the *group*-level of social complexity, such as peer rejection, exclusion and acceptance, help to explain the psychological risks associated with shyness. This study was designed to extend this past research by examining for the first time, to our knowledge,



**FIGURE 2** Model of mediating effect on the relations between shyness and psychological maladjustment

whether a specific type of peer experience at the dyadic-level of social complexity, friendship quality, also plays a mediating role in the associations between shyness and psychological risks. Also of interest was the potential moderating role of gender. Utilizing a large sample of young adolescents from China and both self-report and peer nomination measures, findings from this investigation show that the linkages between shyness and psychological outcomes are explained, in part, by friendship quality, but only for boys.

Prior to discussing the mediation and moderation effects, we should note first that findings from the MANOVA reported gender differences on shyness with girls being reported by their peers as higher in shyness relative to boys. These findings are in line with previous research conducted in both China and North American societies (Chen et al., 2005; Doey et al., 2014). Shyness might be more easily recognized and identified in girls as it is considered more consistent with gender roles and expectations for females relative to males. We should also note that initial correlation analyses indicated that shyness was related positively to each of our indices of psychological difficulty. These findings are also consistent with numerous studies conducted in Western societies, and add to the growing literature showing that shyness is also an important risk factor for psychological maladjustment in the current Chinese urban context (Coplan et al., 2017). The significant and negative association between shyness and friendship quality is also notable as it is the first to show such a relation in a Chinese sample, although it is consistent to findings from studies conducted elsewhere (Ponti & Tani, 2015).

Most noteworthy, however, were the results from the mediation and moderation analyses. The findings from the mediation analyses accord well with research findings showing that other types of peer experiences, such as peer exclusion, help to explain the psychological maladjustment associated with shyness (and related constructs; Gazelle & Ladd, 2003). They are also consistent with contextual-developmental models, which posit that individual vulnerabilities clashing with the values and norms accepted by the larger society and peer group, oftentimes lead to negative peer reactions or evaluations, and in turn, maladjustment (see Boivin et al., 1995). With regard to friendship quality, it seems likely that shyness and its fears and anxieties interfere with intimate disclosure and the necessary ‘give-and-

take' for positive relationship experiences, which in turn, lead social needs for intimacy to be unmet and result in psychological stress (Fredstrom et al., 2012). Sullivan's interpersonal theory of psychiatry (Sullivan, 1953) would suggest that this might be especially true during the early adolescent developmental period due to new needs for intimate and positive best friendship experiences. However, additional research with children will be needed to evaluate this hypothesis. Future research should also explore the importance of the larger cultural context to these findings. Even though the urban context of China has seen an influx of Western values and socialization goals, more interdependent cultural values, such as the importance of close relationships with family and friends, remain. Thus, it is plausible that the ways in which shyness impacts friendship quality, and in turn, psychological outcomes, is particularly impactful among Chinese urban young adolescents, perhaps more so relative to shy young adolescents in more traditionally independent societies, such as the United States and Canada. Evaluating these speculations, in cross-cultural research studies, will be an important next step in this area of research.

Our further analysis of gender moderation revealed several additional noteworthy findings. For example, it was novel to find that, as predicted, shyness was related negatively to friendship quality for boys but not girls. These findings add to the growing body of literature suggesting that shyness may be more closely related to peer relationship difficulties, and in this case, poor friendship quality, for boys than girls (Doey et al., 2014; Markovic & Bowker, 2017). Our study is also the first to reveal evidence that friendship quality mediates the associations between shyness and psychological outcomes for boys but not girls. Previous gender differences in friendship quality and shyness have not been reported and so it will be important to replicate these findings, especially since it is not clear whether these results are specific to the urban Chinese context. Nevertheless, we think it is plausible that shyness might interfere more so with the features of friendship that tend to be more important for boys (i.e., competition, companionship) relative to girls (i.e., intimate disclosure; Rose & Rudolph, 2006). Indeed, competitive games require both communication and assertiveness, and oftentimes occur in larger group settings, all of which may be very difficult and therefore psychologically distressing for shy boys. However, girls' friendship experiences less often occur in large group settings, which in turn, may make it easier for shy girls to relax and share their thoughts and feelings.

Although the findings shed light on a new potential mechanism explaining why shy youth struggle psychologically, there were several study limitations that should be added in future research. First, the self-report method was used to measure friendship quality in this study. However, the perceived friendship quality is only one important source, and friends do not always agree on the quality of their friendships (Brendgen, Little, & Krappmann, 2000). This might be especially true for those shy youth who do form friendships with non-shy peers. Accordingly, future researchers should consider the perspectives of both friends. Second, the peer nomination method was used to measure the shyness level of adolescents. Although the effectiveness of this method has been confirmed by a large number of studies, it is more likely to reflect the individual's external behaviour rather than intrinsic motivation. In the future, researchers should consider integrating self-report, teacher evaluation and other methods to examine adolescents' shyness from multiple perspectives and dimensions. Third, although our model was guided by theory and longitudinal research, our cross-sectional research design affected the final inference of causality. It will be important for investigators to address this limitation, so as to better reveal the impact of friendships, and especially the quality of friendships, in the lives of shy youth. Fourth, this study focused on the role of friendship quality in shyness and psychological adjustment. Other social relationships (i.e., parent-child relationship, teacher-student relationship) were not taken into account, but should be to better capture the social networks of shy youth and how they independently and interactively 'matter'. Finally, since some participants were migrant children in this study, it would be of great significance to investigate the differences between urban and migrant children for adjustment outcomes of shyness. Indeed, previously conducted research has indicated that compared with shy migrant children, urban children who are shy are more prone to suffer from social and school adjustment difficulties (Ding, Chen, Fu, Li, & Liu, 2020). Therefore, further studies should consider the differences between urban and migrant children in the relations between shyness, peer relations and adjustments.

Notwithstanding these shortcomings, the findings from this study could have implications for clinical intervention efforts in China. For example, our findings suggest that shy youth may benefit from direct skills-based instruction on how to improve their friends and to be better friends. Few specific friendship interventions exist, and yet, changing friendships might be easier than changing group-level peer experiences, such as peer rejection and exclusion, which tend to be resistant due to wide-spread negative peer reputations (i.e., as being shy; Asher et al., 1996). If effective programs could be developed that are culturally specific, and also gender-specific, we might begin to see that some of psychological angst experienced by shy Chinese young adolescents is lessened.

## 5 | CONCLUSION

The role of dyadic peer relationships (i.e., friendship) in the lives of shy young adolescents has received limited attention, particularly in studies in China. The findings from this study provide some of the first evidence to suggest that poor friendship quality could explain why many Chinese shy adolescents appear to suffer psychologically. The findings were most notable, however, for shy boys; these findings contribute to the growing literature on the significant peer challenges faced by shy boys in most societies, and highlight the importance of carefully considering not only culture but also gender in future research in this area as well as in the development of clinical intervention.

### DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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