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# Shyness and Loneliness in Chinese Young Adults: Roles of Aggression and Gender

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## ABSTRACT

Loneliness has become an important concern among Chinese university students. Previous studies evidenced the association of loneliness with aggression as well as shyness. Given the variance existed in males and females on shyness and aggression, a more comprehensive consideration can be taken into account to investigate the underlying mechanism in the development of loneliness among Chinese youth. In the current study, conditional indirect effect model was built to examine the effect of shyness and aggression on the loneliness as a function of gender. Shyness, aggression, and loneliness were measured respectively by Shyness Questionnaire, UCLA loneliness questionnaire, and Buss & Perry aggression questionnaire among 503 Chinese university students. Aggression was demonstrated as a significant mediator in between shyness and loneliness university students. Gender moderated this indirect effect. For the females, indirect effect of aggression was significant with effect estimate as 0.81 (95%CI: 0.48–1.22). For the males, indirect effect of aggression was not significant with effect estimate as 0.24 (95%CI: –0.03 to 0.57). Findings suggest that the effect of shyness on loneliness can be altered in female and male students probably due to the different social norms of aggression. This finding can potentially inform clinical practices regarding loneliness among Chinese university students with consideration of gender difference.

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## KEYWORDS

Aggression; conditional indirect effect; gender; loneliness; shyness

## Introduction

Loneliness refers to a complex psychological experience that arises when there is a discrepancy between an individual's actual and perceived expectations of his or her interpersonal relationships (Fitts, Sebbly, & Zlokovich, 2009). Loneliness is regarded as a subjective, unpleasant, and emotionally distressing experience that occurred to individuals in all developmental stages.

Researchers have stressed that emerging adulthood, like university students, are in an especially crucial stage in which loneliness is prevalent (Friggieri, 2008). Physical separation with family and friends can make it hard to transition to university for many university students. This may trigger the feeling of loneliness if the desire of building a new relationship has not achieved. Loneliness

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can increase the risk of suffering from physical and psychological health problems, including depression, alcoholism, cardiovascular problems, and even suicide ideation (Friggieri, 2008). Long periods of feeling lonely can result in poor academic performance, elevation of stress, and decreased quality of life (Heinrich & Gullone, 2006). With the consideration of large population of college students and the influence of previous One-Child policy in China, attention has to be paid to the problem of loneliness due to its potential devastating consequences.

Two leading factors, shyness and aggression, have been well-established associated with the feeling of loneliness. Shyness is defined as a general tendency of withdrawing and feeling awkward in social situations (Cheek & Buss, 1981). Although it is normal to experience shyness in social occasions, excessive shyness in social contexts can be maladaptive, and can influence various domains of individuals' life including social engagement, and perception of achievement (Koydemir & Demir, 2008; Piko, Prievara, & Mellor, 2017; Wang, Wang, Han, Gong, & Gao, 2009). Previous studies support the association between shyness and loneliness (Fitts et al., 2009). For example, shyness may result in lower levels of an individual's motivation to initiate social activity and lead to isolation (Aron, Aron, & Davies, 2005; Jackson, Fritch, Nagasaka, & Gunderson, 2002). In addition, people with shyness are inclined to evaluate themselves and others in a negative way, which hinders them participating in social activities and precipitates loneliness (Zhao, Kong, & Wang, 2012). Although numerous studies have observed a robust correlation between shyness and loneliness, few have attempted to explain why this relationship exists in Chinese university students. Aggression could be a potential contributor to this relationship.

Aggression is a kind of human behavior that may serve as a protective factor in some dangerous situations, whereas may play a detrimental role in other situations (e.g. social conditions). Evidence has shown that people with intensive loneliness were more likely accompanied with temper tantrums and behaving in an aggressive manner (Pavri, 2015; Twenge, Baumeister, Tice, & Stucke, 2001). Studies showed that aggression in the earlier age can predict the loneliness later (Twenge et al., 2001). The impairment of peer relationships brought on by aggression precludes the development of social relationship and increases the risk of getting lonely. Additionally, loneliness can cut off the normal way for young people to learn and develop adaptive social skills which further leads to more loneliness. Therefore, it can be hypothesized that aggression could become a rational precursor of loneliness in the young adulthood (Dake, Price, & Telljohann, 2003). Both shyness and aggression can increase the chance of exposure in severe loneliness.

Moreover, it has been observed that shyness is accompanied with aggression in the adult population. Several studies demonstrated that shyness was in association with overt aggression or a combined overt and relational aggression

composite (Povedano, Cava, Monreal, Varela, & Musitu, 2015). It has been shown that shyness can prohibit individuals from expressing negative emotion and may trigger inadequate social behavior, for example, aggression (Koydemir & Demir, 2008).

Nevertheless, there has been some inconsistency in the relationship between shyness and aggression. Shyness also indicates lower frequency of aggressive behavior especially within the traditional Chinese culture context. Shy, sensitive, and restrained behaviors are often considered an index of social accomplishment and maturity, whereas in other western cultures these would be regarded as a lack of confidence. However, with the substantial change in the social environment during these years in China, shyness in traditional social context may have been challenged. Previous studies found that young generation current in China presented more characteristics such as assertiveness, confidence, and independence, which indicated the exclusion of shyness in this group (Day & Xia, 2019). This transition may play a role in its relation with aggression. From a large scaled cohort study by Chen, Cen, Li, and He (2005), results showed that with the transition of the society in China, shyness correlated with aggression significantly in the youngest cohort whereas not in the elder cohort, which reflected the transition of perspective on shyness hold by the current generation. Recently studies also found that shyness positively correlated with aggression in left-behind children and adolescents (Gao, Xu, Ren, Chen, & Han, 2016), as well as university students in China (Han, Dou, Zhu, Xue, & Gao, 2016; Xue, Han, Dou, Wu, & Gao, 2015).

Further, the social isolation coupled with shyness can limit the employment of proper social skills (Huan, Ang, & Chye, 2014). Anger and hostility exhibit by individuals with shyness may become ways to cope with the threat or hostility from others (Song, Zheng, Zhao, & Yang, 2014). In sum, it is hypothesize that shyness can associate with aggression in a positive way among Chinese young adulthood.

Although the impact of shyness and aggressive behavior on loneliness, respectively, has been well established in previous studies, a holistic consideration of the relationship among these three variables has not translated into empirical evidence among Chinese university students. It would be reasonable to examine the relationship between shyness and loneliness with aggressive behavior as a mediator in one model. This may be beneficial to understand the precipitation of loneliness in combination with emotion and behavior. Furthermore, as it has been longstanding that gender difference sustained in individuals' aggression, shyness, and loneliness, gender could be reasoned as a moderator in this conceptual framework. According to the social role theory, the different expectations of male and female can diverse the endorsement of these three issues. For example, males tend to present more aggressive behaviors than females (Persson, 2009). It can be a symbol of power in males because an aggressive act is criticized in females (Nivette, Eisner, Malti, & Ribeaud, 2014). Besides, aggressive behavior can be also provoked in stressful situation as one type of coping strategy (Luo, 2008).

Therefore, the relationship among shyness, aggressive behavior, and loneliness may vary when gender was taken into account. The investigation of the gender difference may indicate further alleviation of loneliness from more comprehensive perspective. In the current study, the relationship between shyness and loneliness was examined in a conditional indirect effect model with aggressive behavior as mediator and gender as moderator of the whole mediation. It was hypothesized that aggressive behavior would mediate the relationship between shyness and loneliness. Furthermore, gender was investigated as potential moderator. Specifically, it was hypothesized that gender would influence primarily the link between shyness and aggressive behavior, which would be relatively strong in male participants.

## **Method**

### ***Participants***

A total of 527 participants were recruited from a university in Zhuhai, China. Five hundred and three valid questionnaires remained after removing the data with 10% (or more) missing values or invalid scores (i.e. scores exceeded valid maximum value of inventories). The valid questionnaires accounted for 95.45% of the original sample, indicating the response rate was acceptable. One hundred eighty one participants in the final sample are male and 322 are females. The participants were across all the grades of university with age ranging from 17 to 24 years old ( $M = 19.89$ ,  $SD = 0.968$ ).

### ***Measures***

#### ***Revised Cheek and Buss Shyness Scale (RCBS)***

RCBS is a 13-item singular-factorial measure, which is developed by Cheek (1983) to estimate the extent of individual shyness (e.g. I feel nervous with someone I'm not familiar with). Each item followed a 5-point scale ranging from 1 (not at all true) to 5 (exactly true). Higher score indicated elevated level of shyness. The 13 items were combined to create a single indicator of the extent of shyness by calculating their sum score. In the current study, Cronbach's alphas coefficient for the RCBS was 0.87. Confirmatory factor analysis (CFA) showed that it had appropriate construct validity (CFI = 0.93, TLI = 0.91, SRMR = 0.05).

#### ***UCLA Loneliness Questionnaire***

This questionnaire assessed the extent of loneliness individuals experienced when there is discrepancy between actual and perceived expectations of his or her interpersonal relationships (e.g. Do you often feel being left out?). It's a 20-item scale with each item accompanied with a 4-point score ranging from 1 (never) to 4 (all the time). Sum score of the 20 items was calculated to indicate

overall loneliness. Higher scores reflect greater feelings of loneliness. Wang et al. (2009) investigated the internal consistency estimates of this questionnaire in Chinese population was adequate (Cronbach's alpha = 0.94) and test-retest reliability was appropriate ( $r = 0.62$ ). In this study, the Cronbach's alpha is 0.877. CFA showed that it had appropriate construct validity (CFI = 0.93, TLI = 0.90, SRMR = 0.06).

### ***Buss & Perry Aggression Questionnaire***

Buss & Perry Aggression Questionnaire is a 30-item scale developed by Buss and Perry (1992), which consists of five sub scales (physical aggression, verbal aggression, anger, hostility, and self aggression) with each followed a 5-point scale ranging from 1 (never) to 5 (all the time). High scores indicate greater presence of aggression in daily life (e.g. I often feel irritated when things are not going well). This questionnaire has been adapted into Chinese version with adequate internal consistency ranging from 0.60 to 0.89 across all the sub scales (Li et al., 2011). In the current study, the Cronbach's alpha was 0.92. The five sub scales were combined as a single indicator of the aggression level in the current study by averaging the means of each scale. CFA showed that it had appropriate construct validity (CFI = 0.90, TLI = 0.87, SRMR = 0.06).

### ***Procedure***

Information about the current study was spread by flyers, advertisement on the online forum, and intranet of university. Participants who were interested in the study contacted with researchers and informed consent were attained before they filled in the questionnaire battery. With the accomplishment of questionnaires, the participants could get a small gift as compensation.

### ***Data analysis***

SPSS package (version 22.0; IBM, United States) was employed to conduct all the data analysis. Descriptive statistics and correlation coefficients were calculated to analyze the relation between gender, shyness, aggression, and loneliness. To investigate the conditional indirect effect with gender as moderator, first step was to examine common method bias. Secondly, we conducted a hierarchical regression analysis to examine the mediator role of aggression between shyness–loneliness relationship following the recommendations (Baron & Kenny, 1986). Then, we conduct the moderation mediator analyses by the procedure recommended by Hayes (2017) using PROCESS tool, in which Model 14 was adopted to test gender as moderator of our mediation model. Bootstrapping and confidence interval were used to test the significance of each path and indirect effects. To test

the moderation, variables were standardized (Aiken, West, & Reno, 1991). Moderated mediation is expressed by an interaction between gender and aggressiveness (moderator \* mediator) on loneliness (details were demonstrated in the results section).

## Results

### *Common method bias*

Although method bias can be introduced in the research when the same method was adopted across the study, common method bias was examined using Harman Single Factor Test (Harman, 1967). Results showed that the factor explained most of the total variation accounted for 19.84% (below the threshold value 40%). This result shows that there was no significant common method bias and it was appropriate to do the following data analysis.

### *Correlation analysis among variables*

We tested the correlation among shyness, aggressive behavior, gender, and loneliness by adopting Pearson Correlation. Table 1 shows the means and standard deviation of different variables as well as the correlation coefficient among them. Aggressive behavior, shyness, and loneliness were associated significantly with each other.

### *Moderated mediating effects test*

Hierarchical regression was conducted to examining if aggression acted as mediator in between shyness and loneliness. We firstly included shyness as first block to predict loneliness, and then included shyness and aggression together into second block. The results of the regression model are shown in Table 2. Shyness was significant determinant of loneliness. Aggression, added at the second step of the model, was found as a significant determinant of loneliness over and above the effect of shyness. In particular, as can be seen in path *c* in Figure 1, the mediation analysis showed that young people with higher levels of shyness demonstrated higher levels of loneliness. Path *a* in Figure 1 shows that shyness was positively associated with aggression, suggesting with accelerated shyness reported higher levels of aggression.

**Table 1.** Means, standard deviations, and bivariate correlations of variables.

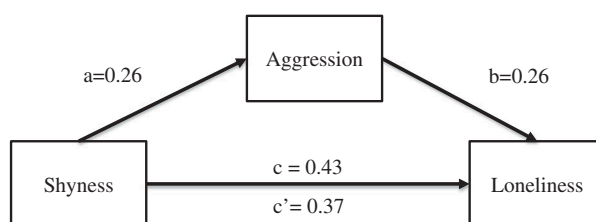
Variables	<i>M</i> ( <i>SD</i> )	Gender	Shyness	Loneliness
Shyness	37.04 (8.46)	0.62		
Loneliness	43.08 (8.62)	-0.07	0.43**	
Aggression	69.63 (18.32)	0.22**	0.26**	0.36**

Gender: 1 = female, 0 = male; \*\*  $p < .001$ .

**Table 2.** Hierarchical multiple regression results to predict loneliness.

	Loneliness					
	<i>B</i>	SE	Beta	<i>R</i> <sup>2</sup>	$\Delta R^2$	<i>F</i>
<b>Step1</b>				0.19		116.317***
Shyness	3.74	0.35	0.43***			
<b>Step2</b>				0.25	0.12	84.441***
Aggressive	2.25	0.34	0.26***			
Shyness	3.17	0.34	0.36***			
<b>Step3</b>				0.26	0.02	10.939**
Aggressive	1.09	0.49	0.13*			
Shyness	3.14	0.34	0.37**			
Gender	0.46	0.34	0.05			
Gender * Aggressive	2.25	0.68	0.19**			

\**p* < 0.05, \*\**p* < 0.01, \*\*\**p* < 0.001.



**Figure 1.** Mediation effect of aggression between shyness and loneliness.

Path *b* in Figure 1 shows that aggression was associated with loneliness in a positive way. To test the indirect effect due to aggression, we adopted bootstrap sampling method to estimate. As can be seen in Table 3, it yielded a significant point estimate as 0.57 (95% CI: 0.23–1.02), which indicated the possibility that aggression partially mediates the associations between shyness and loneliness.

According to the procedure introduced by Hayes & Rockwood (2017), *X* (shyness) is an independent variable, *Y* (loneliness) is a dependent variable, *W* (aggressive behavior) is a mediating variable, and *U* (Gender) is a moderator variable. Gender was coded into dichotomous value with male as 0 and female as 1. The score of shyness, aggressive behavior, and loneliness were standardized into *Z* scores. The interaction terms *UW* (gender \* aggressive behavior) was obtained by multiplying the *Z* scores.

The examination of moderated mediation is equivalent to a hierarchical multiple regression model with loneliness as the dependent variable; the interaction

**Table 3.** Moderation effect of gender in the path from aggression to loneliness.

	Coefficient	SE	95%CI		<i>p</i> -value
			Low limit	High limit	
Shyness → Loneliness	3.20	0.34	2.53	3.88	<i>p</i> < .001
Aggression → Loneliness	0.94	0.51	−0.06	1.95	<i>p</i> = .065
Gender	−0.94	0.71	−2.34	0.46	<i>p</i> = .188
Gender * Aggression → Loneliness	2.25	0.68	0.92	3.58	<i>p</i> < .001



term was added in to see the contribution of the moderator. As can be seen in Table 2, to examine the conditional indirect effect, in addition of shyness and aggression, gender and interaction term were added in the third block that resulted in a significant effect size of interaction term. To further investigate the confidence interval of the coefficients, bootstrap method was adopted and results can be found in Table 3. As can be seen from the results, interaction term (gender \* aggressiveness) was found to be significantly associated with loneliness, which indicated gender moderated the path from aggression and loneliness. Furthermore, the confidence intervals of indirect effects in males and females showed that the indirect relationship from shyness to loneliness through aggression was found valid only in females (point estimate = 0.81, 95% CI: 0.49–1.22,  $p < .001$ ), whereas not in males (point estimate = 0.24, 95%: -0.03 to 0.57,  $p = .075$ ).

## Discussion

In line with previous studies, the current study demonstrated the association between shyness and loneliness among the university students. As an indicator of personality, studies on shyness agree on its effect on loneliness as a profound prediction. Individuals with a higher level of shyness were more likely to experience loneliness. This phenomenon can be explained by the avoidance of social interaction among people with elevated shyness, which in turn accelerates the possibility of individuals to feel lonely.

The current study also showed that the aggressive behaviors partially mediated the relationship between shyness and loneliness. Less exposure in social interactions may lead to the lack of social skills in the people suffering from shyness. According to social adaptation model, people with shyness tend to avoid the social occasions as well as to demonstrate lack of social behavior and social skills (Jackson et al., 2002). China abandoned the One-Child Policy last year but has already created “the loneliest” generation (Hernandez & Qin, 2015). The lacking of interaction with siblings during the developmental period might deprive some chances to learn social skills among this special generation. Aggressive behavior may become one of the consequences (Han et al., 2016). Studies indicated that shyness could cause negative self-evaluation of individuals themselves and affect appropriate emotional expression, which may precipitate unnecessary aggressive behavior due to the suppression of emotion. Aggressive behavior can also increase the chance of being isolated by the people around and devastate the development of positive interpersonal relationship, which would further increase the level of loneliness.

Within this mediation relationship, gender acted as a moderator in the current study. Specifically, girls were affected more than boys in the process shyness induced loneliness via aggressive behavior. With same level of shyness, girls more likely felt lonely with presence of aggressive behavior. Possible explanation of this result can be due to that aggressive behavior appeared more often in boys

rather than in girls. To some extent, aggressive behavior can be a symbol of masculinity in teenager boys, which dilutes the effect of aggressive behavior on the possible isolation within the peers group. Studies showed that aggressive behavior was more likely to be accepted within boys, whereas whatever level of aggressiveness was prohibited among girls, and could cause the isolation among the peers (Harachi et al., 2006; Povedano et al., 2015). The difference of social acceptance of aggressive behavior, thus, may contribute to the moderation effect demonstrated by gender in our study. Future research should focus more on the influence of the social and cultural expectations on shyness and aggression to understand loneliness in depth.

Some limitations have to be addressed. Although the current study composed of cross-sectional data, we were not able to conclude in a causative way. Additionally, the ratio of gender in our participants and heavy reliance on self-report measures may diminish our generalization of our finding. A few strengths of our study also can be acknowledged. The current study can shed light upon the future intervention on the loneliness in this young population by providing more situations to facilitate social interaction among them. It can also be beneficial in regulation of potential aggression fueled by shyness to some extent. The young people we include in the current study represent a special generation (“Only child in the family”), which can help us comprehend possible predisposition of loneliness. The variables we examined in our study, i.e. shyness, aggression, loneliness, were cultural sensitive. Therefore, the findings need to be interpreted carefully when applied to other cultures, even to some neighboring Asian cultures. Although it could implicate some mechanism underlying the emergence of loneliness in the young generation considering the involvement of China in the globalization, more evidence and exploration are still needed from various cultures to map out these meaningful changes.

In sum, the current study examined the role of aggressive behavior in the development of loneliness among Chinese college students and results showed that aggressiveness partially mediated the relationship between shyness and loneliness. Gender moderated the effect of aggressive behavior on loneliness.

### **Conflicts of interest**

All the authors clarified that there is no conflicts of interest.

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