



## Linking shyness to loneliness in Chinese adolescents: The mediating role of core self-evaluation and social support

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### ABSTRACT

This study examined the validity of two models predicting the relationship between shyness and loneliness: the cognitive bias and social network mediation models. Four hundred and eighty adolescents, with their age range between 14 and 18 years, were administered the Cheek and Buss Shyness Scale, Core Self-Evaluation Scale, Multi-dimensional Scale of Perceived Social Support and Emotional and Social Loneliness Scale. Structural equation modeling showed that core self-evaluation and social support partially mediated the association between shyness and loneliness, and the mediating effect of social support was larger than that of core self-evaluation. In addition, a multiple-group analysis found that the paths for the mediation model did not differ between males and females, providing preparatory support to its robustness. The results are discussed in terms of the conceptional context.

Loneliness has been considered to be a crucial area of research in psychological health and is defined as “a subjective unpleasant or even uncomfortable state as a result of the contradiction between one's social expectation and her/his actual social network” (Peplau & Perlman, 1982). In the last ten years, a lot of research has explored the potential causes of loneliness. Some research has indicated that loneliness is due to a lack of integration into social networks, whereas the other has demonstrated the important role of personality (e.g., Chen, Hicks, & While, 2014; Mahon, Yarcheski, Yarcheski, Cannella, & Hanks, 2006; Vanhalst et al., 2012a).

Shyness is considered as one of the crucial characterological factors of loneliness. Although shyness and loneliness are different concepts, both of them have strong associations with more negative emotions and unsatisfactory social relationships (Jones, Rose, & Russell, 1990). A lot of research has observed a stable and strong correlation between shyness and loneliness, and shyness is an effective predictor of loneliness in different populations such as adolescents and adults (e.g., Jackson, Fritch, Nagasaka, & Gunderson, 2002; Mahon et al., 2006; Zhao, Kong, & Wang, 2012, 2013). Although the literature has demonstrated that shyness is related to loneliness, the specific mechanisms involved in the relationship remain unclear. For example, loneliness may be influenced by shyness through social network variables. In addition, the relation between them may reflect a negative cognitive process. Consistent with this, two potential models (the cognitive bias and social network mediation models) have been proposed by Levin and Stokes (1986) to

explain the relationship of shyness with loneliness.

The cognitive bias model suggests that the relationship of individual difference variables (e.g., shyness) with loneliness reflects a negative cognitive process, and it is important to consider the theoretical and clinical significance of the transformation from social toward individual therapeutic models (Levin & Stokes, 1986). Specifically, some people view themselves and the world negatively, which make them more inclined to evaluate themselves as neurotic, shy, and lonely. According to the model, a likely mediator of the shyness–loneliness relationship is core self-evaluation which reflects one's fundamental appraisals toward their self-worth and abilities. Core self-evaluation is “a broad dispositional trait that is indicated by four more specific traits—self-esteem, generalized self-efficacy, locus of control, and emotional stability (low neuroticism)” (Judge, Locke, & Durham, 1997). Some researchers have proposed that one's evaluations about themselves can play an important role in the development of psychological distress (Kong, Wang, & Zhao, 2014; Orth, Robins, & Roberts, 2008; Smith, Haynes, Lazarus, & Pope, 1993). Moreover, as specific traits in core self-evaluation, self-esteem and self-efficacy have been shown to mediate the relationship between shyness and loneliness (e.g., Li, Dang, He, & Li, 2013; Zhao et al., 2012, 2013). In addition, some researchers also provided evidence that shyness and loneliness are negatively related to neuroticism and an external locus of control (e.g., Afshan, Askari, & Manickam, 2015; Anderson & Arnoult, 1985; Briggs, 1988; Bruch & Belkin, 2001; Stokes, 1985; Vanhalst et al., 2012b). Therefore, we speculated that core self-

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evaluation may mediate the shyness–loneliness relationship.

The social network mediation model posits that personal dispositions (e.g., shyness) exhibit an impact on loneliness through social network variables (Levin & Stokes, 1986). That is, personal dispositions can lower one's motivation and/or ability to build and maintain social relationships, thus resulting in loneliness (Levin & Stokes, 1986). According to the model, because shy people have deficient social networks, they tend to experience high levels of loneliness in a new social context (Levin & Stokes, 1986). In line with the model, social support has been shown to be associated with feelings of loneliness (Chen et al., 2014; Kong & You, 2013; Liu, Gou, & Zuo, 2016; Löfvenmark, Mattiasson, Billing, & Edner, 2009; Yildirim & Kocabiyik, 2010; Zhao, Tan, Gao, & Wang, 2017). More importantly, social support has been demonstrated to act as a mediator of the relationship between shyness and loneliness. For instance, Zhao et al. (2013) found that social support acted as a mediator of the shyness–loneliness relationship among Chinese college students. Furthermore, Tan, Ai, Wen, Wu, and Wang (2016) extended the finding to Chinese adolescents.

## 1. Strengths of the present research

The first strength of the study was to examine the validity of the two models in the context of adolescence. Developmental changes during the transition period lead to special vulnerabilities to perceived social isolation (Laursen & Hartl, 2013). During this period, adolescents spend less time with family members and more time with peers (Laursen & Hartl, 2013). They may lose connection with their family members and are expected to build new networks, and thus tend to experience higher levels of loneliness (Mahon et al., 2006). Therefore, testing the mechanisms involved in the shyness–loneliness relationship seems particularly important, which can advance knowledge development and provide the basis for loneliness interventions.

The second strength of the study was to test the mediation models in Asian culture, especially in Chinese culture. As a collectivistic country, China with its strong Confucian traditions might place much more stress on interpersonal relationships. Compared to Western countries, satisfactory interpersonal relationships is more important in predicting loneliness in China.

The third strength of the study was to consider the independent contribution of both social support and core self-evaluation on explaining the shyness–loneliness relationship, which has been never analyzed together in one and the same study before. Testing the concurrent mediation model in which social support and core self-evaluation mediated the effect of shyness on loneliness would expand our consolidated understanding of the mechanism underlying the relationship.

Taken together, the present study compared the validity of the cognitive bias and social network mediation models between shyness and loneliness in Chinese adolescents. First, we conducted mediation analyses to test the concurrent mediating effects of core self-evaluation and social support on the shyness–loneliness relationship. We hypothesized that both core self-evaluation and social support would be significant mediators. Second, we conducted an effect size contrast analysis to compare the mediating effect of core self-evaluation and social support. We hypothesized that the mediating effect social support would be stronger than that of core self-evaluation.

## 2. Method

### 2.1. Participants

The participants were 480 adolescents (163 males and 317 females) from two local high schools in Xi'an and Guilin. The age range was 14–18 ( $M = 16.12$ ,  $SD = 0.84$ ). Of the participants, 30.0% in ten grade, 69.4% in eleventh grade, 0.6% in twelfth grade; 48.8% of the students came from rural areas and 51.3% came from urban areas;

57.5% of the students came from Han majority and 42.5% came from national minority such as Zhuang nationality. The study was approved by the institutional review board of local university.

### 2.2. Measures

#### 2.2.1. Cheek and Buss Shyness Scale (CBSS)

The CBSS consists of 13 items (Cheek & Buss, 1981). Each item is answered on a 5-point scale (1 = strongly disagree, 5 = strongly agree). The Chinese version of the CBSS has satisfactory reliability and validity (Huang & Leung, 2009; Ma, 1999). In this study, the Cronbach alpha coefficient for the CBSS was 0.90.

#### 2.2.2. Core Self-Evaluation Scale (CSES)

The CSES, developed by Judge, Erez, Bono, and Thoresen (2003) consists of 12 items. Each item is answered on a 5-point scale ranging from 1 = strongly disagree to 5 = strongly agree. The Chinese version of the CSES has satisfactory reliability and validity (Gu, Wen, & Fan, 2015; Kong et al., 2014). In this study, the scale had a Cronbach alpha coefficient of 0.75.

#### 2.2.3. Multi-Dimensional Scale of Perceived Social Support (MSPSS)

The MSPSS, developed by Zimet, Dahlem, Zimet, and Farley (1988) consists of 12 items to assess three sources of support: significant other ( $\alpha = 0.87$ ), family ( $\alpha = 0.88$ ), friends ( $\alpha = 0.89$ ). The participants rated the items on a 7-point scale (1 = very strongly disagree; 7 = very strongly agree). The Chinese version of the MSPSS has satisfactory reliability and validity (Chou, 2000; Kong, Ding, & Zhao, 2015; Kong, Zhao, & You, 2012). In this study, the scale had a Cronbach alpha coefficient of 0.92.

#### 2.2.4. Emotional and Social Loneliness Scale (ESLS)

The ESLS (Wittenberg, 1986, cited in Shaver & Brennan, 1991) consists of 10 items to assess emotional loneliness (5 items;  $\alpha = 0.60$ ) and social loneliness (5 items;  $\alpha = 0.68$ ). The participants rated the items on a 5-point scale (1 = strongly disagree, 5 = strongly agree). The Chinese version of the ESLS has satisfactory reliability and validity (Kong & You, 2013; Liu, 1999). In this study, Cronbach alpha coefficient for the ESLS was 0.66.

### 2.3. Procedure

We contacted the head teachers of two high schools in Xi'an and Guilin and described the objectives of the study to them. They approved the research and allowed the administration of questionnaires to the students. Four hundred and eighty students voluntarily participated in the survey and no compensation was given for their involvement. After collecting informed consent, all the questionnaires were completed in a classroom.

### 2.4. Analytical strategy

We used SPSS 22.0 and Amos 22.0 to analyze the data. Firstly, we conducted correlation analysis to establish the correlation between the main variables. Then the two-step procedure was used to analyze the mediation effects (Anderson & Gerbing, 1988). The measurement model was first tested to assess if each of the four latent variables was represented by its indicators. Three item parcels were created for the shyness and core self-evaluation factors to exclude the possibility of inflated measurement errors that may be caused by multiple items for each factor. If skewness and kurtosis values for all variables were satisfactory, then use the maximum likelihood estimation to test the structural model.

The model fit was evaluated in terms of chi-square statistics; root-mean-square error of approximation (RMSEA), standardized root-mean-square residual (SRMR); best if below 0.08; comparative fit index (CFI),

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