Situational Shyness among Chinese Adolescents:

Measurement and Associations with Adjustment

by

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ABSTRACT

Although researchers often conceptualize shyness as stable across different situations (e.g., Rubin, Coplan, & Bowker, 2009), evidence has suggested that shyness may consist of situation-specific components (e.g., Asendorpf, 1990a; 1990b; Gazelle & Faldowski, 2014; Xu & Farver, 2009). This study was aimed at developing a systematic measurement tool for situational shyness in adolescence, as well as examining the relations between situational shyness and other popular measures of shyness and between situational shyness and adjustment. A sample of Chinese adolescents (N = 492) from an urban school participated in the study during 7th (T1) and 8th (T2) grades. Adolescents self-reported their situational shyness using a new measure of hypothetical scenarios, as well as their general shyness, anxious shyness, regulated shyness, depressive symptoms, and loneliness. Peers reported adolescents' general and conflicted shyness, and popularity and peer rejection. The school provided records of their academic achievement (exam scores).

Exploratory and confirmatory factor analyses of the situational shyness measure consistently supported that shyness in the hypothetical scenarios can be separated into three components: shyness with familiar peers, shyness with unfamiliar peers, and shyness in formal situations. These components had differential associations with other measures of shyness. Self-reported general and anxious shyness were related consistently to shyness with unfamiliar peers and in formal situations, and occasionally to shyness with familiar peers. Self-reported regulated shyness was not related to self-reported shyness in any situation. Peer-reported conflicted shyness was associated with shyness with familiar and unfamiliar peers, whereas peer-reported general shyness was associated

with shyness with unfamiliar peers and in formal situations. Moreover, situational shyness showed differential relations to maladjustment. Shyness with familiar peers was associated positively with maladjustment in multiple domains, especially academic and peer difficulties. Shyness with unfamiliar peers and shyness in formal situations, in contrast, were associated primarily with internalizing problems. In addition, shyness with unfamiliar peers and in formal situations occasionally related to positive adjustment, suggesting shyness in specific situations may still be protective in contemporary urban China. The findings provided new evidence that the correlates of shyness depend on the situation in which shyness occurs, and may inform future intervention programs.

DEDICATION

To my parents, Xiaomin An and Ningkun Zong,

for your love and support.

And to my grandmothers, Jiping Gao and Quanzhen Li.

I wish you could see me make it this far.

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INTRODUCTION

Shyness refers to wariness when facing social novelty and self-consciousness in situations with perceived social evaluation (Rubin, Coplan, & Bowker, 2009). Shy children tend to withdraw from social interactions, which may prevent them from advancing their social skills and seeking social support, and make them more vulnerable to peer rejection and victimization, internalizing problems, and academic problems (Coplan et al., 2016; Findlay, Coplan, & Bowker, 2009; Liu et al., 2015).

Scholars often conceptualize shyness as a constant personality or trait that is stable across different situations (e.g., Rubin, Coplan, & Bowker, 2009). Although shyness may be constant across situations for some children or adolescents, it is likely situation-specific for others. Scholars of shyness have proposed a distinction between trait shyness and state shyness, that even people who do not tend to be more shy than others may experience ephemeral feelings of shyness occasionally (e.g., Asendorpf, 1986; Lawrence & Bennett, 1992; Russell, Cutrona, & Jones, 1986). Moreover, most social behaviors are not only dependent on the person's characteristics, but also on the environment, although the relative importance of the person's characteristics and the environment may vary (Lewin, 1936; Bronfenbrenner, 1992). Therefore, people may display situational shyness; that is, their shyness is triggered by specific types of environments, and their shyness level systematically varies across contexts. In line with this notion, children's and adolescents' levels of shyness have been found to vary across different social situations. Factors such as familiarity with other people involved in the social interaction, formality of the interaction, amount of attention received, and power

dynamics between self and others have been considered relevant to one's feelings and behaviors of shyness, suggesting situation-specific components of shyness (Asendorpf, 1990a; 1990b; Asendorpf & Meier, 1993; Evans, 1993; Gazelle & Faldowski, 2014; Gudiño & Lau, 2010; Russell et al., 1986; Xu & Farver, 2009).

However, to date, researchers have conducted few studies to systematically examine the situation-specific components of shyness. Understanding whether and how children and adolescents exhibit shyness unique to different social situations is important because this information can help determine in which situations shyness is harmful for children's and adolescents' development. This knowledge can also inform intervention programs. For example, whereas children who are consistently shy in many social situations may have difficulty participating in peer activities and adjusting to the school environment, shyness only toward strangers may be relatively benign (e.g., Gazelle & Faldowski, 2014). Similarly, whereas shyness with familiar peers or in everyday, low-stress situations may indicate general social anxiety and social skills deficits, shyness in formal activities may be more specific to self-consciousness when with authority figures or under public attention, and requires more specific intervention.

Moreover, situation-specific shyness may explain the cross-informant discrepancies in shyness studies. Researchers of shyness in childhood and adolescence have observed low to moderate agreement across different reporters (i.e., self, parents, teachers, peers; e.g., Spangler & Gazelle, 2009), which may be a result of each reporter only being able to observe part of the child/adolescent's behaviors. For instance, peers may only observe shyness in school settings/during play, whereas parents may only be able to observe shyness at home/with familiar members and close friends (see Ladd &

Profilet, 1996). Different tools to measure shyness also emphasize different types of social situations in which shyness occurs (e.g., Xu & Farver, 2009). By examining shyness specific to each social situation and examining associations with reports from different informants or other established shyness measurement tools, we would be able to understand what each measurement tool measures. This can help explain discrepant findings in studies using different informants or measurement tools, and help researchers select appropriate measurement tools for their research questions.

Situational Elicitors of Shyness

Although researchers have not yet systematically examined shyness in different social situations, they have suggested some situational elicitors of shyness. One of these situational elicitors is novelty and unfamiliarity. Asendorpf (1990a) suggested that the approach-avoidance conflict underlying shyness is more common when children are confronted with unfamiliar rather than familiar peers. He reported an initial moderate correlation between preschool-aged children's social inhibition with strangers and classmates, but the correlation decreased over time when the children became familiar with their classmates (Asendorpf, 1990b). Similarly, Evans (1993) found that some children who were wary and fearful when they encountered unfamiliar people and new social settings (e.g., entering a new play group, transferring into a new classroom) became non-shy after they became familiar with the new context. In another study, Asendorpf and Meier (1993) reported that shy children spent as much time in conversations and spoke as much as non-shy children in familiar situations. These studies suggest children who are shy in unfamiliar situations may become less shy in familiar situations or when they get familiar with a new situation. In addition, some evidence

suggests shy children can be divided into subgroups based on their levels of shyness in familiar and unfamiliar situations. In a study of 2-year-old children, Gazelle and Faldowski (2014) reported that 10% of their participants were shy with unfamiliar but not familiar peers, and 18% were shy with familiar but not unfamiliar peers; in contrast, only 3% of the children were shy with both familiar and unfamiliar peers. They also found peer exclusion was associated with shyness with familiar peers, but not associated with shyness with unfamiliar peers.

In addition, some researchers have suggested that people are more likely to be self-conscious and socially inhibited in public/formal situations than in private/casual situations (Buss & Plomin, 1984; Cheek & Stahl, 1986). Some people identify themselves as non-shy in general or in everyday situations, but still feel shy and fearful when speaking publicly, receiving attention from a large group of people, or interacting with an authority figure (Cheek & Stahl, 1986; Heiser, Turner, Beidel, & Roberson-Nay, 2009; Russell et al., 1986). Some studies of shy children suggest that shy children may become intimidated and speak less when the teacher asks a lot of direct questions, because the questioning may make shy children perceive their teacher as an authority figure and feel scrutinized (Coplan & Arbeau, 2008; Evans & Bienert, 1992). In addition, when shy children interact with peers, they often prefer dyads or smaller groups, perhaps because they are more anxious under the attention of larger groups (Coplan, DeBow, Schneider, & Graham, 2009). Xu and Farver (2009) interviewed a sample of Chinese children in elementary schools about the situational elicitors of shyness. In addition to shyness due to social novelty and shyness due to negative social evaluation, they found public attention to be a unique situational elicitor of shyness (e.g., “Making a presentation

in front of classmates"). They reported low correlations between shyness under public attention and shyness due to novelty/negative evaluation (*r*s = .19 to .23 for novelty and negative evaluation, respectively). Compared with shyness elicited by novelty or negative evaluation, shyness under public attention showed a stronger association with anxious shyness, but a weaker association with shyness toward strangers. In general, the evidence suggests that novel/unfamiliar situations, as well as formal/public situations, may uniquely elicit children's shyness, and therefore children's levels of shyness are expected to vary across situations.

Theoretical foundations of situation-specific shyness. Why do novel/unfamiliar situations and formal/public situations uniquely elicit children's and adolescents' shyness? Theories of shyness suggest that shy responses specific to these situations may reflect different subtypes of shyness. Buss (1986a, 1986b) described two subtypes of shyness with different origins, elicitors, and developmental mechanisms. *Fearful shyness*, which Buss theorized to result from autonomic nervous system response, manifests from the first year of life as distress, wariness, retreat, and inhibited and fearful responses; and is elicited by the presence of unfamiliar people, novel environment, intrusive interaction, and potential social evaluation and rejection. In contrast, *self-conscious shyness* is the feeling of embarrassment, awkwardness, and vulnerability when being exposed as a social object. It is usually elicited by situations that involve public attention, difference between self and others, violation of privacy, and potential scrutiny from authority figures or in formal situations. Buss (1986a, 1986b) suggested that this subtype of shyness is late-onset and starts in about the fourth or fifth year of life, after children develop a good sense of self and self-awareness.

Some other researchers proposed similar but slightly different models regarding the subtypes of shyness. Asendorpf (1993) drew the distinction between early-onset *temperamental shyness* in the form of fear toward strangers and later-onset *social-evaluative shyness* that emerges at 18 months and involves concerns for negative social evaluations. Similar to this idea, Rubin and Asendorpf (1993) redefined the terms of fearful and self-conscious shyness, in which they suggested self-conscious shyness, rather than fearful shyness, is elicited by potential social evaluation. Xu and Farver (2009) suggested that shyness elicited by novelty and negative social evaluation may emerge from earlier fear toward strangers, whereas self-conscious shyness is specifically elicited by public attention and may be expressed in a low-key, cautious, and regulated way. Schmidt and Poole (2019) proposed a theoretical model that both temperamental or fearful shyness and self-conscious shyness are rooted in biological reactivity and dysregulated social fear in infancy, but self-conscious shyness has a deeper association with later development of self-awareness, self-conscious emotions, and the need of affiliation with other people. They argued that evolutionally, fearful/avoidant shyness may serve as a quick response to avoid threat and harm, whereas self-conscious/conflicted shyness allows the individual more time to evaluate the intentions and motives of other people.

Based on these discussions, although researchers have slightly different definitions of fearful/temperamental shyness and self-conscious shyness (especially in whether the fear of negative evaluation is more prominent for fearful shyness or self-conscious shyness), it seems we are able to distinguish two types of shyness: one is a "fight or flight" type of fearful response to potential social threats, including novelty,

uncertainty, intrusiveness, and overt danger, in which the individual fears that he or she may be harmed, rejected, or face unknown bad consequences; and the other is a sociocognitive self-conscious response to potential evaluations of oneself from other people, including being paid attention to, scrutinized or evaluated, interacting with people higher in social hierarchy, and participating in activities with a set of social rules, in which the individual worries about violating the social expectations, being evaluated negatively, and making a fool of himself or herself. In the rest of this paper, I will refer to the former as *fearful shyness* and the latter as *self-conscious shyness*.

There is a logical association between shyness in unfamiliar situations and fearful shyness, as well as between shyness in formal situations and self-conscious shyness. Unfamiliarity often indicates uncertainty and risk for unknown threat, and therefore likely evokes fearful shyness. Thus, children who are high on fearful shyness may experience heightened shyness specifically in the interaction with unfamiliar people, compared with in the interaction with familiar people. Similarly, because formal situations often involve a lot of rules, public attention, and potential evaluation from others, they may tend to elicit self-conscious shyness. Therefore, children who are high on self-conscious shyness may display higher levels of shyness in formal situations than in normal everyday situations. Because the constructs of fearful and self-conscious shyness have been found to be correlated but distinguishable, and the distinguishability seems consistent across self- and observer reports (Eggum-Wilkens, Lemery-Chalfant, Aksan, & Goldsmith, 2015; Xu & Farver, 2009), it is reasonable to anticipate that shyness in unfamiliar and formal situations should be empirically distinguishable from each other in terms of factor structure.

It is worth noting that children and adolescents are not only shy in unfamiliar and formal situations; although these situations correspond with the concepts of fearful and self-conscious shyness and therefore are considered the most shyness-provoking (Cheek & Stahl, 1986; Russell et al., 1986), some children and adolescents are consistently shy in all situations or even shyer in familiar and everyday situations than in the unfamiliar and formal situations (Gazelle, 2013; Gazelle et al., 2005; Gazelle & Faldowski, 2014). Shyness in familiar and everyday situations could be biologically founded; that is, some children may be temperamentally fearful and highly emotionally reactive to potential social threats; as a result, they may experience heightened and dysregulated fear even in low-stress situations (Buss et al., 2013; Kiel & Buss, 2014). In addition, social information processing theory (Crick & Dodge, 1994; Lemerise & Arsenio, 2000) suggests that the encoding and interpretation of cues in the environment are crucial for children to react to the situation, and the process of encoding, interpretation, and reaction is subject to the child's emotional skills and social knowledge. Therefore, previous problems with familiar peers or having been evaluated negatively in everyday situations may make children perceive the familiar, everyday situations as threatening or associated with negative consequences, and therefore react to such situations with higher levels of shyness. For example, Gazelle and colleagues (2005; 2013) described some shy children who showed fewer problems when with unfamiliar peers than when with familiar peers, perhaps because these shy children were rejected by familiar peers, but treated in a friendly way by unfamiliar peers; thus, they may perceive the interactions with familiar peers as more threatening than interactions with unfamiliar peers. In other words, shyness specific to familiar situations may be a result of previous life experiences in, and

perceptions of, such situations; the same may apply to shyness in unfamiliar situations and in formal situations. Consistent with this notion, constructs of fearful shyness, self-conscious shyness, and general anxious shyness with familiar peers have been found to have low to moderate correlations with each other (Xu & Farver, 2009), perhaps partly because children have varying experiences and perceptions of these situations.

Situational Shyness and the Measurement of Shyness

Most contemporary studies of shyness rely on reports of a single informant using one or two measures (Spangler & Gazelle, 2009). Studies that utilize multiple informants and multiple measurement tools, however, sometimes find the inter-rater agreement on shyness being in the low-to-moderate range (Ding et al., 2014; Rudasill et al., 2014; Spangler & Gazelle, 2009; Spooner, Evans, & Santos, 2005; Tu & Erath, 2013). For example, Spangler and Gazelle (2009) conducted a study to empirically examine the convergent validity of anxious solitude across self, peer, teacher, parent, and observer reports during middle childhood. They found the correlations among different reporters' ratings on shyness were moderate at most, with the agreement between peers and teachers being the highest (r = .48), followed by teacher-observer (r = .35), teacher-self (r = .29), peer-self (r = .27), peer-observer (r = .25), peer-parent (r = .24), and parent-self (r = .17). They found no significant association between observer and self-reports, or between parent reports and teacher/observer reports. Similarly, Rudasill and colleagues (2014) reported no significant association between parent- and teacher-reported shyness in early childhood. Using a sample of fifth and sixth graders, Tu and Erath reported significant associations between self- and parent reports (r = .33) and teacher and parent reports (r = .48), but not between self- and teacher reports. Spooner, Evans, and Santos (2005)

investigated a sample of 10- to 12-year-old children who identified themselves as shy, and found about one-third of the children were rated by teachers and parents as non-shy. In a validation study of the Children's Shyness Questionnaire (CSQ; Crozier, 1995) among Chinese children, Ding and colleagues (2014) found a significant correlation between self-reported shyness and peer-nominated shyness-sensitivity, but the size of the correlation was small (r = .10). In another study of Chinese adolescents, the correlation between self- and peer reports was moderate (r = .33; Zhang & Eggum-Wilkens, 2018). Considering the many different informants utilized in the studies of shyness and the range of agreement across informants, these findings put the generalizability of research findings about shyness under question. For instance, results regarding the correlates of shyness may change when substituting teacher-reported shyness for parent-reported shyness (e.g., Berger et al., 2018; Valiente, Lemery-Chalfant, & Swanson, 2010). There may, however, be meaningful reasons for lack of convergence.

Conceptualization of shyness in measurement tools. The low convergent validity may be attributed partly to the different ways each measure conceptualizes shyness. Some measures assess children's general feelings and behaviors of being shy (referred to as *general shyness* in the rest of the manuscript), but the items are described with different amounts of details across measures. For example, one of the most commonly used measures, *Children's Shyness Questionnaire* (*CSQ*; Crozier, 1995), operationalizes *general shyness* as a series of descriptions of nervous and self-conscious emotions and behaviors experienced in social interactions (e.g., "Are you usually shy in a group of people?" "Do you feel shy when you have to read aloud in front of the class?" "Do you find it hard to talk to someone you don't know?"). The description of general

shyness, however, is to some extent vague and unspecified in other measures, that is, using the word "shy" generally without nuanced description of the feelings, behaviors, or elicitors (e.g., "Is shy" in the *Early Adolescent Temperament Questionnaire*, Ellis & Rothbart, 1999; "Someone who is very shy" in *Revised Class Play*, Masten, Morison, & Pellegrini, 1985). In addition to general shyness, some researchers have included items about sadness and emotional vulnerability (e.g., prone to hurt feelings) to form the construct of *shyness-sensitivity* (Chen, Rubin, & Sun, 1992; Masten et al., 1985). Although the measure of shyness-sensitivity has demonstrated good construct validity (Chen et al., 1992), it seems to be a broader concept than the traditional conceptualization of shyness. Moreover, based on Asendorpf's (1990a) theory that shyness is a result of conflicting approach and avoidance motivations, some researchers developed measurement tools for *conflicted shyness* which captures conflicting motivations (e.g., "wants to play with other kids but does not because they are too shy or afraid" in *the Gateway Measure*, Ladd, Kochenderfer-Ladd, Eggum, Kochel, & McConnell, 2011). Furthermore, researchers have proposed culturally unique forms of shyness, such as a distinction between anxious and regulated shyness (see the section "the roles of culture and gender in shy children's and adolescents' adjustment"). Perhaps as a result of the various ways of conceptualizing shyness, the cross-measure/informant agreement tends to be lower when the conceptualizations differ across measures or informants (e.g., general shyness vs. shyness-sensitivity; see Ding et al., 2014). However, some studies that utilize similar measures for multiple informants still show low convergence validity (e.g., Rudasill et al., 2014; Spangler & Gazelle, 2009).

Knowledge and perspectives of informants. Another possibility is that each informant may take on different perspectives or have differential abilities, when describing the target child's social behavior. Scholars have occasionally discussed different informants' strengths and weaknesses in reporting children's social status and behavior (Coie & Dodge, 1988; Erdley et al., 2010; Ladd & Profilet, 1996). In particular, Ladd and Profilet (1996) identified three reasons why informants differ in their reports of children's behaviors, that informants may 1) differ in their ability to assess the target behaviors, 2) not be able to detect and distinguish the behaviors, and 3) have bias and report subjective data.

Specifically, for informants' differential abilities to detect and assess the target behavior, it has been suggested that because children's and adolescents' shyness varies across situations, different informants might be knowledgeable of the child's behavior in different social situations and report different levels of shyness (Bronfenbrenner, 1992). For example, self-report, which is often used in the studies of shyness from late childhood to adolescence (e.g., Bowker & Raja, 2011; Crozier, 1995), is considered to be a reliable way to measure shyness, because children and adolescents are the best informants for their own feelings and behaviors and can report their shyness in all situations (Bowker, Rubin, & Coplan, 2016). Therefore, self-reported shyness, when using the appropriate items, can be a good assessment of dispositional shyness or shyness across multiple situations. Another commonly used method for studying shyness in late childhood to adolescence, peer nominations, is also considered reliable because the report incorporates information from multiple peers who know the child well and can observe the child's everyday behavior (Bierman, 2004). However, because nominations are only

collected from peers who are familiar with the child (e.g., classmates, children in the same community), they might be better observers of children's shyness in familiar situations than in unfamiliar situations. They might also occasionally observe children's shyness in formal situations (e.g., interactions with teachers or school staff, class presentations).

Parent-, teacher-, and observer-reported shyness are more frequently used in early childhood when the child has limited ability to report their own or peers' shyness. However, their reports are subject to the situations they are able to observe. For example, parents might have better knowledge of the child's behavior at home and in the community, both with familiar and unfamiliar people, but they may be less knowledgeable of their children's shyness outside of home/community (e.g., at school), especially when their children grow older. Perhaps as a result of this, Eisenberg and colleagues (1998) found that the correlation between parent- and teacher-reported shyness decreased with age. Teachers are good observers of children's and adolescents' shyness in multiple contexts at school (e.g., in the classroom, during play, at lunchtime), but pragmatically, teachers' ability to report children's shyness may vary by schools' structures. For instance, in schools where children change classrooms often during the day, it may be difficult for teachers to observe and assess children's shyness (Eisenberg, Shepard, Fabes, Murphy, & Guthrie, 1998). In addition, in cultures that emphasize very organized classroom activities, the time for teachers to interact with children outside of the class or observe children's free play with peers can be very limited. As a result, their observation might be limited to children's shyness in the formal, organized group settings (e.g., whether a child is quiet or afraid to speak up during class). In addition, studies that

utilize observation methods of children's shyness usually limit the observation to certain specific situations, such as at school with familiar peers (e.g., Spangler & Gazelle, 2009) or in the lab with unfamiliar peers (e.g., Hane, Cheah, Rubin, & Fox, 2008), and the findings may depend on the observed situation.

In sum, the literature suggests that different informants differ in their strengths and weaknesses when reporting on children's and adolescents' shyness, and part of the strengths and weaknesses is related to the situations in which they are able to observe the child's behavior. Therefore, to understand the cause of discrepancy across reporters and strengthen the measurement of shyness, it is necessary to examine each reporter's knowledge of children's and adolescents' shyness in different types of social situations.

Situational Shyness and Adjustment

Shyness has been found to be associated with a series of negative developmental outcomes in children and adolescents, such as internalizing problems, peer difficulties, and low academic achievement (Coplan et al., 2016; Findlay et al., 2009; Liu et al., 2015). Researchers have suggested that shyness harms children's and adolescents' psychological and school adjustment because shy children and adolescents tend to evaluate themselves negatively, receive negative feedback from people around them, and have difficulty maintaining friendship and getting social support (Ladd et al., 2011; Paulsen, Bru, & Murberg, 2006). The negative self-evaluations, negative feedback in social interactions, and relationship difficulties, however, may be situation specific. First, fearful shyness and self-conscious shyness have been found to relate differentially with adjustment (e.g., Bruch, Giordano, & Pearl, 1986; see later in the section for more information). Therefore, it is reasonable that shyness specific to unfamiliar or novel

interactions, and shyness specific to formal and public situations, may uniquely associate with different aspects of psychological and school adjustment. Second, if children's and adolescents' levels of shyness differ across situations, so too might their ability to maintain positive social relationships and obtain sufficient social support in each social situation. Moreover, as discussed in the previous sections, most people can only observe children's and adolescents' feelings and behaviors in certain social situations, and their feedback to the children and adolescents is contingent on what is observed in those specific situations. Therefore, it is necessary to examine the relations between situational shyness and adjustment.

To date, very few researchers have systematically examined situational shyness and its correlates. Therefore, there is limited evidence of how situation-specific forms of shyness uniquely predict children's and adolescents' adjustment. In the following sections, I will first review the literature about the general association between shyness and adjustment. Then, I will discuss the implications of the general research of shyness for the study of situational shyness, as well as evidence supporting the unique associations between situational shyness and adjustment.

Shyness and internalizing problems. Research has revealed positive associations between children's and adolescents' shyness and internalizing problems, such as depression, anxiety, loneliness, low self-esteem, and somatic complaints (Asendorpf & van Aken, 1994; Crozier, 1995; Findlay, Coplan, & Bowker, 2009; Gazelle, Workman, & Allan, 2010; Graham & Coplan, 2012; Henriksen & Murberg, 2009; Karevold, Røysamb, Ystrom, & Mathiesen, 2009; Karevold, Ystrom, Coplan, Sanson, & Mathiesen, 2012; Kingsbury, Coplan, & Rose-Krasnor, 2013; Lawrence &

Bennett, 1992; Murberg, 2009). Most of the studies focused on shyness and adjustment in early to middle childhood and were cross-sectional. However, there is some evidence that shyness predicts internalizing problems longitudinally. For example, Karevold and colleagues (2009; 2012) reported that shyness in early childhood predicted internalizing problems in middle childhood to early adolescence. In addition, researchers have found that shyness associates positively with depression and loneliness during adolescence. For example, using short-term longitudinal designs and self-reports, An and Eggum-Wilkens (in press) and Murberg (2009) reported concurrent associations between adolescents' shyness and depressive symptoms, as well as associations between the initial level of shyness and increase in depressive symptoms one year later. Similarly, using self- and peer reports, researchers have observed positive associations between adolescents' shyness and concurrent loneliness (Vanhalst, Luyckx, & Goossens, 2014; Zhao et al., 2018). Interestingly, Liu and colleagues (2017) found that peer-nominated shyness-sensitivity positively predicted depression and loneliness among Chinese adolescents, but not among Chinese children (middle childhood), suggesting shyness may be especially problematic during adolescence.

Shyness and peer relationships. Shy children and adolescents often have difficulty with peer relationships, perhaps because they lack the proper social skills for interacting with peers and maintaining friendships (Asendorpf & Meier, 1993). In addition, shyness may be perceived by peers as a less desirable or unattractive personality, which makes shy children and adolescents more likely to be viewed as unpopular and ignored or rejected by peers (Eggum-Wilkens et al., 2014; Liu et al., 2015; Zhang, Eggum-Wilkens, Eisenberg, & Spinrad, 2017), or even victimized (Coplan,

Prakash, O'Nell, & Armer, 2004; Gazelle & Ladd, 2003; Liu et al., 2014; Rubin, Bowker, & Gazelle, 2010; Rubin, Bukowski, & Parker, 2006). When shy children make friends, they tend to have fewer friends and their friendships tend to be lower in quality and less stable compared to non-shy children (Ladd et al., 2011; Rubin, Wojslawowicz, Rose-Krasnor, Booth-LaForce, & Burgess, 2006).

The coexistence of shyness and peer difficulty has been observed in early and middle childhood (Buhs, Rudasill, Kalutskaya, & Griese, 2015; Gazelle & Ladd, 2003; Gazelle & Spangler, 2007; Zhang et al., 2017) using teacher- and parent-reports of shyness, and in adolescence using peer- and self-reports (Bowker & Raja, 2011; Liu et al., 2015; Vanhalst et al., 2014). Some studies suggest longitudinal relations between shyness on peer relationships (Coplan, Arbeau, & Armer, 2008; Eisenberg et al., 1998; Gazelle & Ladd, 2003). The risk of peer difficulties appears to increase with age (Liu et al., 2017), which may be a result of the heightened importance of assertiveness and individuality as well as higher sensitivity to peers during adolescence compared to childhood, combined with peers' increasing ability to recognize shy children when they grow older (Gavinski-Molina, Coplan, & Younger, 2003).

Shyness and academic achievement. Shyness is sometimes linked to less optimal academic achievement among children and adolescents, albeit the relation has been low to moderate (see Evans, 2010, for a review). Children in kindergarten and elementary school who were viewed as shy by the teachers were more likely to be rated as having low academic achievement by teachers (Zhang et al., 2017) or show lower scores in standardized tests (Berger et al., 2018; Valiente et al., 2010). Less is known about the relation between shyness and academic achievement in adolescence; some

studies showed negative associations (An & Eggum-Wilkens, in press; Liu et al., 2015) whereas other studies revealed no significant relations (Liu et al., 2017). Researchers have suggested that the negative association between shyness and academic achievement may be caused by school adjustment problems in other domains (e.g., Hughes & Coplan, 2010). As discussed in previous sections, shyness often is associated with peer difficulties, and peer difficulties have been found to mediate the relation between shyness and academic achievement (Coplan et al., 2017; Zhang et al., 2017). Internalizing problems, such as depression, also have been found to mediate the relation between shyness and academic achievement (Bayram Özdemir et al., 2017). In addition, shy children may be less engaged in school and academic activities, which leads to poor academic achievement in the eyes of teachers (Hughes & Coplan, 2010).

The link between shyness and academic achievement may be affected by the bias of teachers because teachers may hold negative perceptions of shy children and their academic achievement (Coplan & Evans, 2009). For example, in one study, shyness was associated negatively with teacher-rated academic achievement but not the results of standardized tests (Hughes & Coplan, 2010). However, a few studies using standardized test scores or school academic records still showed associations between shyness and poorer academic achievement (An & Eggum-Wilkens, in press; Berger et al., 2018). The association also seems to depend on the reporter of shyness. In Berger et al. (2018) and Valiente et al. (2010), US kindergarteners' and first-graders' standardized test results of academic achievement were negatively related only with teacher-reported shyness, but not parent-reported shyness. An and Eggum-Wilkens (in press) reported concurrent

negative associations between Chinese adolescents' self-reported shyness and school records of exam scores, but they did not find any longitudinal associations.

In sum, research has shown associations between shyness and internalizing problems, peer difficulties, and low academic achievement. The relations between shyness and internalizing problems as well as shyness and peer difficulties seem relatively robust across different reporters and are found both concurrently and longitudinally, whereas the findings regarding shyness and academic achievement are mixed and vary across reporters of shyness and measurements of academic achievement. The association between shyness and adjustment problems also appears to be stronger in adolescence, which highlights the importance of studying the effects of shyness in adolescents such as the present sample.

The roles of culture and gender in shy children's and adolescents' adjustment. The relation between shyness and adjustment has been found to depend on culture. Researchers have argued that shyness may be viewed negatively and be maladaptive in individualistic cultures because members of individualistic cultures value independence and assertiveness; in contrast, members of collectivistic cultures are expected to control the expression of their own needs and desires, and therefore, non-assertive characteristics, such as shyness, may be viewed as positive and harmonious in collectivistic cultures (Chen, 2019; Chen & French, 2008). In line with this idea, shyness has been found to be relatively benign in earlier studies (i.e., in 1990s and before; samples included children who were born around 1980) and rural samples in China when/where the cultural values were considered very collectivistic (Chen et al., 2004; Chen, Cen, Li, & He, 2005; Chen, Rubin, & Li, 1995). However, recent studies of

children who were born in the 1990s-2000s have consistently revealed negative associations between shyness and adjustment in contemporary and urban samples in China (e.g., An & Eggum-Wilkens, in press; Chen et al., 2005; Coplan et al., 2016; Ding et al., 2014; Zhang & Eggum-Wilkens, 2018), and the magnitude of the associations between shyness and adjustment has demonstrated similar to those of individualistic Western societies (e.g., Liu et al., 2015). It is suggested that because of social changes during globalization, the urban areas of China have become increasingly individualistic, which makes shyness maladaptive compared to the past (Chen & French, 2008). Therefore, it is reasonable to assume shyness is associated with negative developmental outcomes in contemporary urban Chinese samples.

Culture also influences people's perception of shyness as well as its stability or variations caused by situations. As was already described, Xu and colleagues (2007; 2009) distinguished two types of shyness based on descriptions provided by Chinese children: *anxious shyness*, which is similar to general shyness, but especially focuses on social anxiety and fear; and *regulated shyness*, which means the child behaves quietly, passively, and non-assertively to avoid social attention and maintain group harmony. Regulated shyness has been found to be associated with shyness toward strangers in early years and high levels of effortful control, and has been positively associated with peer preference (Xu, Farver, Yu, & Zhang, 2009; Xu, Zhang, Farver, Yu, & Chang, 2007). Xu and Farver (2009) found that anxious shyness, but not regulated shyness, was associated with shyness in situations with potential negative evaluations among Chinese children, suggesting anxious shyness and regulated shyness may be elicited by different situational cues.

In addition, compared with North Americans who often attribute behaviors to inborn and stable traits, East Asians seem to hold the belief that people's behavioral pattern is fluid to some extent and may change across situations or over time (Lockhart, Nakashima, Inagaki, & Keil, 2008; Miller, 1984; Morris & Peng, 1994; Norenzayan, Choi, & Nisbett, 2002). In a cross-cultural comparison study, Zhang and Xu (2019) found that Chinese children held weaker entity theories of shyness (i.e., thought of shyness less as a stable trait and more as a changeable behavior) than American children, which predicted less rejection and exclusion of shy peers in the Chinese sample than in the American sample (i.e., entity theory of shyness mediated the associations between country and peer acceptance of shy children). The cultural belief that shyness can be changed may lead to observable situational variations of shyness among Chinese children and adolescents, and warrants further investigation of situational shyness in Chinese samples.

Moreover, evidence also suggests that shyness is associated with more negative outcomes for boys than for girls, likely because shyness violates the gender norms for masculinity (Doey, Coplan, & Kingsbury, 2014). Some researchers have found that compared with shy girls, shy boys are more likely to receive negative responses from parents and teachers (e.g., Coplan et al., 2004; Eggum et al., 2009; Sandberg & Pramling-Samuelsson, 2005), and be excluded, rejected, or bullied by peers (Bullock et al., 2018; Coplan et al. 2004; Gazelle & Ladd, 2003; Spangler & Gazelle, 2009). Perhaps partly as a result of these negative experiences, the associations between shyness and negative developmental outcomes, such as internalizing problems, were also stronger among boys than girls in several studies (Coplan et al., 2007; Eisenberg et al., 1998; Liu et al., 2018;

Rubin et al., 1993). However, gender differences in shy children's and adolescents' adjustment have not always been consistent. For example, Bullock and colleagues (2018) found that the association between shyness and peer victimization was stronger among boys than among girls, but the moderating effect of gender did not replicate for the outcomes of depression, loneliness, and peer rejection. Crick and Ladd (1993) reported a stronger association between shyness and loneliness for girls than for boys during middle childhood. Despite the mixed findings, these studies suggest it is necessary to examine gender differences in shy children's and adolescents' adjustment.

The unique contributions of situational shyness to children's and adolescents' adjustment. To date, very few studies directly examined the unique associations between situational shyness and adjustment. Kerr (2000) proposed that early-onset fearful shyness may be less problematic than later-onset self-conscious shyness for adults, because children who are fearfully shy may not have problems with familiar people in everyday settings, and they may be able to develop preferences of staying alone which help them obtain a sense of personal control. In contrast, children who are self-consciously shy may see their shyness as a personal failure both when with familiar people and when being alone. However, this theoretical assumption seems inconsistent with empirical findings. Some studies of fearful and self-conscious shyness among young adults showed that compared to self-consciously shy individuals, fearfully shy individuals had lower self-esteem and higher somatic anxiety (Bruch et al., 1986; Schmidt & Robinson, 1992). Fearfully shy individuals, but not self-consciously shy individuals, were less knowledgeable about effective social skills than their non-shy counterparts (Bruch et al., 1986). These findings might suggest that shyness unique to

unfamiliar situations might be more problematic than shyness unique to formal and public situations in terms of psychological and social adjustment.

Some studies that directly compared shyness in different situations have suggested a stronger association between peer relationships and shyness in familiar situations compared with shyness in unfamiliar situations (Gazelle & Faldowski, 2014). In a recent study, An, Clifford, Eggum-Wilkens, and Lemery-Chalfant (2019) examined the relations between dispositional and situational shyness and early adolescents' adjustment using parental reports. They found that although dispositional shyness, characterized by shyness in the interactions with familiar peers, was associated positively with internalizing problems, school and academic difficulties, and peer difficulties, shyness with unfamiliar peers was only associated with a few psychological and peer difficulties. This notion makes sense because being shy in everyday interactions with familiar peers likely means having difficulty interacting with people in general, whereas the impact of being shy only with unfamiliar peers is limited to certain types of social interactions that occur with less frequency.

In addition, although speculative, findings from studies that utilized different reporters and measures of shyness might indicate unique associations between situational shyness and adjustment because some reporters are more knowledgeable of children's feelings and behaviors in one situation than in other situations, and the items of shyness vary from measure to measure. For example, compared with parent-reported shyness, teacher-reported shyness has been found to be associated more strongly with low academic achievement (Berger et al., 2018; Valiente et al., 2010). This difference could be caused by teachers being more knowledgeable of children's shyness in school settings,

such as in interactions with familiar peers, and in formal classroom activities, and shyness in these situations might be associated with worse academic achievement. Similarly, evidence from peer-reported shyness during adolescence shows that shyness is associated with depression, loneliness, and peer problems (Liu et al., 2015; Vanhalst et al., 2014), indicating shyness with familiar peers should be related to adjustment problems in psychological and peer domains. Therefore, it seems shyness in both familiar and unfamiliar situations should be related with internalizing problems and peer difficulties during adolescence, but the association between shyness in formal situations and similar adjustment variables requires further investigation. In sum, although evidence is limited, it appears that shyness in different social situations may contribute to adjustment differently and should be systematically examined.

The Present Study

The purpose of the study was to develop a measure for shyness in familiar/unfamiliar and normal/formal situations among Chinese adolescents, and examine the relations between situational shyness and traditional measures of shyness, as well as between situational shyness and adolescents' adjustment. In this study, situational shyness is conceptualized as shyness elicited by a specific type of social situation. By systematically investigating shyness in different social situations, we will be able to know whether shyness can be separated into constructs unique to the type of situation, and understand whether and how shyness in each situation contributes to different aspects of adjustment. In addition, examination of the relations between situational shyness and other existing measures of shyness will help us understand what each measure is actually measuring. In turn, this may help explain why researchers observe relatively low

agreements across reporters and measures. As a first step to systematically understand situational shyness, this study is valuable for the measurement of shyness and may inform intervention programs for shyness in different social situations.

Data were collected in an urban area of Liaoning Province, China. Similar to other studies done in urban China, shyness has been negatively associated with adjustment among early adolescents in urban areas of Liaoning (Zhang & Eggum-Wilkens, 2018). I chose to conduct the study in China because Chinese children have been found to have a stronger belief that shyness is fluid and changeable compared to American children (Zhang & Xu, 2019), and therefore shyness is more likely to be situation-specific for Chinese children and adolescents.

Examining shyness in social situations during adolescence is important for at least two reasons. First, the salience of peer relationships as well as the negative consequences of shyness peak during adolescence in China (Liu et al., 2017). Second, adolescents are good reporters of their own behaviors and feelings across a variety of situations (Coie & Dodge, 1988).

I utilized a short-term longitudinal design in which data were obtained from the same group of adolescents one year apart. The longitudinal design allowed me to examine the consistency of the factor structure of situational shyness over time, as well as the longitudinal associations between situational shyness and adjustment.

Aim 1: Establish a measurement tool for situational shyness. I designed a new questionnaire to measure self-reported shyness in familiar vs. unfamiliar, and normal vs. formal situations (see the Method section for more information of the measure). The first step of the analyses was to examine the factor structure of the new measure using

exploratory and confirmatory factor analyses. I expected self-reported shyness to be explained by separate factors of familiar, unfamiliar, normal, and formal stations, and the correlations between the situational factors to be in the low to moderate range (i.e., Chinese adolescents can distinguish these situations and react to them differently). In addition, I examined measurement invariance of situational shyness across time and the reliability of each subscale, as well as tested the concurrent validity of the situational shyness measure by testing the correlations between the situational shyness factors and self-reported general shyness (CSQ; Crozier, 1995). I expected all the situational shyness factors to be correlated with self-reported general shyness.

Aim 2: Understand what situations other measures of shyness actually measure. To examine what situations other measurement tools of shyness actually measure (in other words, the *content validity* of the current measurement tools of shyness), I investigated the relations between situational shyness factors and concurrent self-/peer-reported shyness using other popular measures. I used self- and peer-reported shyness because studies of shyness in adolescence often rely on these reporters, and several popular measurement tools of shyness have been developed for these reporters, including self-reported anxious and regulated shyness (Xu et al., 2007), and peer-reported conflicted shyness and shyness-sensitivity (Masten et al., 1985). I expected self-reported anxious shyness to be associated positively with all forms of situational shyness, and self-reported regulated shyness to be associated positively with shyness in formal situations (Xu & Farver, 2009). Peer-reported conflicted shyness and shyness-sensitivity were also expected to be associated positively with all forms of situational shyness, but peer-reported shyness should be associated more strongly with shyness in familiar situations,

and more weakly with shyness in unfamiliar and formal situations, compared with self-reported shyness.

Aim 3: Examine the prediction of adjustment from shyness in different social situations. Because shyness has been found to predict adjustment in psychological, peer relationship, and academic domains, I expected Chinese adolescents' situational shyness to be associated with their internalizing problems (i.e., depressive symptoms, loneliness), peer difficulties (lower popularity and higher rejection), and lower academic achievement, both concurrently and longitudinally, but the specific associations should depend on the type of situation. It was difficult to make specific predictions because very few studies have been done to examine the correlates of situational shyness, but based on the review of the limited literature (An et al., 2019; Bruch et al., 1986; Gazelle & Faldowski, 2014; Hughes & Coplan, 2010; Schmidt & Robinson, 1992), I anticipated shyness in familiar situations to be the most maladaptive and therefore predictive of adjustment problems in all domains. Shyness in unfamiliar situations, in contrast, should only be associated with internalizing problems and peer difficulties. Shyness in familiar situations and shyness in unfamiliar situations are similar to some extent because they both indicate deficits in everyday social skills and ability to seek support, which may negatively influence adjustment in the psychological and social domains. However, because learning activities usually take place in the familiar classroom context, shyness in familiar situations, but not shyness in unfamiliar situations, may be related to school disengagement and academic difficulties. Similarly, shyness in formal/public situations also may uniquely contribute to academic problems because it may limit adolescents' participation in classroom learning activities. This may be particularly true in Chinese

classrooms, where the classroom environment is quite formal, and teachers can be very critical of students' performance in the learning activities. Moreover, because literature suggests gender differences in the outcomes of shyness (e.g., Doey et al., 2014), I examined the moderating role of gender in the aforementioned relations. I expected the association between situational shyness and maladjustment to be stronger among boys than among girls.

CHAPTER 2

METHOD

Participants

Participants were students from an urban middle school in Benxi, Liaoning Province, China. Benxi is a midsize city in northeastern China and is moderately developed compared to other provinces in China (National Bureau of Statistics of China, 2018). All 7th grade students from the school were invited to the study in June, 2016 (T1); 318 of them (46.9% girls; M_{age} = 13.4 years, SD = 0.4) participated in the study (47.6% consent rate). The follow-up data collection took place, nearly 1 year later, in May, 2017 (T2). All 8th grade students were invited to participate, and 443 students (43.8% girls; M_{age} = 14.3 years, SD = 0.4) participated at T2 (67.2% consent rate); 269 students participated at both T1 and T2. Additional demographic information is shown in Table 1. Most (70.8–73.6%) of the students were of Han ethnicity (the predominant ethnic group in China). Students were from diverse socioeconomic backgrounds. The majority of the participants were from families with an annual household income of ￥20,000 – ￥50,000 and ￥50,000 – ￥100,000 RMB, which was equivalent to $3,175 – $7,937 and $7,937 – $15,873 USD, respectively, at T1. Incomes resembled the income data reported by the city's statistics bureau. About two-thirds of the parents had college educations. Most participants lived with both parents and were the only child in the family.

Procedure

The institutional review board (IRB) at Arizona State University, the school district, and the school approved the study. A graduate student and I forward- and backward-translated all measures.

Before each data collection, I explained the study to the teachers and students, and gave each student a parental consent form and a demographic questionnaire. Teachers asked students to take the consent form home, and asked parents to sign the form and help complete the demographic questionnaire. I obtained written assent from the students with parental consent. Participants completed the questionnaires in class during a one-hour period. Each participant received a small stationary set worth ￥10 ($1.50 USD) at T1 and ￥15 ($2.20 USD) at T2.

Measures

Students self-reported on their shyness in different social situations, general shyness, anxious shyness, regulated shyness, depressive symptoms, and loneliness, and nominated peers who they perceived as shy-sensitive, conflicted shy, popular, and rejected. The school provided records of students' academic achievement.

Situational shyness. To assess the possible situational variations of shyness, a new measure was developed for adolescents to self-report their feelings and behaviors in a variety of hypothetical situations. The measure included questions for shyness, unsociability, and social withdrawal; in this study, only the questions about shyness in the hypothetical situations were used. Situations varied in terms of activity type (i.e., normal, formal) and familiarity level (i.e., unfamiliar, familiar). There were two types of activities: *normal* and *formal*. The normal situations involved initiation of typical, daily social interactions with peers, such as play, talking, chatting at a party, and collaborating (e.g., "You are at a relative's home with some children. You all decide to spend time working on some handicrafts"). The formal situations were organized activities in which the participant may receive public attention (e.g., "You and some classmates completed a

group project. One person in your group needs to present the project to a group of student judges"). The formal situations also included scenarios such as answering the teacher's questions in class because classroom learning activities are usually very organized and formal in urban Chinese schools and the teacher often is regarded as an authority figure with great power. Students are not allowed to express an opinion or ask/answer a question unless they raise their hand and get the teacher's approval, and when they speak, they are required to stand up, similar to making a small public speech. Students also may get punished or criticized by the teacher if they answer a question incorrectly. Furthermore, each context was described in an *unfamiliar* condition (e.g., new classroom, with unfamiliar peers) and a *familiar* condition (e.g., current classroom, with familiar peers).

Four scenarios were asked for each activity (2) × familiarity (2) combination, which added up to 16 situations in total. The scenarios were adapted from examples in the literature (Cheek, 1983; Elkind & Bowen, 1979; Xu & Farver, 2009) and common activities in the local adolescents' daily life. After each scenario, adolescents were asked about how nervous or uncomfortable they felt about the specific social interaction. The full measure can be found in the Appendix. Items were rated on 4-point scales (1 = *not at all* to 4 = *very*). Higher scores indicated higher levels of shyness. I report the psychometric properties of this new measure in the Results section.

Self-reported general shyness. Adolescents reported their general shyness levels using the *Children's Shyness Questionnaire* (*CSQ*; Crozier, 1995). The CSQ is a 25-item measure of shy emotions and behaviors experienced in social interactions (e.g., "Are you usually shy in a group of people?"). Items were rated on a 3-point scale (0 = *no*, 1 =

sometimes, 2 = *yes*). Researchers have used the CSQ to assess Chinese children's shyness, and found strong reliability and validity, but some items have displayed poor psychometric properties among Chinese children (Ding et al., 2014). In the present sample, a confirmatory factor analysis of the CSQ showed low (< .30) standardized factor loadings for four items ("Are you usually quiet when you are with others?" "Do you say a lot when you meet someone for the first time?" "If the teacher asked for someone to act in a play would you put your hand up?" "Do you enjoy having your photograph taken?") at T1 and T2, which was consistent with another study (Ding et al., 2014). I eliminated these five items from further analyses. The Cronbach's alphas of the 21-item CSQ version were .88 at T1 and .90 at T2. After reversing negatively worded items, the item scores were averaged to form the composite score. Higher scores indicated higher shyness.

Self-reported anxious shyness and regulated shyness. Adolescents' anxious shyness and regulated shyness were assessed using a self-reported version of the *Chinese Shyness Scale* (*CSS*; Xu et al., 2007). The CSS consists of subscales that assess two subtypes of shyness among Chinese children: anxious shyness, which refers to passive social withdrawal due to fear and anxiety (e.g., "I am afraid to join or approach peer play groups"); and regulated shyness, which refers to self-controlled social withdrawal characterized by nonassertive and low-key behavior, so children can fit into the peer group and avoid attention (e.g., "I behave modestly"; see Xu et al., 2007). Each subscale consists of five items and was rated on a 5-point scale (1 = *never* to 5 = *always*). The internal consistency of the CSS was in the "good" to "acceptable" range in the present sample (αs = .85 at T1 and .86 at T2 for anxious shyness, and .73 at T1 and .81 at T2 for

regulated shyness). The item scores of each subscale were averaged to form the composite scores of anxious shyness and regulated shyness. Higher scores indicated higher shyness.

Self-reported depressive symptoms. Adolescents reported their depressive symptoms using a short version of the *Children's Depressive Inventory* (*CDI*; Kovacs, 1981). The CDI is a 10-item measure (rated on a 3-point scale, range = 0 to 2) that asks about cognitive, emotional, and behavioral components of depressive symptoms. Each item provides three alternative descriptions (e.g., 0 = "I am sad once in a while," 1 = "I am sad many times," 2 = "I am sad all the time") from which the adolescent chooses the one that best describes him or her. The CDI has been used frequently among Chinese children and adolescents, and demonstrated good reliability and validity (e.g., Dong, Yang, & Ollendick, 1994; Jia et al., 2009). Internal consistency was high in this sample (αs = .83 at T1 and .85 at T2). After reversing negatively-worded items, the item scores were averaged to form the composite score. Higher scores indicated higher depression.

Self-reported loneliness. Adolescents reported their loneliness using the *Revised UCLA Loneliness Scale* (Russell, Peplau, & Cutrona, 1980), which contains 20 items about the feeling of loneliness (e.g., "I lack companionship"). Adolescents reported their levels of loneliness on a 4-point scale (1 = *never*, 4 = *always*). The Revised UCLA Loneliness Scale has been used among the Chinese population (e.g., Ma, Liang, Zeng, Jiang, & Liu, 2014), and showed good psychometric properties. In the present sample, a confirmatory factor analysis of the Revised UCLA Loneliness Scale showed low (< .30) factor loading for one item: "I am unhappy being so alone" at both T1 and T2. This item may have worked poorly because it assumes the adolescent is alone, and I eliminated the

item from further analyses. The 19-item measure showed high internal consistency in this sample (αs = .93 at T1 and .92 at T2). After reversing negatively worded items, the item scores were averaged to form the composite score. Higher scores indicated higher loneliness.

Peer nominations of shyness, popularity, and peer rejection. The *Revised Class Play* (*RCP*; Masten et al., 1985) was used to assess peer-reported shyness-sensitivity. The RCP often has been used to assess Chinese children's social withdrawal (e.g., Chen et al., 1992; 2005). Three items in the RCP were used to assess shyness-sensitivity ("Someone whose feelings get hurt easily," "Somebody who is very shy," and "Someone who is usually sad"). In addition, an item from *the Gateway Measure* was added to tap the conflicting motivations of shyness ("Someone that wants to play with other kids but does not because he or she is too shy or afraid"; Ladd et al., 2011). Popularity and peer rejection were measured by asking adolescents to nominate classmates who they liked most and least to be with.

Adolescents were given classroom rosters that included names and corresponding IDs (created for purposes of confidentiality) for all classmates. The order of names on the classroom roster for each classroom were counterbalanced as suggested by literature on peer nominations (Marks, Cillessen, & Babcock, 2016). I asked adolescents to write down the IDs of classmates who were the best fit for each described role if they were directors of a class play, and told them that they could nominate as many classmates as they wanted, but they needed to rank the nominations in order, with the best fit listed first. Self-nominations were not allowed.

To form composite scores for peer-nominated variables, first, the total number of nominations received on each item was computed for each adolescent. Then, the item scores were divided by the number of nominators in each classroom, and standardized within each classroom to adjust for the disparities in the number of nominators between classrooms. Of note, some researchers (e.g., Coie, Lochman, Terry, & Hyman, 1992; Parker & Asher, 1993) have suggested to divide number of nominations by the number of same-gender nominators or to standardize nominations within gender and classroom to control for the same-gender nomination bias and obtain equal proportions of popular/rejected boys and girls. I decided to use the current approach instead because all these approaches produced very similar results in this sample (correlations between results of different standardization methods were above .95) and the method for the present study allows for examination of gender differences in peer-nominated variables.

Researchers have suggested that peer nominations are less reliable when the participation rate is low (Marks, Babcock, Cillessen, & Crick, 2013). Because the participation rates varied greatly between classrooms (8.7% – 74.5% at T1, and 8.7% – 89.1% at T2), following the recommended procedures of calculating Cronbach's alphas for single-item peer nominations (Marks et al., 2013), I computed the reliabilities of all the peer nomination items for each classroom. Interestingly, two of three shyness-sensitivity items, "Someone whose feelings get hurt easily" and "Someone who is usually sad," showed relatively low Cronbach's alphas, even when participation rate was high (mean Cronbach's alpha = .43 – .47 at T1 and .53 – .57 at T2, with some classrooms with participation rates as high as 70% – 85% showing Cronbach's alphas in the .30 – .40 range), suggesting adolescents in this sample may have difficulty telling which peer was

usually sad or got their feelings hurt easily. Therefore, I eliminated these two items from further analysis. The item left in the shyness-sensitivity measure, "Someone who is very shy," was used as a single-item measure of general shyness. A mean Cronbach's alpha value was then computed for each classroom based on the alphas of peer-nominated popularity, rejection, general shyness, and conflicted shyness. Nominations from classrooms with mean alpha values < .60 were eliminated from further analyses. Therefore, peer-nomination scores were dropped from six classrooms (mean participation rate = 25.6%) at T1 and one classroom (participation rate = 8.7%) at T2. The remaining classrooms had an average participation rate of 60.1% at T1 and 71.5% at T2.

The standardized scores on the corresponding single item were used as composite scores for peer-nominated general shyness, conflicted shyness, popularity, and peer rejection. Higher scores indicated higher numbers of peer nominations.

Academic achievement. The school provided participating students' grades for final exams in Spring 2016 and midterm exams in Spring 2017. I summed and then standardized the scores of the subjects considered most important in Chinese schools (Chinese, Math, and English in 7th grade, and Chinese, Math, English, and Physics in 8th grade) within each time to reflect the student's general academic achievement relative to the average student.

Analytic Plan

Because some students only participated in the study at T1 or T2, attrition analyses were conducted in SPSS 23 to examine the potential differences in the demographic and study variables between students who participated at both times and only at T1 or T2. Descriptive statistics were also calculated for all study variables. Then,

analyses were conducted in Mplus 7.31 (Muthén & Muthén, 1996–2019) to examine several models of interest. Models were estimated using the robust maximum likelihood estimator (MLR), which computes standard errors and a chi-square test that are adjusted for nonnormality. Missing data were handled using the full information maximum likelihood method (FIML) which produces unbiased estimates for missing at random data.

Aim 1: Examine the psychometric properties of the situational shyness questionnaire. Because the measurement tool for situational shyness was newly developed, the first step of the analyses was to examine its construct validity or factor structure. First, the factor structure of T1 and T2 shyness in the hypothetical scenarios were separately examined using exploratory factor analysis (EFA) with all the data within each time point. I chose to examine the factor structure with all the data at each time and check for consistency across time, rather than to cross-validate the factor analyses by splitting the sample into random halves within each time and comparing consistency across halves, because the sample was small and produced unstable EFA results when data were divided. I used parallel analysis to determine the number of factors underlying the data. Parallel analysis (Horn, 1965) is a technique that compares the eigenvalues from the real data with eigenvalues generated from simulated random data. The simulated random data consist of a series of data sets (fifty in the present study), each of which contain the same number of participants and items as the real data set, but the item scores are random and expected to be uncorrelated in the population. A factor should only be kept in the model when it explains more variance than the corresponding factor in the random data (i.e., the eigenvalue based on the real data is larger than the average

eigenvalue based on the random data). I examined the EFA models at T1 and T2 for structural consistency across time in terms of the number of factors and the loading pattern matrix. Geomin rotation was used to estimate the pattern matrix, which is an oblique rotation that allows factors to correlate. Standardized loadings > .30 were considered "large". Because each scenario was designed to reflect the combination of two conditions (e.g., familiar and formal), double loadings were expected. Separate confirmatory factor analyses (CFA) were conducted to replicate the structure of the EFA models using all the data within each time point. I examined the CFA models in terms of model fit and statistical significance of loadings. Following the suggestions of Hu and Bentler (1999), I considered models with RMSEA < .06, CFI > .95, and SRMR < .08 as showing a good fit to the data. In addition, configural, weak, and strong measurement invariance of situational shyness across time were examined.

After factor structure was established for situational shyness, I calculated Cronbach's alphas for the situational shyness subscales. Then, to examine the concurrent validity of the new measure, I analyzed the correlations between the situational shyness subscales and the observed composites of self-reported general shyness (CSQ; Crozier, 1995). All the subscales of situational shyness were expected to correlate positively with self-reported general shyness.

Aim 2: Examine the relations between situational shyness and other measures of shyness. To understand what situations the other popular measures of shyness actually measure, the second aim of the study was to examine the associations between the situational factors of shyness and other measures of shyness. First, the correlations between the situational shyness factors and the composites of self-reported

anxious shyness and regulated shyness as well as peer-reported shyness were examined. The correlations were examined in the structural equations framework. Situational shyness was measured via latent variables. Although latent variables are preferable, I used composites of the other measures of shyness because I likely did not have the sample size to support the number of parameters requiring estimation in a fully latent model. Next, I predicted the aforementioned measures of shyness from the situational factors of shyness within each time to examine the unique contributions of situational shyness to shyness measured using different measurement tools and informants.

Aim 3: Examine the concurrent and longitudinal relations between situational shyness and adjustment. The third aim of the study was to examine the contributions of situational shyness to Chinese adolescents' psychological, social, and school adjustment using structural equation modeling. Adjustment variables included depressive symptoms, loneliness, popularity, peer rejection, and academic achievement. Adjustment variables were measured with observed composites and I took an analytic approach similar to that for Aim 2. First, I examined the correlations between situational shyness and the adjustment variables at T1 and T2. Then, I analyzed the unique contributions of situational shyness to concurrent adjustment variables by predicting adjustment from all situational shyness factors. T1 and T2 concurrent predictions were examined in separate models.

Next, I examined the longitudinal contributions of situational shyness at T1 to adjustment at T2 (controlling for adjustment at T1). First, I fit a model in which autoregressive paths between T1 and T2 situational shyness factors, depressive symptoms, loneliness, popularity, peer rejection, and academic achievement were

estimated. Variables and residual variances within each time point were allowed to covary. Then, predictions of the adjustment variables from each situational shyness factor were added to the autoregressive model one at a time (i.e., three models were estimated and, in each model, the T2 adjustment variables were predicted by only one situational shyness factor; the adjustment variables and the rest of the situational shyness factors were allowed to covary). Finally, all situational shyness factors predicted the T2 adjustment variables in the same model to estimate the unique contributions of the situational shyness factors to adjustment. In all the concurrent and longitudinal predictive models, age, gender (-0.5 = girls, 0.5 = boys), ethnicity (0 = Han, 1 = ethnic minority), and family income (coded into five categories from low to high as shown in Table 1), were included as covariates.

After testing the general associations between situational shyness and adjustment, I planned to examine a multigroup model to determine whether the relations between shyness and adjustment differed between boys and girls, but only if such analyses proved feasible through demonstrated measurement invariance across genders.

CHAPTER 3

RESULTS

Preliminary Analysis

Descriptive statistics of the T1 and T2 study variables are shown in Table 2. I examined differences between adolescents with data at both times and adolescents with data at only T1 or T2. They did not differ on self- and peer-reported shyness scores, depressive symptoms, loneliness, or any demographic characteristic. However, adolescents who participated at T1 and T2 had higher T1 academic achievement than adolescents who only participated at T1, $t(57.27) = 2.57$, $p = .01$ ($M = 0.08$ vs. $M = -0.42$), as well as higher T2 academic achievement than adolescents who only participated at T2, $t(284.25) = 2.54$, $p = .01$ ($M = 0.11$ vs. $M = -0.15$). In addition, adolescents who participated at T1 and T2 received less peer rejection at T1 than adolescents who only participated at T1, $t(39.04) = -2.37$, $p = .023$ ($M = -0.12$ vs. $M = 0.34$), and were liked better by peers at T2 than adolescents who only participated at T2, $t(437) = 2.14$, $p = .032$ ($M = 0.11$ vs. $M = -0.10$).

Aim 1: Psychometric Properties of the Situational Shyness Questionnaire

First, the factor structure of T1 and T2 shyness in the hypothetical scenarios were separately examined using exploratory factor analysis (EFA). Parallel analyses supported a three-factor structure at T1 and T2. The results suggested the three factors reflected three correlated components of situational shyness: shyness with familiar peers, with unfamiliar peers, and in formal situations. EFA results are shown in Table 2. Using a cutoff point of .30, the pattern of factor loadings appeared to be similar across T1 and T2,

but with a few discrepancies (Table 3). The correlations between factors were moderate to large according to Cohen (1988), *r*s = .27 to .50 at T1, and .24 to .53 at T2.

Based on the EFA results, I estimated the CFA models at T1 and T2. Items with > .30 loadings in at least one of the EFA models or with significant loadings in both T1 and T2 EFA models were specified to load on the corresponding factor at both times. The latent factors were allowed to covary. Figure 2 illustrates the model specification. The T1 CFA model fit the data okay, with the CFI being slightly low: $\chi^2(93) = 172.84$, $p < .01$; RMSEA = .052; CFI = .943; and SRMR = .048. All loadings were significant at T1, except for two items showing marginally significant loadings ($p < .10$): the standardized loading of "answering the teacher's question in a new class" on the formal situation factor was .24, $Z = 1.66$, $p = .097$; the standardized loading of "giving a speech in front of your class about recent success in an exam" on the familiar factor was .29, $Z = 1.73$, $p = .083$. The T2 CFA model fit the data well: $\chi^2(93) = 177.73$, $p < .01$; RMSEA = .045; CFI = .966; and SRMR = .035. All loadings were significant at T2.

Because only two items had non-significant loadings at T1 and the loadings were marginally significant, I decided to include these items in the measurement invariance analyses. Literature of measurement invariance tests suggested that the chi-square difference test is overly sensitive to sample size and model complexity (Chen, 2007; Cheung & Rensvold, 2002). Therefore, following the guideline of Chen (2007), I used the change in RMSEA, CFI, and SRMR as the criterion, with ΔRMSEA, ΔCFI, and ΔSRMR smaller than .01 indicating invariance.

First, a configural invariance model was estimated by estimating the T1 and T2 measurement models in the same model and allowing the residuals of the same items to

covary across time. The configural model demonstrated a good fit to the data: $\chi^2(417) = 648.33$, $p < .001$; RMSEA = .034; CFI = .962; and SRMR = .047.

Then, I conducted a full weak invariance model in which all factor loadings were constrained to be equal across time. The full weak invariance model fit the data well, with $\chi^2(438) = 684.33$, $p < .001$; RMSEA = .034; CFI = .959; and SRMR = .053; and the fit was not different from the configural model (ΔRMSEA = .000, ΔCFI = .002, and ΔSRMR = .006). The results suggested that full weak longitudinal invariance held.

Next, the full strong invariance model was estimated (i.e., loadings and intercepts for the same items constrained to be equal at T1 and T2) and compared with the weak invariance model (i.e., loadings for same items constrained to be equal at T1 and T2). The model fit the data well: $\chi^2(451) = 707.01$, $p < .001$; RMSEA = .034; CFI = .958; SRMR = .053, with no difference from the full weak invariance model (i.e., ΔRMSEA = .000, ΔCFI = .002, and ΔSRMR = .000). Therefore, the situational shyness measure demonstrated strong invariance across time. The final results of the strong invariance model can be found in Table 4.

Adolescents showed an increase of 0.18 in the unstandardized factor score of shyness with familiar peers from T1 and T2, $p < .001$. No significant changes in the levels of shyness with unfamiliar peers or in formal situations were found from T1 to T2. To examine if the increase in the factor score of shyness with familiar peers was influenced by missing data, an additional model was examined for adolescents with valid data at T1 and T2, and the factor score of shyness with familiar peers was still higher at T2 than at T1 after excluding missing data.

Next, the reliabilities of the situational shyness subscales were examined. The Cronbach's alphas showed good internal consistency of the subscales at T1 and T2, with αs = .85 and .88 for shyness with unfamiliar peers, .82 and .88 for shyness with familiar peers, and .87 and .89 for shyness in formal situations, at T1 and T2, respectively.

Finally, I examined the correlations between self-reported general shyness and situational shyness. Self-reported general shyness was significantly and moderately to highly correlated with shyness in all three situations, suggesting good concurrent validity of the situational shyness measure (see Table 5 for the correlation matrix). However, further analysis of a predictive model showed that self-reported general shyness was predicted uniquely only by shyness with unfamiliar peers and shyness in formal situations, not shyness with familiar peers (Table 6).

Aim 2: Relations between Situational Shyness and Other Measures of Shyness

The correlations between the situational shyness factors and other measures of shyness are listed in Table 7. The correlation-only model (illustrated in Figure 3) fit the data well, $\chi^2(659) = 1013.91$, $p < .001$; RMSEA = .033; CFI = .957; SRMR = .050. Self-reported anxious shyness was correlated moderately and positively with shyness in all situations at T1 and T2. However, self-reported regulated shyness showed no significant correlations with any of the situational shyness factors, but was correlated positively with peer-reported general shyness at T2 (Table 2). Moreover, peer-reported general shyness was correlated positively and weakly with shyness in formal situations at T1 and T2, as well as shyness with unfamiliar peers at T2 but not T1. Peer-reported conflicted shyness also was correlated positively and weakly with shyness with unfamiliar peers at T2, but it was not related to shyness in formal situations at T1 or T2. However, peer-reported

conflicted shyness showed a positive and weak correlation with shyness with familiar peers at T1 (Table 2). Although some correlations differed in significance level from T1 and T2, none of the correlations significantly differed between T1 and T2.

Next, I examined the unique predictions of other measures of shyness from situational shyness (model configuration illustrated in Figure 4). Age, gender, ethnicity, and family income were controlled for in the predictive models. Results of the predictive models are in Table 8. The T1 predictive model showed okay fit to the data, with a slightly low CFI, $\chi^2(197) = 301.74$, $p < .001$; RMSEA = .041; CFI = .949; and SRMR = .041. Shyness with unfamiliar peers, with familiar peers, and in formal situations significantly and uniquely predicted concurrent self-reported anxious shyness at T1 (βs = .33, .25, and .33, respectively; $p < .001$, .05, and .001, respectively), but not other measures of shyness. The T2 predictive model fit the data well, $\chi^2(197) = 328.96$, $p < .001$; RMSEA = .039; CFI = .961; and SRMR = .032. At T2, only shyness with unfamiliar peers and shyness in formal situations significantly and uniquely predicted concurrent anxious shyness, βs = .39 and .27, respectively, ps < .001. Shyness with familiar peers no longer uniquely predicted anxious shyness at T2; further analysis showed that the unique association between shyness with familiar peers and anxious shyness was weaker at T2 than at T1, Satorra-Bentler adjusted $\Delta\chi^2(1) = 5.82$, $p < .05$. No significant predictions from situational shyness were found for self-reported regulated shyness and peer-reported shyness. At T1 and T2, gender was found to significantly predict self-reported regulated shyness and peer-reported general shyness, with boys showing lower levels of shyness than girls (for self-reported regulated shyness, βs = -.16 and -.12, ps < .01 and < .05 at T1 and T2, respectively; for peer-reported general shyness,

βs = -.24 and -.16, ps < .001 at T1 and T2, respectively). Family income negatively predicted peer-reported conflicted shyness at T1 and T2 (βs = -.09 and -.16, ps < .05 and < .001, respectively), as well as self-reported anxious shyness at T2 (β = -.11, p < .05). Ethnic minority adolescents also appeared to have lower levels of self-reported anxious shyness than Han adolescents at T2, β = -.07, p = .050. Age did not predict any measure of shyness at T1 or T2.

Aim 3: Concurrent and Longitudinal Relations between Situational Shyness and Adjustment

Correlations between situational shyness and adjustment variables at T1 and T2 are shown in Table 9. The correlation model fit the data well, $\chi^2(711) = 1046.05$, p < .001; RMSEA = .031; CFI = .953; and SRMR = .048. Shyness with familiar peers appeared to be associated with most adjustment variables: it was correlated positively with depressive and loneliness at T1 and T2, negatively with academic achievement and popularity at T1 and T2, and positively with peer rejection at T1. Shyness with unfamiliar peers was associated positively with depressive symptoms at T1 and T2, and negatively with academic achievement at T1. In addition, the correlations between shyness with unfamiliar peers and popularity were negative and close to significant at T1 and T2, ps = .074 and .090, respectively. Shyness in formal situations was correlated positively only with depressive symptoms and loneliness at T1 and T2. Interestingly, shyness in formal situations showed a negative correlation with peer rejection at T2.

Next, the unique contributions of situational shyness to concurrent adjustment problems were examined. The configuration of T1 and T2 concurrent predictive models is illustrated in Figure 5, and results are listed in Table 10. The T1 concurrent predictive

model fit the data well, $\chi^2(210) = 302.27$, $p < .001$; RMSEA = .037; CFI = .957; and SRMR = .040. Age, gender, family income, and ethnicity were controlled for in the models, but only gender significantly predicted peer relationships, with girls liked better and rejected less (marginally) by peers than boys ($\beta = -.18$, $p < .01$ and $\beta = .10$, $p = .070$, respectively); age, income, and ethnicity did not predict concurrent adjustment. After controlling for age, gender, family income, and ethnicity, T1 shyness with familiar peers uniquely positively predicted concurrent depressive symptoms and loneliness, and negatively predicted academic achievement and popularity. T1 shyness in formal situations also uniquely and positively predicted concurrent depressive symptoms and loneliness. T1 shyness with unfamiliar peers only uniquely and positively predicted concurrent depressive symptoms.

However, these results did not fully replicate at T2. The T2 concurrent predictive model fit the data well, $\chi^2(210) = 356.13$, $p < .001$; RMSEA = .040; CFI = .960; and SRMR = .033. Similar to T1, girls were liked better and rejected less by peers than boys (βs = -.13 and .13, ps < .01, respectively). In addition, family income positively predicted academic achievement and popularity ($\beta = .12$, $p < .05$ and $\beta = .16$, and < .01, respectively). No significant predictions were found for age and ethnicity. After controlling for age, gender, family income, and ethnicity, T2 shyness with familiar peers was still uniquely associated with school and social adjustment, in that it negatively predicted concurrent academic achievement and positively predicted concurrent peer rejection, but no unique association between shyness with familiar peers and depressive symptoms, loneliness, or popularity was found. Instead, T2 depressive symptoms and loneliness were predicted positively by shyness with unfamiliar peers.

After investigating the concurrent associations, I examined the longitudinal associations between situational shyness and adjustment (see Figure 6 for model configuration). First, a model that only included the autoregressive paths between T1 and T2 study variables and the predictions from the covariates was examined. The model showed adequate fit to the data, but the CFI was slightly low: $\chi^2(883) = 1328.25$, $p < .001$; RMSEA = .032; CFI = .943; and SRMR = .055. The results (Model 1 in Table 11) showed that all the adjustment variables were highly stable from T1 to T2 (βs = .54 – .92), with the stability of academic achievement being especially high ($\beta = .92$). The stabilities of shyness in different situations (not listed in the table) were in the moderate to high range, βs = .40, .37, and .60 for shyness in unfamiliar, familiar, and formal situations, respectively, ps < .001. Higher family income at T1 significantly predicted lower levels of T2 loneliness ($\beta = -.11$, $p < .05$) and marginally significantly predicted higher T2 popularity ($\beta = .08$, $p = .051$). Age, gender, and ethnicity did not predict longitudinal adjustment significantly.

Next, paths that predicted T2 adjustment from T1 situational shyness were added to the model, with predictions from only one situation included in each model. Therefore, three models were estimated separately for shyness with unfamiliar peers, with familiar peers, and in formal situations. The models fit the data adequately: $\chi^2(868) = 1294.50$ – 1296.94, ps < .001; RMSEAs = .032; CFIs = .943; and SRMRs = .053 – .054. Results (Models 2–4 in Table 11) showed that after controlling for age, gender, family income, ethnicity, and stabilities of the adjustment variables, only T1 shyness with familiar peers negatively predicted popularity longitudinally, $\beta = -.14$, $p < .01$. In addition, the path coefficients from T1 shyness with unfamiliar peers to T2 depressive symptoms and

loneliness were close to but not significant, βs = .13 and .11, ps = .055 and .057, respectively.

Finally, a model was estimated to include predictions from all situational shyness factors (χ^2[868] = 1292.60, $p < .001$; RMSEA = .032; CFI = .937; SRMR = .053). In this model (Model 5 in Table 11), after controlling for age, gender, family income, ethnicity, and stabilities of the adjustment variables, T2 popularity was still predicted negatively by T1 shyness with familiar peers, $\beta = -.14$, $p < .05$. The prediction of T2 loneliness from T1 shyness with unfamiliar peers stayed marginally non-significant, $\beta = .16$, $p = .053$. T2 academic achievement was predicted positively by shyness with unfamiliar peers ($\beta = .16$, $p < .001$) and negatively by shyness with familiar peers ($\beta = -.13$, $p < .01$), but because academic achievement was highly stable over time, readers should interpret the findings with caution.

In addition, I tried to examine gender differences in the associations between situational shyness and adjustment. However, the configural invariance model for situational shyness across gender showed less-than-optimal fit (particularly the CFI), $\chi^2(902) = 1359.40$, $p < .001$; RMSEA = .047; CFI = .907; and SRMR = .072. Adding further constraints to the gender multigroup model or adding predictors resulted in CFIs < .90. Because the models produced less-than-optimal fit indices, I did not pursue the multigroup comparisons for moderation by gender.

CHAPTER 4

DISCUSSION

Although shyness has been considered a stable and consistent personality across situations, some evidence has suggested that children's and adolescents' shyness may be situation-specific to some extent. The present study, to my knowledge, is the first to systematically examine situational shyness among adolescents. The findings suggest that Chinese adolescents' shyness can be separated into several correlated but distinguishable components that are specific to different social situations. Specifically, I found that interaction with familiar peers, interaction with unfamiliar peers, and participation in formal activities are unique elicitors of shyness for Chinese adolescents. Shyness specific to these situations was uniquely associated with other measures of shyness, as well as with adolescents' psychological, social, and academic adjustment in different ways.

The Situational Shyness Measure: Construct Validity, Concurrent Validity, and Change from T1 to T2

Exploratory and confirmatory factor analyses of the situational shyness measure supported the hypothesis that shyness is situation-specific, and the factor structure proved to be fairly consistent across time. Specifically, self-reported shyness in these hypothetical scenarios can be separated into three situational components: shyness with familiar peers, shyness with unfamiliar peers, and shyness in formal situations. Theoretically, shyness with unfamiliar peers is rooted in fearful shyness, whereas shyness in formal situations is based on self-conscious shyness (Buss, 1986a; 1986b; Rubin & Asendorpf, 1993). Therefore, the findings correspond with the literature that fearful shyness and self-conscious shyness are different subtypes of shyness and are elicited by

different types of situations. The situational components of shyness were correlated positively with each other, which was expected because different subtypes of shyness have been theorized to share the same biological foundation (Schmidt & Poole, 2019).

Comparisons between T1 and T2 models showed no difference between T1 and T2 in the factor loadings and means of each situational factor, except that adolescents' shyness with familiar peers increased from T1 to T2. Adolescence is a period in which adolescents become increasingly sensitive to peer interactions and how they are perceived by familiar peers (Liu et al., 2017). Whereas their reactivity to unfamiliar and formal situations stayed the same across time, the adolescents may have experienced higher levels of shyness with familiar peers because of developmentally normative increases in sensitivity to familiar peers.

The situational shyness measure demonstrated good concurrent validity. All the situational components of shyness were correlated positively and significantly with the commonly used self-reported general shyness measure, Children's Shyness Questionnaire (CSQ; Crozier, 1995). However, further analyses showed that self-reported general shyness was only uniquely predicted by shyness with unfamiliar peers and in formal situations, but not shyness with familiar peers, which may be related to the items used in the CSQ. I discuss the content of the CSQ items together with other measures of shyness in the next section.

What Does the Situational Shyness Measure Tell Us About Other Measures of Shyness?

Although situational shyness generally was related positively to other measures of shyness, the relations between situational shyness and other measures of shyness varied

across measures. This is likely a result of the content and wording of the other measures, as well as the reporter's knowledge of adolescents' shyness.

Self-reported general shyness, as discussed in the previous section, was correlated with shyness in all situations, but predicted uniquely only by shyness with unfamiliar peers and in formal situations, not by shyness with familiar peers, suggesting no unique association between self-reported general shyness and shyness with familiar peers after controlling for shyness in other situations. Although the CSQ (Crozier, 1995) covers various social situations and often is considered a general measure of shyness, a closer examination of the CSQ items showed that the majority of the items described situations that are unfamiliar to some extent (e.g., talking with new people, joining a new class), and situations that involve formality, public attention, or authority figures (e.g., reading in front of the class, being put in the first row on the stage, being with important people). Only a few items specifically addressed shyness in general or in familiar situations, but such items are less relevant to everyday peer interactions (e.g., asking to be supported for a good cause), or mainly focused on signs of self-consciousness (e.g., easily embarrassed, blushing). Therefore, despite covering a broad range of shy feelings and behaviors, the CSQ focuses less on shyness unique to familiar peer interactions, which may explain the lack of unique association between CSQ and shyness with familiar peers.

Similarly, consistent with the hypothesis, self-reported anxious shyness (Xu et al., 2007) was correlated positively with shyness in all situations. Self-reported anxious shyness was also predicted positively and uniquely by shyness in all situations at T1, but the unique prediction from shyness with familiar peers was no longer significant at T2. Because the adolescents experienced an increase in shyness with familiar peers from T1

to T2, perhaps they consider shyness with familiar peers less problematic and more as a part of normative behavior at T2. In addition, the anxious shyness measure utilized behavioral-level items such as "afraid to join or approach peer groups," "isolate myself from others," and "do not initiate peer contact." The situational shyness measure, in contrast, asked adolescents how nervous or uncomfortable they feel internally in social situations. Whereas adolescents who feel shy with familiar peers may display the anxiously shy behaviors when they are in 7th grade (the first year in Chinese middle schools), they may develop friendships over time and become able to interact with a small group of friends with no problems. Therefore, although they still feel shy internally, they may no longer display anxious shyness at the behavioral level when they are with friends. In contrast, being shy with unfamiliar peers and in formal situations likely still would relate to anxious and inhibited behaviors in these situations, and therefore be correlated consistently with anxious shyness.

I anticipated self-reported regulated shyness (Xu et al., 2007) to be associated positively with shyness in formal situations because both constructs have been theorized to specifically reflect self-conscious shyness (Xu & Farver, 2009). However, the findings did not support this hypothesis. Regulated shyness was not correlated with or uniquely predicted by any situational shyness measure at T1 and T2. The items of regulated shyness primarily described low-key and harmonious social behaviors (e.g., behaving modestly, avoiding conflict). Although these behaviors may be regarded as shyness in the Chinese culture, they do not necessarily reflect the anxious, nervous, uncomfortable, and self-conscious internal feelings. Consistent with this notion, self-reported regulated shyness was not correlated with, and in some cases correlated negatively with, self-

reported general shyness and anxious shyness. Interestingly, self-reported regulated shyness was correlated positively with peer-reported general shyness at T2, which suggests regulated shyness was sensed as shyness by peers to some degree. Considering the regulated shyness measure has been used mainly as a peer-nomination measure in previous studies (Xu et al., 2007; Xu & Farver, 2009), it may assess some behavioral characteristics that are viewed by other people as shyness in the Chinese culture, and might be more appropriate for peer and teacher reports. However, it does not capture the internal feelings of shyness very well and should not be used as a self-reported measure of shyness.

Peer-reported general shyness and conflicted shyness (Ladd et al., 2011; Masten et al., 1985) were correlated positively with self-reported shyness in some situations, but the effect sizes appeared to be weaker than the correlations between self-reported situational shyness and other self-reported measures of shyness. Previous studies using self- and peer-reports also have shown weak associations between self-reported and peer-reported shyness (Ding et al., 2014; Spangler & Gazelle, 2009; Zhang & Eggum-Wilkens, 2018). Indeed, adolescents are better at interpreting peers' behaviors and feelings than younger children (Ladd & Profilet, 1996). However, their understanding of other people's feelings and behaviors likely is less accurate than self-reports. In addition, shy children may become better at coping with or concealing their fearful, anxious, and self-conscious internal feelings when they grow older and develop better self-regulation strategies (Asendorpf, 1993). Therefore, adolescents' internal feelings of shyness may not be visible to peers unless the level of shyness is severe or they lack sufficient regulative abilities.

I anticipated peer-reported general and conflicted shyness to be associated primarily with shyness with familiar peers. However, peer-reported general shyness and conflicted shyness correlated with situational shyness in different ways which were not fully consistent with the hypothesis. Peer-reported general shyness, but not conflicted shyness, was correlated with shyness in formal situations; in contrast, peer-reported conflicted shyness, but not general shyness, was correlated with shyness with familiar peers. This difference may be explained by the wording and translation of the peer-reported general shyness and conflicted shyness measures. Peer-reported general shyness is described vaguely using the item "Someone who is very shy," without further specification of what it means to be shy. The word "shy" is usually directly translated into Chinese as "haixiu (害羞)," which describes a person who is socially inhibited because he or she is easily embarrassed or ashamed. Therefore, it is not surprising that this item was particularly associated with shyness in formal situations, because the term "haixiu" primarily reflects self-conscious shyness. In contrast, the conflicted shyness item, "Someone that wants to play with other kids but does not because he or she is too shy or afraid," is a detailed description of shyness in peer interactions and therefore likely reflects shyness in peer situations rather than shyness in formal situations.

Several messages for the measurement of shyness emerge from these findings. First, to measure the general concept of shyness, researchers need to use items that cover a wide range of social situations, including familiar, unfamiliar, and formal situations, as well as peer interaction situations and other types of social situations. Items that focus on highly anxiety-provoking situations may be good for measuring shyness in intense unfamiliar and formal situations, but they may not capture shyness in everyday, familiar

peer interactions very well. Researchers should think about which types of situations to include in their items based on the purpose of their study. Second, it is better to provide a detailed description of shy feelings and behaviors in the item, rather than to use the term "shy" vaguely. This is especially important in cross-cultural studies because the meaning of the word "shy" heavily relies on the language used in the culture and the word choice during translation. Therefore, when we observe a cross-cultural difference in shyness using a measure that mentions "shy" vaguely, it is difficult to tell whether the difference is caused by culture or different interpretations of the word "shy." In contrast, a detailed description helps operationalize shyness and makes the meaning of shyness consistent across different languages. Third, the relations between situational shyness and self-reported anxious and regulated shyness, as well as peer-reported shyness, suggest a distinction between the internal *feelings* of shyness and the external *behavioral* characteristics of shyness: that is, the internal feelings of shyness may not necessarily be displayed at the behavioral level or become visible to others, and the behavioral characteristics that can be interpreted as shy (e.g., regulated shyness) may not be linked to the internal feelings of shyness. When measuring shyness, researchers should think about whether they are more interested in measuring shy feelings, shy behaviors, or both. Future studies should also address if shy feelings and shy behaviors are related to adjustment in different ways.

Situational Shyness and Adjustment

When shyness in different situations was associated with psychological, social, and academic adjustment outcomes, the associations generally were negative, which replicates the previous findings that shyness is considered problematic in contemporary

urban China (Chen et al., 2005; Coplan et al., 2016; Ding et al., 2014; Liu et al., 2015; Zhang & Eggum-Wilkens, 2018). There were two exceptions. Specifically, shyness in formal situations was associated negatively with peer rejection at T1, and shyness with unfamiliar peers was associated positively with academic achievement in the longitudinal model. These findings may suggest that shyness in some specific situations may still positively contribute to urban Chinese adolescents' adjustment (see the sections below for more discussion). However, shyness in different situations associated with adjustment in different ways. Below, I discuss the relations between adjustment and shyness in each type of situation separately.

Shyness with familiar peers. Consistent with my hypothesis and the literature (An et al., 2019; Gazelle & Faldowski, 2014), shyness with familiar peers appeared to be the most problematic in the concurrent correlations, as it was associated with adjustment problems in multiple domains, such as depressive symptoms, loneliness, peer problems, and poor academic achievement. Shyness with unfamiliar peers and in formal situations, in contrast, were associated primarily with psychological maladjustment (i.e., depressive symptoms, loneliness). Being shy when with familiar peers could indicate extreme and dysregulated shyness because familiar situations usually are considered as less stressful than unfamiliar and formal situations (Buss & Plomin, 1984; Cheek & Stahl, 1986). In addition, social information processing theory (Crick & Dodge, 1994; Lemerise & Arsenio, 2000) and previous studies of shyness (Gazelle, 2013; Gazelle & Faldowski, 2014; Gazelle et al., 2015) suggest shyness with familiar peers may be a result of negative experiences in past social interactions with familiar people, and likely is associated with deficits in familiar contexts such as learning activities in the classroom or

interacting with familiar peers. Experiencing severe shyness, likely on a daily basis, as well as potentially having a history of negative social experiences might be expected to contribute to a wide range of psychological, social, and academic difficulties.

This pattern was replicated in the T1 concurrent predictive model, in that after controlling for shyness in other situations, shyness with familiar peers predicted adjustment problems in all domains at T1. However, at T2, shyness with familiar peers uniquely predicted adjustment problems in peer and academic domains, but not in the psychological domain. Because the average level of shyness with familiar peers increased over time, perhaps it became more normative and less predictive of internalizing problems at T2. However, adolescents who are shy with familiar peers may still have trouble participating in classroom learning activities or establishing positive peer relationships, which means they still have difficulties with peers and academic achievement. Consistent with the T2 findings, the negative prediction of shyness with familiar peers to academic achievement and peer relationships persisted in the longitudinal model after controlling for the initial levels of academic achievement and peer relationships. In sum, it seems that shyness with familiar peers consistently contributes to academic and peer problems, whereas its associations with internalizing problems depend on normative development.

Shyness with unfamiliar peers. At both T1 and T2, shyness with unfamiliar peers was correlated positively with internalizing problems, such as depressive symptoms and loneliness. After controlling for shyness in other situations, these concurrent associations persisted to some degree (i.e., significant correlations for depressive symptoms at T1 and T2, and for loneliness at T2). These findings are consistent with the

literature that fearful shyness and shyness specific to interactions with unfamiliar people are associated with psychological maladjustment (An et al., 2019; Bruch et al., 1986; Schmidt & Robinson, 1992), perhaps because adolescents who are wary about interactions with unfamiliar peers are low in self-esteem and high in negative emotionality. However, these concurrent associations were not replicated in the longitudinal models, in which the effects of shyness with unfamiliar peers on depressive and loneliness were marginally significant at most, suggesting shyness with unfamiliar peers has limited contributions to the development of internalizing problems over time.

Shyness with unfamiliar peers was also correlated negatively with academic achievement at T1. In Chinese middle schools, learning activities mostly happen within the same classroom with teacher and familiar peers, so it was a bit surprising to see that shyness with unfamiliar peers was related to academic achievement. However, at T1, the adolescents were in their first year of middle school and probably were still exploring relationships with teachers and classmates. Perhaps those who are shy with unfamiliar peers have difficulty adjusting to the middle school environment and seeking help from teachers and classmates whom they do not know very well in the first year, which may negatively influence their academic achievement. This association no longer existed at T2. Surprisingly, in the longitudinal model, after controlling for shyness in other situations, shyness with unfamiliar peers positively predicted increase in academic achievement. Because academic achievement was highly stable over time, readers should interpret this finding with caution. Although speculative, adolescents who are only shy toward strangers but not in familiar and formal situations may not have social deficits; instead, they may be cautious, less likely to get into trouble with unfamiliar people, or

less likely to be distracted by novel social stimuli, which can help them concentrate on their studies. In another study of American adolescents, An and colleagues (2019) reported a similar finding that shyness specific to encountering strangers uniquely and negatively predicted being bullied, perhaps because being shy with unfamiliar people helped adolescents to avoid potential conflicts.

Finally, shyness with unfamiliar peers was not related to peer difficulties in any models. This finding was consistent with some studies that shyness with unfamiliar peers was not associated with observed peer exclusion (Gazelle & Faldowski, 2014), but contradicted findings in other studies that fearful shyness was related to self-reported lack of knowledge in social skills (which may lead to poor interpersonal relationships; Bruch et al., 1986) and that shyness specific to interactions with unfamiliar peers positively predicted parent-reported peer rejection (An et al., 2019). Because peer difficulties in the present study were assessed using peer nominations, it makes sense that shyness with unfamiliar peers is unrelated to popularity and rejection as rated by familiar peers at school. Studies that utilize self- or parent-reported social adjustment may capture difficulties in social interactions with unfamiliar people or outside school, which may be related to shyness with unfamiliar peers.

Shyness in formal situations. Like shyness with unfamiliar peers, shyness in formal situations was related positively to concurrent internalizing problems, in that it was correlated positively with concurrent depressive symptoms and loneliness at T1 and T2, and uniquely predicted these problems at T1, perhaps because adolescents who are shy in formal situations have lower self-esteem and are constantly worried about making mistakes or being evaluated negatively. Contradictory with the hypothesis, shyness in

formal situations was not related to academic achievement. Although learning activities in Chinese middle schools are often very formal and organized, the classrooms are also often large and difficult to handle. The school in the present sample, for example, had 45 to 50 students in each classroom. Therefore, teachers often lectured throughout the class and limited students' active participation to a manageable amount. Students were forbidden from freely speaking out their thoughts in class; when they wanted to express an opinion or ask/answer a question, they must raise their hands and wait for the teacher's approval. Because of the lack of emphasis on participation, perhaps shyness in formal situations did not hinder the learning process, even if adolescents who were shy in formal situations may speak up less in class.

Interestingly, at T1, higher shyness in formal situations was associated with less peer rejection, which suggest shyness in formal situations is still perceived as a positive personality to some degree in contemporary urban China. Because the formal situations were about activities such as public speaking, answering questions in class, and talking about success, adolescents who are shy in these formal situations may be seen as low-key, modest, and not showing off as a "know-it-all" person, which are qualities highly valued in the traditional Chinese culture (Chen & French, 2018). It seems that in contemporary urban China, peers still value the modest and harmonious aspects of shyness in formal situations, but shyness may not be appreciated in other situations and is no longer protective for adolescents' psychological well-being.

Strengths, Limitations, and Future Directions

This study has several strengths. It provided one of the first comprehensive and systematic investigations of adolescents' shyness in different social situations, and

validated a questionnaire for measuring situational shyness. The results demonstrated that shyness in unfamiliar, familiar, and formal situations are related but distinct constructs, and showed that shyness in different situations were associated with psychological, social, and academic adjustment in different ways. In particular, shyness with familiar peers was related negatively to adjustment in psychological, academic, and peer relationship domains, with the contributions being the most salient to academic achievement and peer relationships. Shyness with unfamiliar peers and shyness in formal situations, in contrast, were related primarily to psychological adjustment such as internalizing problems. Consistent with literature on shyness in contemporary urban China (An & Eggum-Wilkens, 2019; Chen et al., 2005; Coplan et al., 2016; Ding et al., 2014; Zhang & Eggum-Wilkens, 2018), in this study, Chinese adolescents' shyness in different social situations were generally negatively related to adjustment. However, shyness with unfamiliar peers and shyness in formal situations were related to positive adjustment occasionally, suggesting shyness may still serve as a protective factor in contemporary urban China, but the protective role is limited to specific situations and domains.

These findings about relations between situational shyness and adjustment may inform future intervention programs. Consistent with the literature (e.g., An et al., 2019; Gazelle & Fadowski, 2014), shyness with familiar peers in this study was found to be the most problematic and related to maladjustment in multiple domains, such as internalizing problems, peer difficulties, and low academic-achievement. Therefore, adolescents who are shy with familiar peers may need additional social skills training to help them establish positive relationships with others and seek social and academic support. In

contrast, shyness with unfamiliar peers and shyness in formal situations were associated with internalizing problems only, not academic achievement or peer difficulties. If these findings are replicated, intervention programs for adolescents who are shy with unfamiliar peers or in formal situations should narrow their focus to the anxious emotions and the risks for developing internalizing problems.

Furthermore, by examining the relations between situational shyness and other measures of shyness, this study also revealed what situations the other measurement tools of shyness actually measure, and provided insights on how to utilize and develop appropriate measurement tools of shyness. In sum, self-reported measures like CSQ (Crozier, 1995) and anxious shyness (Xu et al., 2007) are good measures of shyness, but capture unfamiliar and formal situations better than familiar situations. Peer-reported shyness measures (Ladd et al., 2011; Masten et al., 1985) are not as accurate as self-reports, and the situations captured by the measure may depend on the wording of the items. Regulated shyness (Xu et al., 2007) may describe some behaviors that are perceived by peers as shyness, but the measure does not capture the internal feelings of shyness and should not be used as a self-report measure of shyness.

However, this study is not without limitations. First, this study utilized a self-reported measure using hypothetical scenarios. Although hypothetical scenarios frequently have been used to assess shy children's and adolescents' socioemotional development and interpretation of situations (e.g., Harrist et al., 1997; Vassilopoulos, Banerjee, & Prantzalou, 2009), self-reported situational shyness may be different from the actual feelings of shyness or observed shy behaviors in real situations. Future studies need to replicate the findings using different measures of situational shyness, such as

observed shyness in real situations. Second, although the findings show that shyness in unfamiliar, familiar, and formal situations are separate constructs, this study did not examine the origins of situational shyness. Researchers have proposed that temperament, past experiences in different situations, social information processing, as well as the fearful and self-conscious components of shyness, may contribute to situation-specific shyness (e.g., Buss, 1986a; 1986b; Schmidt & Poole, 2019; Xu & Farver, 2009), however, there lacks sufficient empirical investigation of these theoretical notions. A next step would be to examine the associations between situational shyness and constructs such as early fearful and inhibited temperament, interpretation of social situations, emotion regulation, fearful shyness, and self-conscious shyness, so that we can understand the etiology of shyness in different situations and help develop intervention programs to reduce shyness in certain situations. Moreover, the sample size restricted me from further analyzing gender differences in situational shyness. The mean levels of shyness and the associations between shyness and adjustment have been found to be different for boys and girls, perhaps because shyness violates the gender norms for masculinity (Coplan et al., 2007; Doey et al., 2014; Eisenberg et al., 1998; Liu et al., 2018; Rubin et al., 1993). Indeed, gender was controlled for in the analyses, and the results revealed some gender differences, such as boys had lower levels of self-reported regulated shyness and peer-reported general shyness than girls. However, the relation between gender and situational shyness is still unknown. Future studies should utilize large samples and examine gender differences in situational shyness and its correlates.

Furthermore, because the study was done with an urban Chinese adolescent sample, the results may not generalize to other populations and need to be replicated

using different samples. For instance, in rural China, where cultural values are more collectivistic than the urban areas (Chen, Wang, & Liu, 2012), the relations between situational shyness and adjustment may be different. In addition, whereas Chinese children consider shyness as fluid and changeable across situations, children and adolescents in other cultures like the United States may view shyness as a stable personality trait (e.g., Zhang & Xu, 2019). Therefore, it remains in question whether the distinction between shyness in different situations can be observed using samples from Western societies. So far, some evidence suggests shyness in Western cultures may be situational too; after all, researchers have considered fearful shyness and self-conscious shyness, the theoretical constructs underlying shyness in unfamiliar and formal situations, to be distinct constructs in Western societies (Bruch et al., 1986; Buss, 1986a; 1986b; Eggum-Wilkens et al., 2015; Schmidt & Robinson, 1992). Empirically, using a sample of American children, Gazelle and Faldowski (2014) found that shyness with familiar peers and shyness with unfamiliar peers were moderately to highly correlated with each other at age 2 for both mother reports and teacher reports (*r*s = .42 to .83), but the effect size depended on the measurement tool used. An and colleagues (2019) reported a high correlation between American adolescents' parent-reported shyness with familiar peers and shyness with unfamiliar peers ($r = .75$). But after switching to a bifactor model, they were able to find a dispositional shyness factor characterized by shyness in the interaction with familiar peers, as well as unique situational shyness factors for encountering and interacting with unfamiliar peers which were independent from the dispositional factor. Therefore, shyness in unfamiliar and familiar situations might be distinguishable in North America depending on the measurement tools and analytic methods used; however, no

study has directly examined potential differences between shyness in formal situations and in other situations using Western samples. Thus, more research is needed to examine shyness with familiar peers, shyness with unfamiliar peers, and shyness in formal situations in Western cultures. When studying situational shyness in other cultures using hypothetical scenarios, researchers should ensure the scenarios apply to the target culture. For example, whereas answering a question in class is considered a formal situation in China, it may be regarded as a less formal situation in the United States because classroom activities are not as structured. Similarly, such scenarios may not apply to cultures and communities where adolescents no longer stay in schools. Therefore, some of the scenarios may need to be changed when we replicate the study in other cultures.

Finally, further efforts are needed to advance the measurement tool for situational shyness. For instance, because shyness in different situations were correlated with one another, there may be a common, "dispositional" factor of shyness underlying all these situations. In a previous study, An and colleagues (2019) suggested that a bifactor model that separates shyness into one dispositional factor and several situational factors may describe the data better than a model with only situational factors. Such alternative models and their implications should be examined in future studies. In addition, although the current measure captures the complexity of shyness in different situations, the complex factor structure makes it difficult to directly obtain observed composites, which may limit the application of the situational shyness measure. Perhaps future studies can explore alternative ways of measuring situational shyness, such as developing items that directly assess shyness in unfamiliar, familiar, and formal situations.

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APPENDIX A

TABLES

Table 1

Demographic Statistics at T1 and T2

	T1 (*N* = 318)	T2 (*N* = 443)
Ethnicity		
Han	70.8%	73.6%
Manchu	23.9%	22.1%
Hui	3.5%	2.3%
Sibe	1.3%	0.9%
Korean	0.3%	0.0%
Mongol	0.3%	0.9%
Missing	0.0%	0.2%
Only child in the family		
Yes	84.9%	83.5%
No	15.1%	16.0%
Missing	0.0%	0.5%
Living with both parents	84.6%	86.9%
Annual household income (in RMB)		
< 20,000	6.9%	8.6%
20,001-50,000	40.9%	35.9%
50,001-100,000	38.4%	39.3%
100,001-150,000	9.8%	9.0%
> 150,001	2.9%	6.8%
Missing	1.3%	0.5%
Father's education		
Middle school and below	8.2%	7.7%
High school or equivalent (e.g., vocational school)	29.6%	29.3%
Three-year college	23.6%	24.4%
Four-year university/Bachelor's	33.6%	32.1%
Graduate school and above	4.4%	6.1%
Missing	0.6%	0.5%
Mother's education		
Middle school and below	9.4%	10.6%
High school or equivalent (e.g., vocational school)	29.6%	31.2%
Three-year college	27.0%	26.2%
Four-year university/Bachelor's	31.4%	28.9%
Graduate school and above	1.9%	2.5%
Missing	0.6%	0.7%

Table 2

Descriptive Statistics and Correlations among Variables at T1 and T2

		N	Mean	*SD*	Min.	Max.	Skew.	Kurt.	1	2	3	4	5	6	7	8	9	10
1	T1 S Gen Shy	316	0.67	0.40	0.00	1.95	0.67	-0.02		.66***	-.16**	.24***	.18***	.55***	.53***	-.19***	-.15**	.13*
2	T1 S Anx Shy	316	1.91	0.86	1.00	5.00	1.16	0.84			-.02	.38***	.35***	.57***	.65***	-.08	-.19***	.18**
3	T1 S Reg Shy	314	3.84	0.69	1.00	5.00	-0.73	1.38				.11	.08	-.27***	-.30***	.20***	.18***	-.29***
4	T1 P Gen Shy	342	0.00	1.01	-0.90	6.18	3.02	11.13					.73***	.22***	.21***	-.03	-.15***	.00
5	T1 P Con Shy	342	-0.02	0.97	-1.07	6.49	3.54	16.15						.18***	.25***	-.07	-.28***	.18***
6	T1 S Depress	316	0.42	0.38	0.00	1.90	1.14	0.99							.79***	-.22***	-.22***	.27***
7	T1 S Lonely	311	1.80	0.60	1.00	3.79	0.83	0.11								-.19***	-.29***	.33***
8	T1 Aca	317	0.00	1.00	-4.09	1.39	-1.69	3.05									.38***	-.40***
9	T1 P Pop	342	0.02	1.01	-1.81	3.45	0.76	0.29										-.52***
10	T1 P Rej	342	0.01	1.01	-0.98	5.26	2.14	5.40										
11	T1 Income	314	2.70	1.06	1.00	5.00	0.92	0.45										
12	T1 Ethnicity	318	0.29	0.46	0.00	1.00	0.92	-1.17										
13	T2 S Gen Shy	436	0.74	0.43	0.00	2.00	0.41	-0.19										
14	T2 S Anx Shy	440	2.02	0.92	1.00	5.00	1.01	0.78										
15	T2 S Reg Shy	439	3.87	0.74	1.00	5.00	-0.93	1.95										
16	T2 P Gen Shy	479	0.00	1.00	-0.85	6.42	2.92	10.01										
17	T2 P Con Shy	479	-0.01	0.99	-1.06	6.55	3.73	17.41										
18	T2 S Depress	434	0.44	0.39	0.00	2.00	1.25	1.66										
19	T2 S Lonely	429	1.91	0.60	1.00	4.00	0.73	0.27										
20	T2 Aca	438	0.00	1.00	-4.10	1.35	-1.37	1.94										
21	T2 P Pop	479	0.01	0.99	-2.00	2.96	0.52	-0.20										
22	T2 P Rej	479	0.01	1.01	-1.08	5.41	2.05	5.08										
23	T2 Income	447	2.69	0.98	1.00	5.00	0.53	0.18										
24	T2 Ethnicity	448	0.26	0.44	0.00	1.00	1.09	-0.81										
25	Gender	492	0.07	0.50	-0.50	0.50	-0.26	-1.94										

Notes. Min. = Minimum. Max. = Maximum. Skew. = Skewness. Kurt. = Kurtosis. S = Self-report. P = Peer-report. Gen Shy = General shyness. Anx Shy = Anxious shyness. Reg Shy = Regulated shyness. Con Shy = conflicted shyness. Depress = Depressive symptoms. Lonely = Loneliness. Aca = Academic Achievement. Pop = Popularity. Rej = Peer rejection. Income = Family income. Ethnicity was coded 0 = Han, 1 = Ethnic minority. Gender was coded -.5 = girls, .5 = boys. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Table 2 Continued

		11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	T1 S Gen Shy	-.06	-.14**	.59***	.45***	-.09	.17***	.15***	.42***	.43***	-.19***	-.15**	.00	-.04	-.15***	-.07
2	T1 S Anx Shy	-.08	-.12*	.40***	.59***	.00	.29***	.33***	.42***	.48***	-.07	-.17**	.03	-.10	-.15**	-.06
3	T1 S Reg Shy	-.01	.10	.00	.05	.50***	.18***	.12**	-.04	-.20***	.16**	.15*	-.23***	-.07	.09	-.18***
4	T1 P Gen Shy	-.08	-.03	.16**	.27***	.10*	.76***	.59***	.10*	.14***	-.06	-.15***	-.03	-.08	-.01	-.23***
5	T1 P Con Shy	-.08	-.02	.15**	.25***	.06	.63***	.66***	.11*	.22***	-.12**	-.28***	.15**	-.17***	-.01	-.08
6	T1 S Depress	-.13*	-.08	.24***	.42***	-.19**	.13**	.16***	.58***	.60***	-.22***	-.24***	.19***	-.12*	-.08	-.05
7	T1 S Lonely	-.15**	-.08	.29***	.45***	-.23***	.13**	.23***	.53***	.69***	-.19***	-.27***	.18***	-.15**	-.07	.02
8	T1 Aca	.13*	.01	-.06	-.08	.21***	.04	-.07	-.18	-.19***	.92***	.40***	-.39***	.07	.01	-.19***
9	T1 P Pop	.15**	.02	-.08	-.16***	.12*	-.11**	-.22***	-.09	-.19***	.38***	.75***	-.45***	.16***	.00	-.11*
10	T1 P Rej	-.13*	-.09*	-.01	.06	-.28***	-.01	.20**	.08	.25***	-.41***	-.50***	.79***	-.09	-.07	.17***
11	T1 Income		.04	-.09	-.06	.05	-.06	-.17***	-.09	-.18**	.14*	.17***	-.08	.54***	.04	-.07
12	T1 Ethnicity			-.08	-.06	.06	.01	-.02	-.03	-.07	.03	.04	-.06	-.03	.95***	.02
13	T2 S Gen Shy				.61***	-.03	.16***	.20***	.47***	.41***	-.08	-.14**	.03	-.11*	-.08	-.06
14	T2 S Anx Shy					-.01	.24***	.30***	.52***	.58***	-.10	-.20***	.14*	-.14**	-.07	-.10*
15	T2 S Reg Shy						.09*	.04	-.19***	-.23***	.21***	.12**	-.26***	.02	.04	-.10
16	T2 P Gen Shy							.66***	.10*	.09*	.00	-.12***	-.04	-.08	.00	-.20***
17	T2 P Con Shy								.15***	.22***	-.12*	-.26***	.20**	-.16***	-.05	-.03
18	T2 S Depress									.71***	-.21***	-.18***	.17***	-.03	-.03	-.07
19	T2 S Lonely										-.15**	-.28***	.27***	-.07	-.07	.01
20	T2 Aca											.42***	-.40***	.08	.04	-.16***
21	T2 P Pop												-.54***	.15***	.05	-.08
22	T2 P Rej													-.02	-.03	.12**
23	T2 Income														-.02	.07
24	T2 Ethnicity															.01
25	Gender															

Notes. S = Self-report. P = Peer-report. Gen Shy = General shyness. Anx Shy = Anxious shyness. Reg Shy = Regulated shyness. Con Shy = conflicted shyness. Depress = Depressive symptoms. Lonely = Loneliness. Aca = Academic Achievement. Pop = Popularity. Rej = Peer rejection. Income = Family income. Ethnicity was coded 0 = Han, 1 = Ethnic minority. Gender was coded -.5 = girls, .5 = boys. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Table 3

Exploratory Factor Analyses of Situational Shyness at T1 and T2

Brief Description of Scenario	T1 Situational Shyness Factors			T2 Situational Shyness Factors		
	Unfamiliar	Familiar	Formal	Unfamiliar	Familiar	Formal
UN1. Join in a game on the play ground	**0.73***	0.02	-0.14	**0.64***	-0.01	-0.00
UN2. Talk with other children at a party	**0.68***	-0.05	0.13	**0.77***	-0.04	0.00
UN3. Meet a child on the way home	**0.58***	0.09	0.02	**0.62***	0.06	0.01
UN4. Work on handicrafts with other children	**0.70***	0.03	-0.01	**0.71***	0.08	-0.02
UF1. Speak at a debate competition	**0.32***	-0.00	**0.35***	**0.42***	0.05	**0.38***
UF2. Present a group project	**0.44***	-0.15*	**0.46***	**0.40***	-0.03	**0.50***
UF3. Answer the teacher's question in class	**0.31***	0.25*	0.28*	**0.55***	0.04	0.22*
UF4. Give a speech about recent success in an exam	**0.45***	0.02	**0.38***	**0.39***	-0.03	**0.41***
FN1. Join in a game on the play ground	0.20	**0.43***	-0.03	0.18*	**0.59***	0.01
FN2. Talk with other children at a party	0.08	**0.71***	0.00	0.00	**0.79***	-0.02
FN3. Meet a child on the way home	-0.00	**0.76***	-0.14	-0.02	**0.85***	-0.05
FN4. Work on handicrafts with other children	-0.13	**0.70***	0.02	0.05	**0.77***	0.03
FF1. Speak at a debate competition	-0.00	0.28*	**0.62***	0.02	**0.40***	**0.60***
FF2. Present a group project	0.00	**0.30***	**0.68***	-0.02	0.26	**0.75***
FF3. Answer the teacher's question in class	0.06	**0.43***	**0.42***	-0.01	**0.42***	**0.47***
FF4. Give a speech about recent success in an exam	-0.02	0.19	**0.69***	0.01	**0.32***	**0.60***

Notes. The scenarios in the table are abbreviated. See the appendix for the full description of the scenarios. UN = unfamiliar, normal situations. UF = unfamiliar, formal situations. FN = familiar, normal situations. FF = familiar, formal situations. Loadings > .30 are bolded.

*$p < .05$.

Table 4

Strong Invariance Model of Situational Shyness at T1 and T2

Items	T1 and T2 Unstandardized Loadings			T1 Standardized Loadings			T2 Standardized Loadings		
	Unfamiliar	Familiar	Formal	Unfamiliar	Familiar	Formal	Unfamiliar	Familiar	Formal
UN1	**1.00**	0	0	**0.61**	0	0	**0.63**	0	0
UN2	**1.17**	0	0	**0.70**	0	0	**0.74**	0	0
UN3	**0.99**	0	0	**0.65**	0	0	**0.67**	0	0
UN4	**1.13**	0	0	**0.71**	0	0	**0.76**	0	0
UF1	**0.73**	0	**1.00**	**0.41**	0	**0.33**	**0.45**	0	**0.36**
UF2	**0.68**	0	**1.38**	**0.37**	0	**0.45**	**0.40**	0	**0.48**
UF3	**0.87**	0	**0.65**	**0.51**	0	**0.23**	**0.55**	0	**0.24**
UF4	**0.79**	0	**1.23**	**0.42**	0	**0.40**	**0.42**	0	**0.39**
FN1	0	**1.00**	0	0	**0.55**	0	0	**0.70**	0
FN2	0	**1.02**	0	0	**0.70**	0	0	**0.79**	0
FN3	0	**0.94**	0	0	**0.74**	0	0	**0.79**	0
FN4	0	**1.02**	0	0	**0.66**	0	0	**0.82**	0
FF1	0	**0.66**	**1.59**	0	**0.29**	**0.60**	0	**0.44**	**0.61**
FF2	0	**0.57**	**2.01**	0	**0.24**	**0.73**	0	**0.35**	**0.70**
FF3	0	**0.72**	**1.13**	0	**0.37**	**0.50**	0	**0.49**	**0.44**
FF4	0	**0.56**	**1.83**	0	**0.23**	**0.63**	0	**0.34**	**0.63**
Correlations among factors									
Unfamiliar	-	-	-	-	.53***	.51***	-	.60***	.43***
Familiar	-	-	-	-	-	.22*	-	-	.18

Notes. UN = unfamiliar, normal situations. UF = unfamiliar, formal situations. FN = familiar, normal situations. FF = familiar, formal situations. The model fit the data well: $\chi^2(451) = 707.01$, $p < .001$; RMSEA = .034; CFI = .958; SRMR = .053. All bolded loadings were significant at .001 level.

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

Table 5

Correlations between Situational Shyness and Concurrent Self-Reported General Shyness

	T1 S Gen Shy	T2 S Gen Shy
Unfamiliar	.71***	.69***
Familiar	.41***	.38***
Formal	.62***	.49***

Notes. S = Self-report. Gen Shy = General shyness.
***$p < .001$.

Table 6

Unique Predictions of Self-Reported General Shyness from Concurrent Situational Shyness

	T1 S Gen Shy	T2 S Gen Shy
Covariates		
Age	-.03	.03
Gender (-0.5 = girl, 0.5 = boy)	-.00	-.08
Family income	-.04	-.10^{+}
Ethnicity (0 = Han, 1 = ethnic minority)	-.04	-.08*
Situational Shyness		
Unfamiliar	.51***	.60***
Familiar	.08	-.00
Formal	.34***	.19***

Notes. S = Self-report. Gen Shy = General shyness. Standardized path coefficients are reported in the table. Age, gender, ethnicity, and family income were controlled for in the model.

$^{+}p < .10$. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Table 7

Correlations between Concurrent Situational Shyness and Other Measures of Shyness

	S Anx Shy	S Reg Shy	P Gen Shy	P Con Shy
Unfamiliar	.61***/.55***	-.09/.00	.10/.14**	.11/.14**
Familiar	.44***/.32***	-.13/-.02	.14/.09	.18*/.11
Formal	.56***/.48***	-.02/.01	.12*/.13*	.07/.06

Notes. S = Self-report. P = Peer-report. Gen Shy = General shyness. Anx Shy = Anxious shyness. Reg Shy = Regulated shyness. Con Shy = conflicted shyness. T1 correlations are before the slashes and T2 correlations are after the slashes.
$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Table 8

Unique Predictions of Other Measures of Shyness from Concurrent Situational Shyness

	S Anx Shy	S Reg Shy	P Gen Shy	P Con Shy
Covariates				
Age	-.01/.00	.03/.06	-.05/-.03	-.03/-.08
Gender (-0.5 = girl, 0.5 = boy)	-.01/-.02	$-.16^{**}$/$-.12^{*}$	$-.24^{***}$/$-.18^{***}$	-.09/.01
Family income	$-.04$/$-.11^{*}$	-.06/.02	-.07/-.07	$-.09^{*}$/$-.16^{***}$
Ethnicity (0 = Han, 1 = ethnic minority)	$-.02$/$-.07^{+}$	.09/.05	.04/.01	.01/-.05
Situational Shyness				
Unfamiliar	$.33^{***}$/$.39^{***}$	-.04/.01	.01/.06	.04/.09
Familiar	$.25^{*}$/.02	-.09/-.03	.16/.03	.19/.06
Formal	$.33^{***}$/$.27^{***}$	.01/.00	.08/.06	.02/-.01

Notes. S = Self-report. P = Peer-report. Gen Shy = General shyness. Anx Shy = Anxious shyness. Reg Shy = Regulated shyness. Con Shy = conflicted shyness. Gender, family income, and ethnicity were controlled for in the models. Standardized path coefficients are reported in the table. T1 path coefficients are before the slashes and T2 path coefficients are after the slashes.
$^{+}p < .10$. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Table 9

Correlations between Situational Shyness and Adjustment at T1 and T2

		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	T1 Unfamiliar	.53***	.51***	.41***	.40***	-.13*	-.11	.07	.42***	.28***	.35***	.29***	.32***	-.08	-.14*	.01***
2	T1 Familiar		.23*	.36***	.42***	-.34***	-.21***	.18*	.18*	.34***	.12	.16*	.21**	-.36***	-.26***	.11
3	T1 Formal			.36***	.32***	-.06	-.09	.01	.44***	.15*	.62***	.31***	.26***	-.07	-.04	-.06
4	T1 S Depress				.79***	-.22***	-.22***	.27***	.19**	.17**	.20**	.58***	.60***	-.22***	-.24***	.19***
5	T1 S Lonely					-.19***	-.29***	.33***	.21***	.18**	.24***	.53***	.69***	-.19***	-.27***	.18***
6	T1 Aca						.38***	-.40***	-.03	-.20**	.08	-.18	-.19***	.92***	.40***	-.39***
7	T1 P Pop							-.52***	-.08	-.12*	-.07	-.09	-.19***	.38***	.75***	-.45***
8	T1 P Rej								-.09	.04	-.09	.08	.25***	-.41***	-.50***	.79***
9	T2 Unfamiliar									.59***	.49***	.33***	.31***	.00	-.08	-.06
10	T2 Familiar										.19	.15**	.22***	-.19**	-.11*	.08
11	T2 Formal											.21***	.19***	.06	.02	-.13*
12	T2 S Depress												.71***	-.21***	-.18***	.17***
13	T2 S Lonely													-.15**	-.28***	.27***
14	T2 Aca														.42***	-.40***
15	T2 P Pop															-.54***
16	T2 P Rej															

Notes. S = Self-report. P = Peer-report. Unfamiliar = Shyness with unfamiliar peers. Familiar = Shyness with familiar peers. Formal = Shyness in formal situations. Depress = Depressive symptoms. Lonely = Loneliness. Aca = Academic Achievement. Pop = Popularity. Rej = Peer rejection.

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

Table 10

Unique Predictions of Adjustment Variables from Concurrent Situational Shyness

	S Depress	S Lonely	Aca	P Pop	P Rej
Covariates					
Age	.04/-.02	.03/.01	-.07/-.06	.10/.10	-.04/-.07
Gender (-0.5 = girl, 0.5 = boy)	-.06/-.02	.00/.04	-.06/-.18***	-.18**/-.13**	.10+/.13**
Family income	-.09/.00	-.10+/-.05	.03/.12*	.09/.16**	-.07/-.04
Ethnicity (0 = Han, 1 = ethnic minority)	.01/-.03	.01/-.08+	-.04/.07	-.02/.06	-.07/-.04
Situational Shyness					
Unfamiliar	.19*/.35***	.16/.27***	.04/.12	.03/-.04	-.01/-.11
Familiar	.25*/-.08	.32**/.03	-.34***/-.24***	-.22*/-.09	.20/.16*
Formal	.21**/.06	.18*/.07	.00/.02	-.06/.03	-.04/-.08

Notes. S = Self-report. P = Peer-report. Depress = Depressive symptoms. Lonely = Loneliness. Aca = Academic Achievement. Pop = Popularity. Rej = Peer rejection. Gender, family income, and ethnicity were controlled for in the models. Standardized path coefficients are reported in the table. T1 path coefficients are before the slashes and T2 path coefficients are after the slashes. $^{+}p < .10$. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Table 11

Unique Predictions of T2 Adjustment Variables from T1 Situational Shyness after Controlling for T1 Adjustment

Model	Predictors	T2 S Depress	T2 S Lonely	T2 Aca	T2 P Pop	T2 P Rej
Model 1. Control for covariates and stabilities						
	Age	-.06	-.03	.01	.05	-.03
	Gender (-0.5 = girl, 0.5 = boy)	-.02	.01	.01	.00	.00
	Family income	-.04	-.11*	.03	.08+	.00
	Ethnicity (0 = Han, 1 = ethnic minority)	.03	-.01	.02	.00	.04
	T1 S Depress	.54***	-	-	-	-
	T1 S Lonely	-	.63***	-	-	-
	T1 Aca	-	-	.92***	-	-
	T1 P Pop	-	-	-	.73***	-
	T1 P Rej	-	-	-	-	.78***
Models 2-4. Separate predictions from situational shyness						
	T1 Unfamiliar	.13+	.11+	.05	-.07	-.05
	T1 Familiar	.03	-.02	-.06	-.14**	-.01
	T1 Formal	.09	.07	-.01	.03	-.06
Model 5. Unique predictions from situational shyness						
	T1 Unfamiliar	.13	.16+	.16***	-.05	-.04
	T1 Familiar	-.03	-.10	-.13**	-.14*	.03
	T1 Formal	.02	-.00	-.06	.11	-.05

Notes. S = Self-report. P = Peer-report. Depress = Depressive symptoms. Lonely = Loneliness. Aca = Academic Achievement. Pop = Popularity. Rej = Peer rejection. Age, gender, family income, and ethnicity were controlled for in Models 2-5. Covariates (i.e., age, gender, ethnicity, family income), as well as stabilities of the adjustment variables, were controlled for in Models 2-5 but not shown in the table because the results were very similar to Model 1. Specifically, the significance of the path coefficients from the covariates stayed the same in Models 2-5 (relative to Model 1), except for the prediction of T2 popularity from T1 family income in the unfamiliar-only model (Model 2), $\beta = .08$, $p = .043$. Standardized path coefficients are reported in the table.
$^{+}p < .10$. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

APPENDIX B

FIGURES

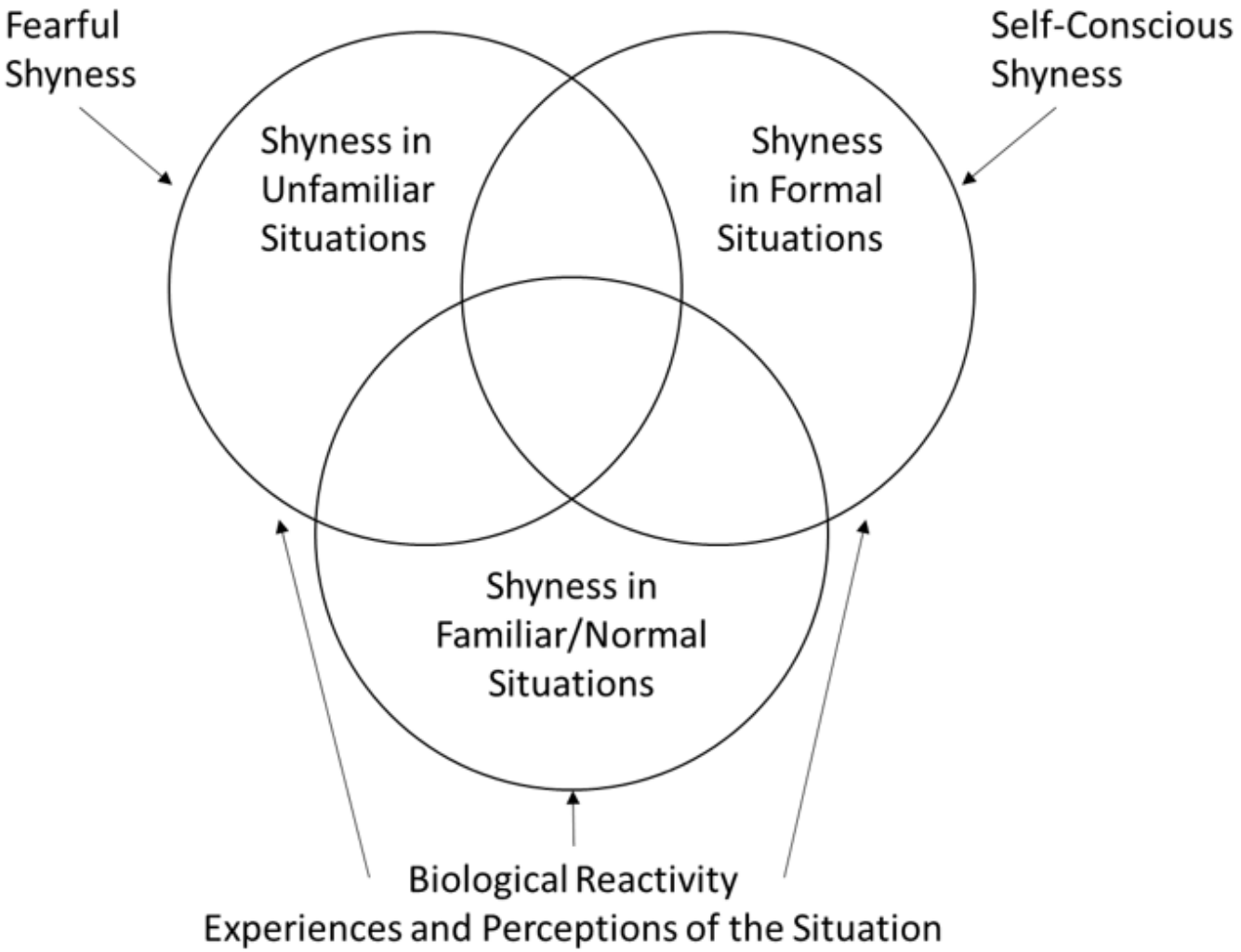

Figure 1. An illustration of the theoretical foundation of situational shyness.

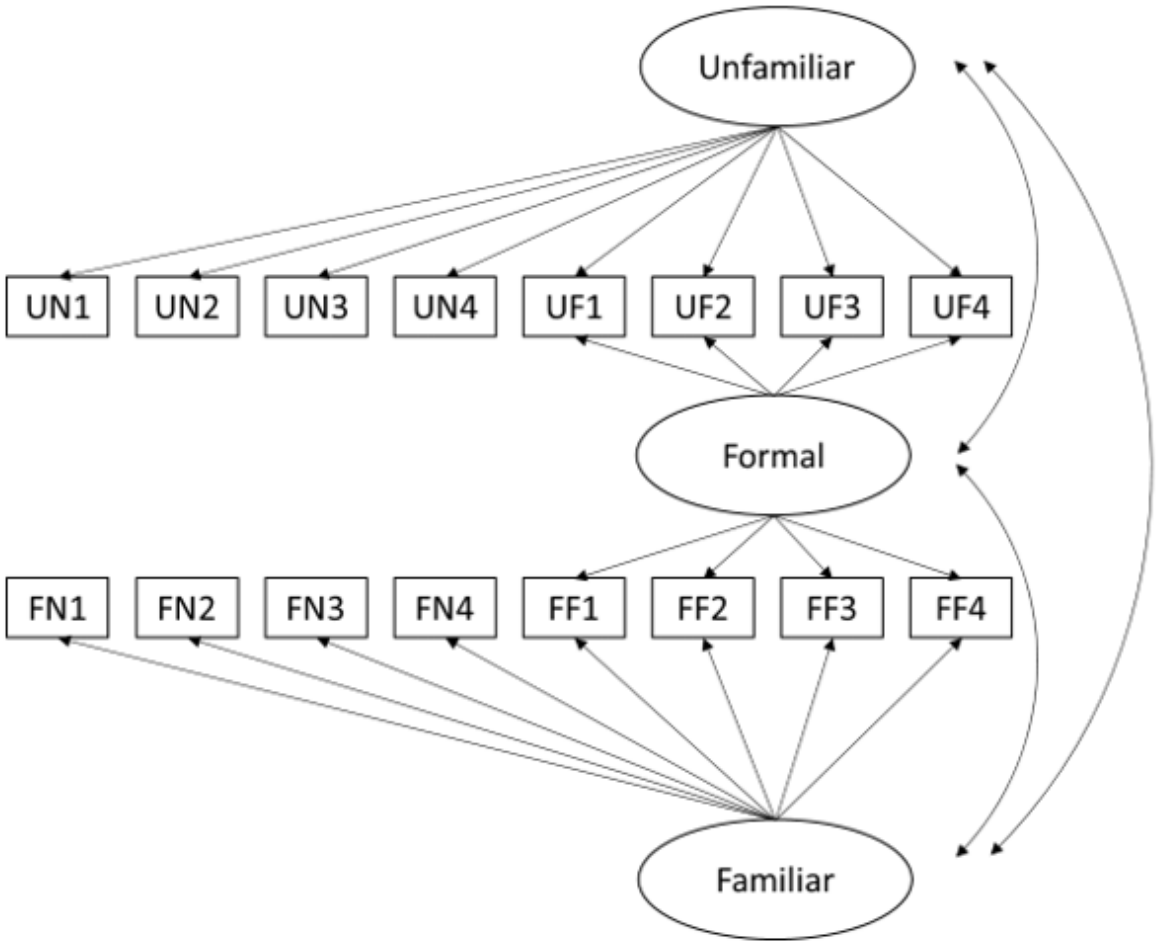

Figure 2. Configuration of the confirmatory factor analysis model for situational shyness. Factor variances and residual variances are estimated but not illustrated in the figure. UN = unfamiliar, normal situations. UF = unfamiliar, formal situations. FN = familiar, normal situations. FF = familiar, formal situations.

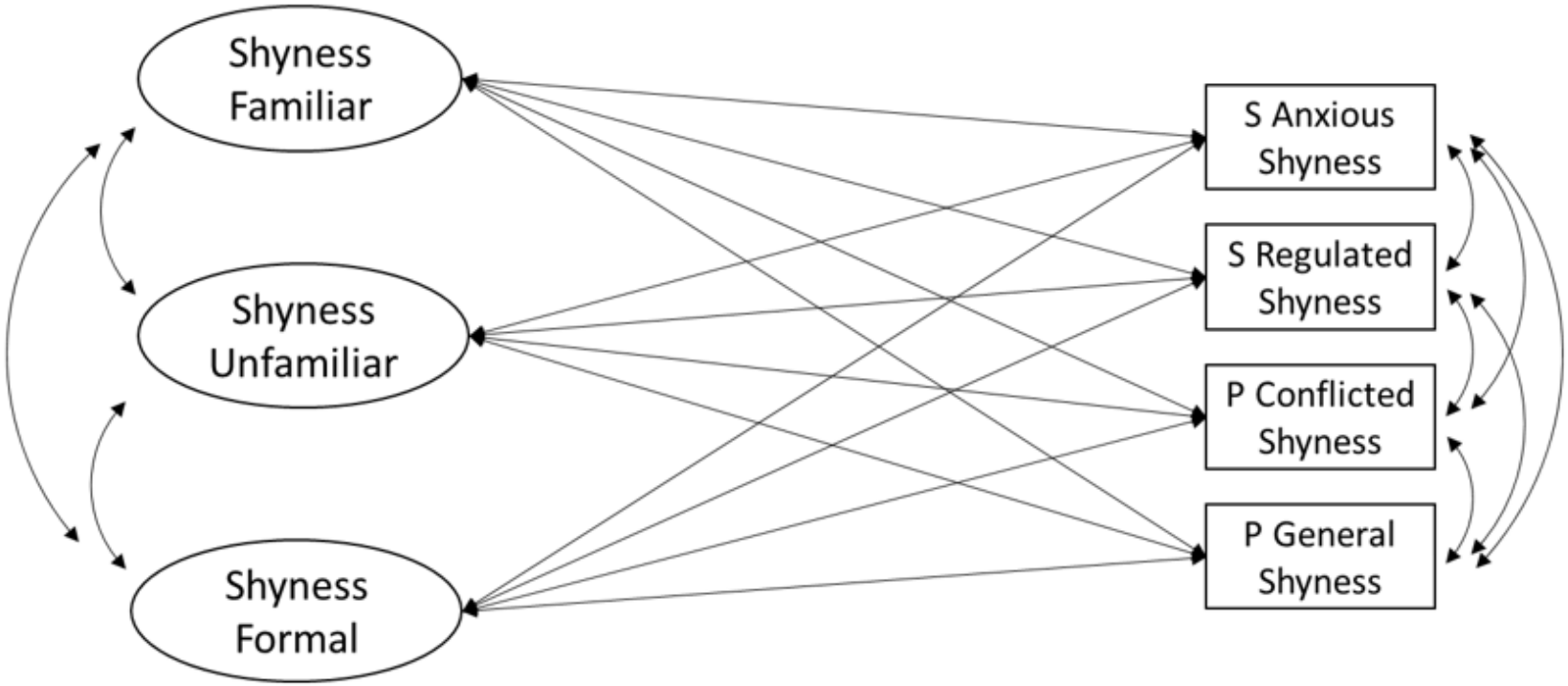

Figure 3. Model configuration for examining the correlations between situational shyness and other measures of shyness. The same model was examined separately at T1 and T2. Factor variances and residual variances were estimated but not illustrated in the figure.

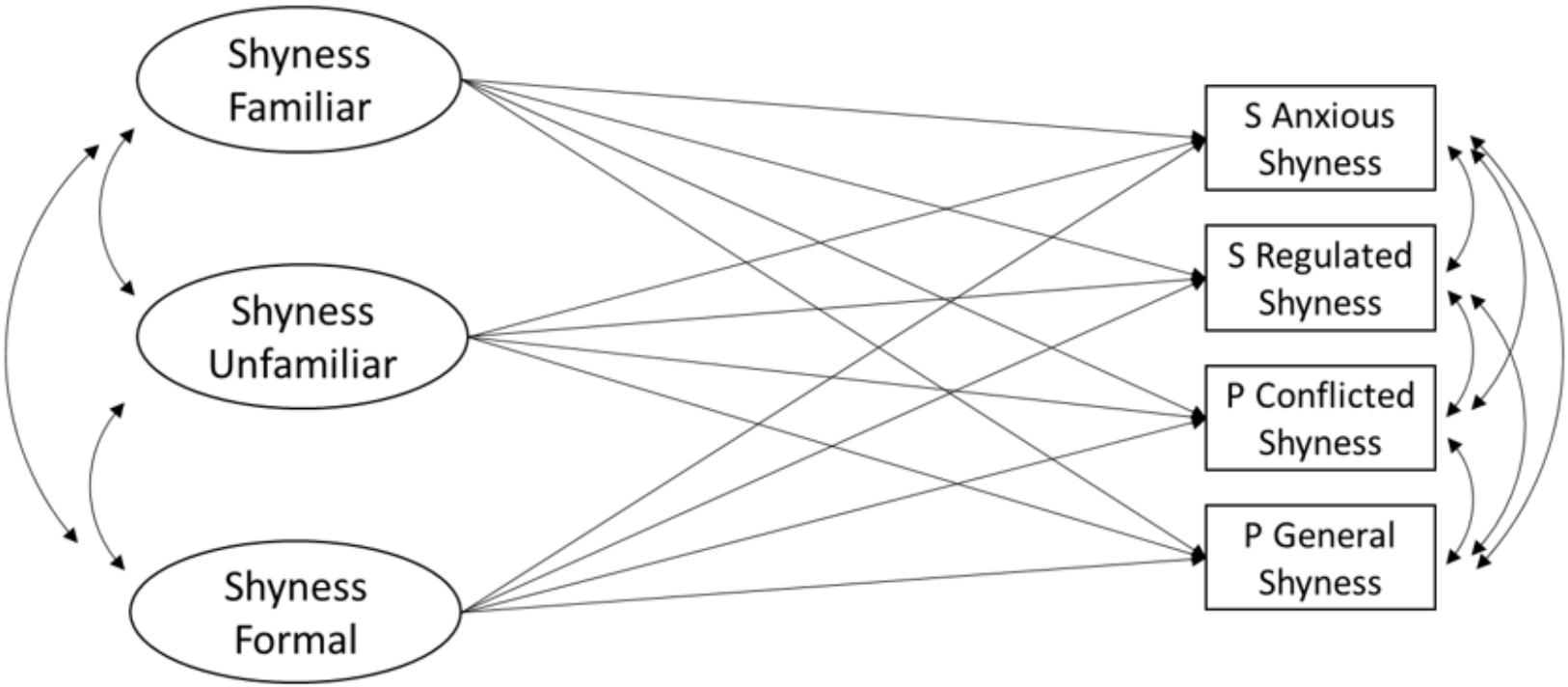

Figure 4. Model configuration for examining the unique contributions of situational shyness to the other measures of shyness. The same model was examined separately at T1 and T2. Factor variances, residual variances, and paths from covariates (i.e., age, gender, income, ethnicity) were estimated but not illustrated in the figure.

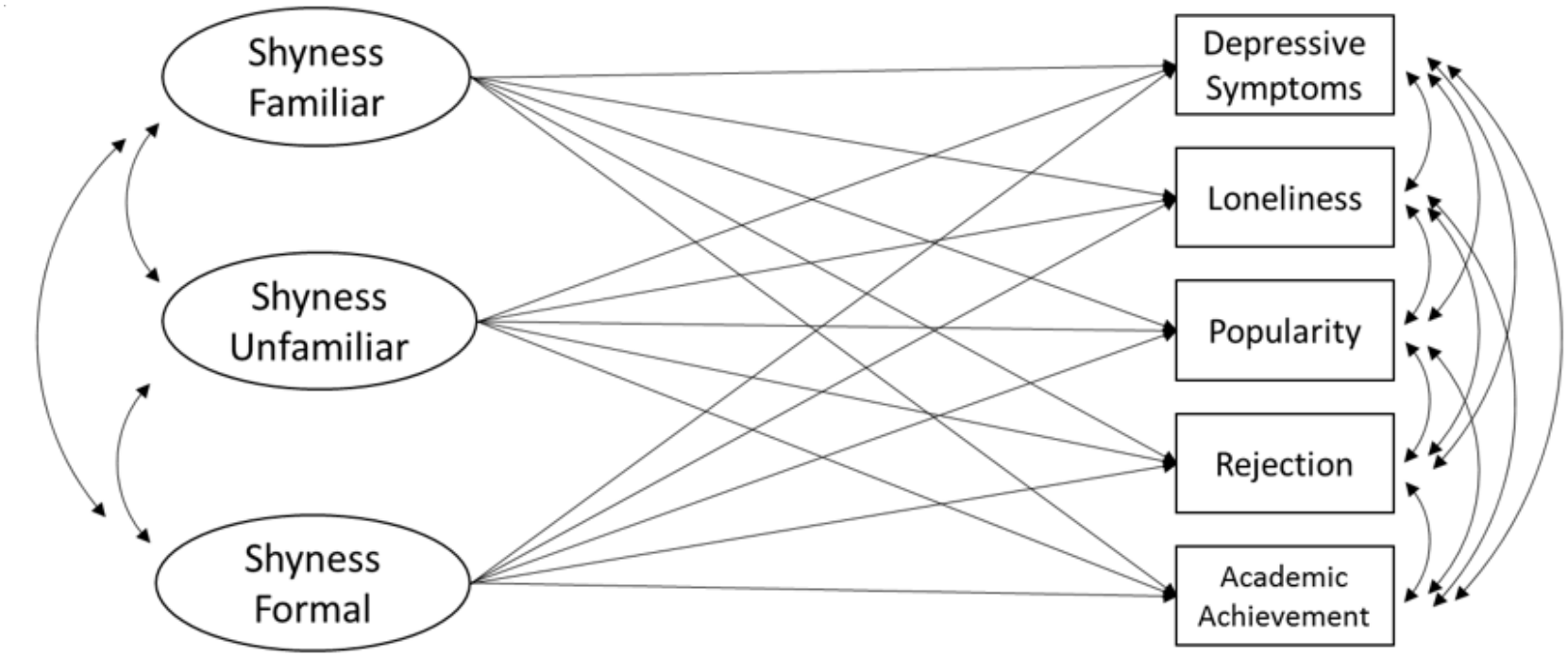

Figure 5. Path model predicting concurrent adjustment from situational shyness. Observed indicators for situational shyness factors are included in the model but not shown in the figure. Factor variances, residual variances, and paths from covariates (i.e., age, gender, income, ethnicity) were estimated but not illustrated in the figure.

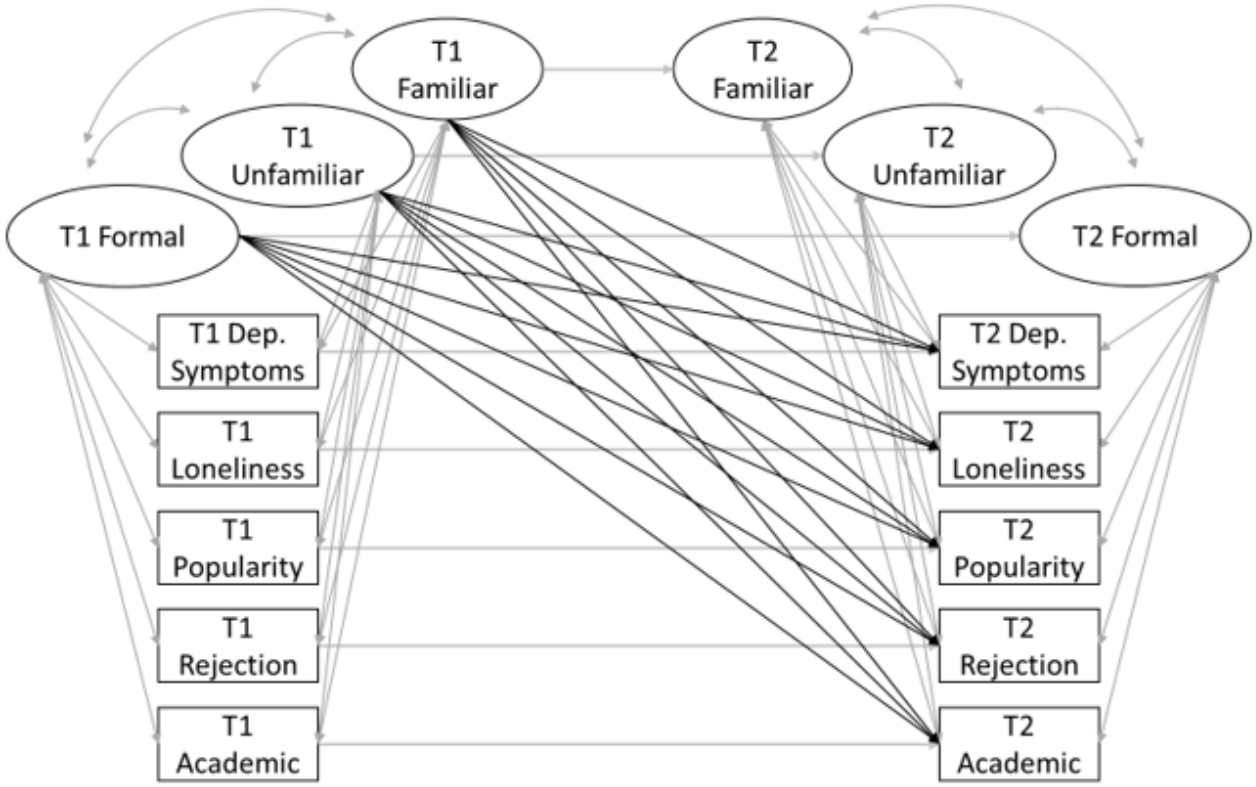

Figure 6. Path model predicting T2 adjustment from T1 situational shyness, after controlling for T1 adjustment. Observed indicators for situational shyness factors are included in the model but not shown in the figure. Factor variances, residual variances, and paths from covariates (i.e., age, gender, income, ethnicity) were estimated but not illustrated in the figure. Stabilities across time and correlations between variables within time (gray lines) were included in all models. Predictions from T1 situational shyness were added to the model one situation at each time in separate models (Models 2-4) and then all together in the same model (Model 5).

APPENDIX C

HUMAN SUBJECT IRB APPROVAL DOCUMENTS

APPROVAL: EXPEDITED REVIEW

Natalie Wilkens
Social and Family Dynamics, T. Denny Sanford School of (SSFD)
480/727-6899
Natalie.Wilkens@asu.edu

Dear Natalie Wilkens:

On 5/10/2016 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Social Withdrawal in Adolescence (SWA)
Investigator:	Natalie Wilkens
IRB ID:	STUDY00004310
Category of review:	(7)(b) Social science methods, (5) Data, documents, records, or specimens, (7)(a) Behavioral research
Funding:	Name: Arizona State University
Grant Title:	
Grant ID:	
Documents Reviewed:	• 5. SWA Recruitment letter Chinese.pdf, Category: Recruitment Materials; • 6. SWA Recruitment Script.pdf, Category: Recruitment Materials; • 7. SWA Certification Letter from Benxi Department of Education.pdf, Category: Off-site authorizations (school permission, other IRB approvals, Tribal permission etc); • 5. SWA Recruitment letter.pdf, Category: Recruitment Materials; • 4. SWA Parental Consent Form Chinese.pdf, Category: Consent Form; • 2. SWA Child Measures Package Chinese.pdf, Category: Translations; • Social Withdrawal in Adolescence (SWA) Jumpstart Grant Notification, Category: Sponsor Attachment; • 2. SWA Child Measures Package.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • 4. SWA Parental Consent Form.pdf, Category: Consent Form;

	• Social Withdrawal in Adolescence (SWA) IRB Application, Category: IRB Protocol; • Social Withdrawal in Adolescence (SWA) ASU GPSA Jumpstart Grant Application, Category: Sponsor Attachment; • 3. SWA Child Assent Form.pdf, Category: Consent Form; • 3. SWA Child Assent Form Chinese.pdf, Category: Consent Form; • 6. SWA Recruitment Script Chinese.pdf, Category: Recruitment Materials;

The IRB approved the protocol from 5/10/2016 to 5/9/2017 inclusive. Three weeks before 5/9/2017 you are to submit a completed Continuing Review application and required attachments to request continuing approval or closure.

If continuing review approval is not granted before the expiration date of 5/9/2017 approval of this protocol expires on that date. When consent is appropriate, you must use final, watermarked versions available under the "Documents" tab in ERA-IRB.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc: Danming An
Danming An

APPROVAL:CONTINUATION

Natalie Wilkens
Social and Family Dynamics, T. Denny Sanford School of (SSFD)
480/727-6899
Natalie.Wilkens@asu.edu

Dear Natalie Wilkens:

On 4/26/2017 the ASU IRB reviewed the following protocol:

Type of Review:	Modification and Continuing Review
Title:	Social Withdrawal in Adolescence (SWA)
Investigator:	Natalie Wilkens
IRB ID:	STUDY00004310
Category of review:	(7)(b) Social science methods, (7)(a) Behavioral research
Funding:	Name: Arizona State University (ASU); Name: Arizona State University (ASU)
Grant Title:	None
Grant ID:	None
Documents Reviewed:	• 4. SWA Parental Consent Form.pdf, Category: Consent Form; • 4. SWA Parental Consent Form Chinese.pdf, Category: Consent Form; • Social Withdrawal in Adolescence (SWA) IRB Application, Category: IRB Protocol; • Social Withdrawal in Adolescence (SWA) Jumpstart Grant Notification, Category: Sponsor Attachment; • Social Withdrawal in Adolescence (SWA) ASU GRSP Grant Notification, Category: Sponsor Attachment; • 6. SWA Recruitment Script 2017.pdf, Category: Recruitment Materials; • 2. SWA Child Measures Package Chinese.pdf, Category: Translations; • 5. SWA Recruitment letter Chinese.pdf, Category: Recruitment Materials; • 6. SWA Recruitment Script.pdf, Category: Recruitment Materials;

	• 9. SWA Teacher Letter 2017.pdf, Category: Recruitment Materials; • 5. SWA Recruitment letter 2017.pdf, Category: Recruitment Materials; • 8. SWA Teacher Measures Package 2017.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Social Withdrawal in Adolescence (SWA) ASU GRSP Grant Application, Category: Sponsor Attachment; • 3. SWA Child Assent Form Chinese.pdf, Category: Consent Form; • 3. SWA Child Assent Form.pdf, Category: Consent Form; • 5. SWA Recruitment letter.pdf, Category: Recruitment Materials; • 3. SWA Child Assent Form 2017.pdf, Category: Consent Form; • 4. SWA Parental Consent Form 2017.pdf, Category: Consent Form; • Social Withdrawal in Adolescence (SWA) ASU GPSA Jumpstart Grant Application, Category: Sponsor Attachment; • 2. SWA Child Measures Package.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • 2. SWA Child Measures Package 2017.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • 6. SWA Recruitment Script Chinese.pdf, Category: Recruitment Materials; • 7. SWA Certification Letter from Benxi Department of Education.pdf, Category: Off-site authorizations (school permission, other IRB approvals, Tribal permission etc);

The IRB approved the protocol from 4/26/2017 to 5/8/2018 inclusive. Three weeks before 5/8/2018 you are to submit a completed Continuing Review application and required attachments to request continuing approval or closure.

If continuing review approval is not granted before the expiration date of 5/8/2018 approval of this protocol expires on that date. When consent is appropriate, you must use final, watermarked versions available under the "Documents" tab in ERA-IRB.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc: Danming An
Danming An

APPROVAL:CONTINUATION

Natalie Wilkens
Social and Family Dynamics, T. Denny Sanford School of (SSFD)
480/727-6899
Natalie.Wilkens@asu.edu

Dear Natalie Wilkens:

On 4/9/2018 the ASU IRB reviewed the following protocol:

Type of Review:	Continuing Review
Title:	Social Withdrawal in Adolescence (SWA)
Investigator:	Natalie Wilkens
IRB ID:	STUDY00004310
Category of review:	(7)(b) Social science methods, (7)(a) Behavioral research
Funding:	Name: Arizona State University (ASU); Name: Arizona State University (ASU)
Grant Title:	None
Grant ID:	None
Documents Reviewed:	

The IRB approved the protocol from 4/9/2018 to 5/7/2019 inclusive. Three weeks before 5/7/2019 you are to submit a completed Continuing Review application and required attachments to request continuing approval or closure.

If continuing review approval is not granted before the expiration date of 5/7/2019 approval of this protocol expires on that date. When consent is appropriate, you must use final, watermarked versions available under the "Documents" tab in ERA-IRB.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc: Danming An
Danming An

APPROVAL:CONTINUATION

Natalie Wilkens
CLAS-SS: Social and Family Dynamics, T. Denny Sanford School of (SSFD)
480/727-6899
Natalie.Wilkens@asu.edu

Dear Natalie Wilkens:

On 4/8/2019 the ASU IRB reviewed the following protocol:

Type of Review:	Continuing Review
Title:	Social Withdrawal in Adolescence (SWA)
Investigator:	Natalie Wilkens
IRB ID:	STUDY00004310
Category of review:	(7)(b) Social science methods, (7)(a) Behavioral research
Funding:	Name: Arizona State University (ASU); Name: Arizona State University (ASU)
Grant Title:	None
Grant ID:	None
Documents Reviewed:	

The IRB approved the protocol from 4/8/2019 to 5/6/2021 inclusive. Three weeks before 5/6/2021 you are to submit a completed Continuing Review application and required attachments to request continuing approval or closure.

If continuing review approval is not granted before the expiration date of 5/6/2021 approval of this protocol expires on that date. When consent is appropriate, you must use final, watermarked versions available under the "Documents" tab in ERA-IRB.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc: Danming An
Danming An

APPENDIX D

MEASURES

Self-Reported Situational Shyness

Rating scale:
1 = *Not at all*, 2 = *A little*, 3 = *Some*, 4 = *Very*

*The following questions are about what you would feel and do when you are with children **who you don't know**. Please read each item carefully and respond as honestly and sincerely as you can.*
*以下问题是关于你和**不熟悉**的孩子在一起时的感受和行为。请诚实地根据你的真实想法作答。*

Unfamiliar, normal situations:

1. You just transferred to a new class. You are on the playground and you see that some new classmates *who you don't know* are playing a game that children your age often play. Would you feel nervous or uncomfortable about asking to join the new classmates?
2. You are at a party at a friend's house. You *don't know* most children at the party, and they are talking together. Would you feel nervous or uncomfortable to start talking with these children?
3. You are on your way home from school. A student *new to your class who you don't know* is on the same way. Would you feel nervous or uncomfortable to start chatting with the new student?
4. You are at a relative's home with some children *who you do not know*. You all decide to spend time working on some handicrafts. Would you feel nervous or uncomfortable communicating with other children?

1. 你刚刚转到一个新班级。你在操场上看到几个你不认识的新同学在一起玩一个你们这个年龄的孩子经常玩的游戏。你会对去问新同学们能不能一起玩这件事感到紧张或不好意思吗？
2. 你在一个同学家聚会。聚会上的大多数孩子你都不认识，正在一起聊天。你会对去和这些孩子聊天这件事感到紧张或不好意思吗？
3. 你在回家的路上。一个新转到你们班的同学和你顺路。你会对去和这位新同学聊天这件事感到紧张或不好意思吗？
4. 你在一个亲戚家，和几个你不认识的孩子在一起。你们决定做手工来打发时间。你会对跟其他孩子交流这件事感到紧张或不好意思吗？

Unfamiliar, formal situations:

1. Your school is holding a debate competition. You and a few other classmates are going to have a debate with another team in front of students from other classes *who you don't know*. During the debate, all team members are free to speak. Would you feel nervous or uncomfortable about speaking in the debate in front of children you don't know?

2. You and some classmates completed a group project. One person in your group needs to present the project to a group of student judges from other classes *who you don't know*. Would you feel nervous or uncomfortable about presenting in front of the student judges?
3. You just transferred to *a new class*. The teacher asks the whole class a question, and any student can answer the question freely. Other students do not seem to know the answer, but you know the answer. Would you feel nervous or uncomfortable about answering the question in the new class?
4. Your grades improved a lot in a recent exam. The teacher asks you to talk about the efforts you made in front of *another class* he/she teaches. Would you feel nervous or uncomfortable about talking about your efforts in front of the other class?

1. 你的学校在举行一场辩论赛。你和几个同学要与另一支队伍在其他班你不认识的同学面前辩论。在辩论过程中，所有辩论队成员都可以自由发言。你会对在辩论赛上面对不认识的同学发言这件事感到紧张或不好意思吗？
2. 你和几个同学完成了一个小组项目。你们组中的一个人要在一群其他班你不认识的学生评委面前讲解这个项目。你会对在学生评委面前讲解这个项目感到紧张或不好意思吗？
3. 你刚刚转到一个新班级。老师问了全班同学一个问题，所有学生都可以自由回答。其他学生似乎都不知道答案，但是你知道答案。你会对在新班级回答问题这件事感到紧张或不好意思吗？
4. 你最近一次考试成绩有显著的提高。老师请你去他/她教的另外一个班介绍你的学习经验。你会对在另外一个班的同学面前介绍学习经验这件事感到紧张或不好意思吗？

*The following questions are about what you would feel and do when you are with children **who you know**. Please read each item carefully and respond as honestly and sincerely as you can.*
*以下问题是关于你和你**认识**的孩子在一起时的感受和行为。请诚实地根据你的真实想法作答。*

Familiar, normal situations:

1. You are on the playground and you see that some classmates *you know* are playing a game that children your age often play. Would you feel nervous or uncomfortable to ask to join these classmates?
2. You go to a party at a friend's house. You see classmates *you know*, and they are talking together. Would you feel nervous or uncomfortable to start talking with these classmates?
3. You are on your way home from school. A classmate *you know* is on the same way. Would you feel nervous or uncomfortable to start chatting with the classmate?

4. You are at a relative's home with some children *who you know*. You all decide to spend time working on some handicrafts. Would you feel nervous or uncomfortable communicating with other children?

1. 你在操场上看到几个你认识的同学在一起玩一个你们这个年龄的孩子经常玩的游戏。你会对去问这些同学能不能一起玩这件事感到紧张或不好意思吗？
2. 你去一个朋友家聚会，看到你认识的同学在一起聊天。你会对去和这些同学。聊天这件事感到紧张或不好意思吗？
3. 你在回家的路上。一个你认识的同学和你顺路。你会对去和这位同学聊天这件事感到紧张或不好意思吗？
4. 你在一个亲戚家，和几个你认识的孩子在一起。你们决定做手工来打发时间。你会对跟其他孩子交流这件事感到紧张或不好意思吗？

Familiar, formal situations:

1. Your class is holding a debate competition. You and a few other classmates are going to have a debate with another team in front of *your classmates*. During the debate, all team members are free to speak. Would you feel nervous or uncomfortable about speaking in the debate in front of your class?
2. You and some classmates completed a group project. One person in your group needs to present the project in front of *your class*. Would you feel nervous or uncomfortable about presenting in front of your class?
3. You are in *the current classroom*. The teacher asks the whole class a question, and any student can answer the question freely. Other students do not seem to know the answer, but you know the answer. Would you feel nervous or uncomfortable about answering the question in the current classroom?
4. Your grades improved a lot in a recent exam. The teacher asks you to talk about the efforts you made in front of *your class*. Would you feel nervous or uncomfortable about talking about your efforts in front of your class?

1. 你的班级在举行一场辩论赛。你和几个同学要与另一支队伍在你们班同学面前辩论。在辩论过程中，所有辩论队成员都可以自由发言。你会对在辩论赛上面对你们班同学发言这件事感到紧张或不好意思吗？
2. 你和几个同学完成了一个小组项目。你们组中的一个人要在你们班同学面前讲解这个项目。你会对在你们班同学面前讲解这个项目感到紧张或不好意思吗？
3. 你在你现在的班级。老师问了全班同学一个问题，所有学生都可以自由回答。其他学生似乎都不知道答案，但是你知道答案。你会对在现在的班级回答问题这件事感到紧张或不好意思吗？
4. 你最近一次考试成绩有显著的提高。老师请你在你们班同学面前介绍你的学习经验。你会对在你们班同学面前介绍学习经验这件事感到紧张或不好意思吗？

Self-Reported General Shyness

Items were from Crozier (1995).

Rating scale:
0 = *No*, 1 = *Sometimes*, 2 = *Yes*
0 = 不, 1 = 有时, 2 = 是

Items:
1. Do you find it hard to talk to someone you don't know?
2. Are you easily embarrassed?
3. Are you usually quiet when you are with others?
4. Do you blush when people sing "Happy Birthday" to you?
5. Do you feel nervous when you are with important people?
6. Do you feel shy when you have to read aloud in front of the class?
7. Do you feel nervous about joining a new class (group)?
8. Do you go red or feel uncomfortable when someone teases you?
9. Do you say a lot when you meet someone for the first time?
10. Are you usually shy in a group of people?
11. Do you feel shy when you are the center of attention?
12. Do you blush a lot?
13. Do you feel shy when the teacher speaks to you?
14. If the teacher asked for someone to act in a play would you put your hand up?
15. Is it easy for you to make friends?
16. Would you be embarrassed if the teacher put you in the front row on stage?
17. When grown-ups ask you about yourself do you often not know what to say?
18. Do you go red or feel uncomfortable when the teacher praises your work?
19. Do you feel shy when you have to go into a room full of people?
20. Are you embarrassed when your friends look at photos of you when you were little?
21. Would you be too shy to ask someone to support you for a good cause?
22. Do you enjoy having your photograph taken?
23. Do you usually talk to only one or two close friends?
24. Are you usually shy when you meet children of the other gender?
25. Do you go red or feel uncomfortable when you have to speak to someone your age of the other gender?

1. 你觉得和你不认识的人说话很难吗？
2. 你很容易感到尴尬吗？
3. 你和别人在一起的时候通常很安静吗？
4. 当别人给你唱生日快乐歌的时候，你脸红或不好意思吗？
5. 你和重要的人呆在一起的时候会感到紧张吗？
6. 你当着全班面朗读时感到害羞吗？
7. 你要加入一个新班级或团体时会感到紧张吗？
8. 别人取笑你的时候你会脸红或不好意思吗？

9. 你会和第一次见面的人说很多话吗？
10. 你在一群人中总是很害羞吗？
11. 当你是大家注意的焦点时，你通常会害羞吗？
12. 你经常脸红吗？
13. 当老师跟你说话时，你感到害羞吗？
14. 如果老师问谁想在一个戏剧中表演，你会举手吗？
15. 你容易交到朋友吗？
16. 如果老师把你放在舞台上第一排，你会尴尬吗？
17. 当大人问关于你自己的问题时，你常常不知道怎么回答吗？
18. 当老师表扬你的工作时，你会脸红或不好意思吗？
19. 你进入一个满是人的屋子时会感到害羞吗？
20. 当朋友看你小时候的照片时，你感到尴尬吗？
21. 当你因为正当理由需要别人帮助你时，你会因为太害羞而不能启齿吗？
22. 你喜欢被拍照吗？
23. 你总是只跟一两个好朋友讲话吗？
24. 你遇到异性时总是害羞吗？
25. 当你需要跟同龄的异性讲话时，你会脸红或不好意思吗？

Self-Reported Anxious and Regulated Shyness

Items were adapted from Xu et al. (2007) and made suitable for self-report.

Rating scale:
1 = *Never*, 2 = *Rarely*, 3 = *Sometimes*, 4 = *Often*, 5 = *Always*
1 = *从不*, 2 = *很少*, 3 = 有时, 4 = 经常, 5 = 总是

Anxious shyness items:
1. I am afraid to join or approach peer play groups
2. I isolate myself from others
3. I am timid and fearful
4. I do not initiate peer contact
5. I am anxious and nervous when speaking in front of peers.

1. 我不敢加入或靠近和大家一起玩
2. 我把自己孤立起来
3. 我胆怯怕羞
4. 我不会主动找别人玩
5. 我当着大家发言会焦虑或紧张

Regulated shyness items
1. I behave modestly
2. I avoid conflict with peers
3. I do not show off
4. I compromise or negotiate in confrontations with peers
5. I have a polite demeanor

1. 我行为谦虚
2. 我避让与同伴之间的矛盾
3. 我做事低调不炫耀
4. 我在与同伴的冲突中会妥协或退让
5. 我礼让他人

Self-Reported Depressive Symptoms

Items were from Kovacs (1981).

Rating scale: Options under each item are in the order of values 0-2. Items noted "R" are reverse coded.

Items:

1. O I am sad once in a while. O I am sad many times. O I am sad all the time.	6R. O Things bother me all the time. O Things bother me many times. O Things bother me once in a while.
2R. O Nothing will ever work out for me. O I am not sure if things will work out for me. O Things will work out for me O.K.	7. O I look O.K. O There are some bad things about my looks. O I look ugly.
3. O I do most things O.K. O I do many things wrong. O I do everything wrong.	8. O I do not feel alone. O I feel alone many times. O I feel alone all the time.
4R. O I hate myself. O I do not like myself. O I like myself.	9. O I have plenty of friends. O I have some friends but I wish I had more. O I do not have any friends.
5R. O I feel like crying every day. O I feel like crying many days. O I feel like crying once in a while.	10R. O Nobody really loves me. O I am not sure if anybody loves me. O I am sure that somebody loves me.

1. O 我偶尔伤心 O 我经常伤心 O 我总是伤心	6R. O 总是有事情让我烦恼 O 有好几次，有事情让我烦恼 O 偶尔有事情让我烦恼

2R. O 我的事情永远不会进展顺利 O 我不知道我的事情会不会进展顺利 O 我的事情会进展顺利的	7. O 我的外表没什么问题 O 我的外表有些不太好看的地方 O 我的外表很丑
3. O 我做大多数事情都没问题 O 我做错了很多事情 O 我什么事情都做不对	8. O 我不感到孤独 O 有好几次我感到孤独 O 我总是感到孤独
4R. O 我恨自己 O 我不喜欢自己 O 我喜欢自己	9. O 我有许多朋友 O 我有几个朋友，但我希望有更多 O 我没有任何朋友
5R. O 我每天都想哭 O 我很多天都想哭 O 我偶尔想哭	10R. O 没有人爱我 O 我不确定是否有人爱我 O 我很确定有人爱我

Self-Reported Loneliness

Items were from Russell et al. (1980).

Rating scale:
1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often
1 = *从不*, 2 = *很少*, 3 = *有时*, 4 = *总是*

Items:
1. I feel in tune with the people around me
2. I lack companionship
3. There is no one I can turn to
4. I don't feel alone
5. I feel part of a group of friends
6. I have a lot in common with the people around me
7. I am no longer close to anyone
8. My interests and ideas are not shared by those around me
9. I am an outgoing person
10. There are people I feel close to
11. I feel left out
12. My social relationships are superficial
13. No one really knows me well
14. I feel isolated from others
15. I can find companionship when I want it
16. There are people who really understand me
17. I am unhappy being so alone
18. People are around me but not with me
19. There are people I can talk to
20. There are people I can turn to

1. 我觉得我和周围的人很合拍
2. 我缺少陪伴
3. 我没人可以求助
4. 我不感到孤独
5. 我觉得自己是一群朋友中的一员
6. 我和周围的人有很多共同点
7. 我和谁都不亲密
8. 我的兴趣和观点跟我周围的人不一致
9. 我是个开朗的人
10. 有人让我感到亲密
11. 我感到被孤立
12. 我的人际关系流于表面，不深入
13. 没有人真的很了解我
14. 我感到与其他人隔绝开来了

15. 只要我想要，我就能找到人陪伴
16. 有人真的了解我
17. 我对自己独自一人感到不开心
18. 我身边虽然有人，但他们没有真正和我在一起
19. 我有人可以倾诉
20. 我有人可以求助

Peer Nominations

Items were adapted from Masten et al. (1985). Students were instructed to write down the IDs of classmates who were the best fit of each description.

Rating Scale: N/A

Popularity item:
Someone who you most like to be with
你最喜欢和这个人在一起

Peer rejection item:
Someone who you least like to be with
你最不喜欢和这个人在一起

Conflicted shyness item:
Someone that wants to play with other kids but does not because he or she is too shy or afraid
想跟其他同学一起玩，但是因为太害羞和害怕而不跟其他同学玩的人

Shyness-sensitivity items:
Someone whose feelings get hurt easily
Someone who is very shy
Someone who is usually sad
感情容易受伤害的人
非常害羞的人
总是不开心的人