

Revisiting Associations Between Behavioral Inhibition/Shyness and Social Competence in Young Chinese Children: Sociohistorical Imprint on Three Samples

Shuyang Dong^{1, 2}, Yue Song³, Judith Semon Dubas⁴, Nanhua Cheng²,
Xi Liang², Qiqi Yuan³, and Zhengyan Wang²

¹ Faculty of Education, The University of Hong Kong

² Beijing Key Lab of Learning and Cognition, Research Center for Child Development,
School of Psychology, Capital Normal University

³ School of Psychology, Nanjing Normal University

⁴ Department of Developmental Psychology, Utrecht University

While negative associations between behavioral inhibition/shyness and social competence are well established for children from Western cultures, the directions of these associations have been inconsistent for Chinese children, partly due to the ongoing social-cultural changes in China. Drawing from three samples of young Chinese children (born between 2009 and 2019), we aim at examining how inhibition/shyness predicts cooperative behaviors and prosocial behaviors throughout early childhood. In Study 1 ($N = 700$, children aged between 36 and 72 months), mother-reported inhibition/shyness was negatively associated with mother-reported cooperative and prosocial behaviors during the preschool years. In Study 2 ($N = 251$, at 6, 15, 25, and 37 months of children's ages), mother-reported inhibition/shyness in infancy was negatively associated with mother-reported cooperative behaviors but was not related to observed cooperative behaviors at the early preschool age. Infancy inhibition/shyness was negatively associated with mother-reported and observed prosocial behaviors. In Study 3 ($N = 95$, at 14, 25, 38, and 60 months of children's ages), the inhibition/shyness trait, assessed by both observation and maternal report, did not predict any indicators of cooperative behaviors. Early childhood inhibition/shyness, however, still predicted fewer observed and mother-reported prosocial behaviors. On balance, our research supports a negative association between early inhibition/shyness and later prosocial behaviors. The mixed findings concerning cooperative behaviors are interpreted in light of sociopolitical changes in China during the past two decades.

Public Significance Statement

This research found that inhibited/shy young Chinese children consistently showed fewer prosocial behaviors relative to their uninhibited/nonshy peers. Inhibition/shyness did not predict cooperative behaviors in the oldest cohort of children but predicted fewer cooperative behaviors in the most recent cohort. These findings signify changes in cultural meanings of inhibition/shyness over historical time and indicate the necessity of using strategies to alleviate early inhibition/shyness for optimal social development of Chinese children.

Keywords: behavioral inhibition, shyness, cooperative behaviors, prosocial behaviors, social changes

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Shuyang Dong  <https://orcid.org/0000-0003-1289-7727>

Zhengyan Wang  <https://orcid.org/0000-0003-0178-804X>

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Correspondence concerning this article should be addressed to Zhengyan Wang, Beijing Key Lab of Learning and Cognition, Research Center for Child Development, School of Psychology, Capital Normal University, Main Building East Campus, Room 709-2, No. 23 Baiduizijia, Shoutinan Road, Haidian District, Beijing 100048, China. Email: wangzhengyan@cnu.edu.cn

Under the umbrella term of fearful temperament, behavioral inhibition is characterized by “heightened vigilance to novelty combined with a lack of approach and active avoidance of unfamiliar objects, people, and environments” (Fox et al., 2023, p. 537). In early childhood, behaviorally inhibited children are reluctant and inclined to withdraw from unfamiliar situations (Kagan, 1997; Kagan et al., 1988). They exhibit a particularly high level of temperament-based, fearful shyness (Rothbart & Mauro, 1990), featuring “the individual fears being harmed, rejected, or facing unknown bad consequences” (An & Eggum-Wilkens, 2021, p. 2). A dominant avoidance motivation triggers both behavioral inhibition and fearful shyness (Schmidt & Poole, 2019). The inhibition/shyness trait is, by and large, biologically and physiologically determined (Kagan et al., 1988), and has moderate to substantial heritability (Smith et al., 2012). The typical behaviors of this temperamental trait emerge in infancy and start to consolidate throughout the preschool years (Kagan, 1997).

For Western, Educated, Industrialized, Rich, and Democratic (WEIRD) populations, extant research has noted unfavorable consequences of early childhood inhibition/shyness, including social anxiety (Kagan, 1997; Pérez-Edgar & Guyer, 2014), school difficulties (Rubin et al., 2009), and academic underachievement (Rubin et al., 2009). In contrast, positive developmental implications were found for inhibited/shy Chinese children, such as being more socially competent, accepted by peers, and obtaining higher levels of academic achievement (see Chen, 2019 for a review). A potential explanation is that the inhibition/shyness trait is in concordance with the traditional Chinese values of self-restraint and cautiousness (Chen, 2019). A well-behaved Chinese child was stereotypically depicted as someone who is sensitive, wary, and behaviorally restrained (Chen et al., 1998; Xu et al., 2007). Behavioral inhibition or shyness, therefore, was seen as an indication of social maturity and mastery in this context (Chen et al., 1998).

Nevertheless, a concern on the timeliness of this explanation emerges, as the abovementioned knowledge of the cultural specificity of inhibition/shyness is mostly drawn from a cohort of Chinese children born in the 1990s. These children grew up in a sociopolitical and economic climate substantially different from China’s current situation. While the behavioral expressions of inhibition/shyness had been acceptable in the traditional Chinese cultural context up until and including the generation of the 1990s (Chen et al., 1998, 2021; Chen, Chen, et al., 2009; Liu et al., 2012), the situation has begun to change in the 2000s. Owing to the massive and fast socioeconomic development in China, particularly during the past two decades, cultural meanings and social attitudes about inhibition/shyness have undergone considerable changes. With the opening-up and economic development of the Chinese society, behavioral qualities such as initiative-taking, self-confidence, and self-expressiveness, which have not been stressed traditionally, are now becoming important for personal success and embraced by the young generations (Chen, 2019; Yang et al., 2015).

More recently in the 2010s, due to the enactment of influential national policies, cultural values about inhibition/shyness underwent even more profound changes. In 2011, the Government of China announced the Outline for the Development of Children (2011–2020), in which, for the first time, promoting comprehensive child development for 0- to 3-year-olds and fulfilling their potential were highlighted as a key direction for policy reforms (The State Council of the People’s Republic of China, 2011). Later in 2012, the Ministry of Education of China released the Early Learning

and Development Guidelines for Children Aged 3 to 6 Years, which provided educational suggestions for parents and educators to facilitate young children’s interpersonal relationships and social competence. Under these directives, qualities such as self-confidence and independence, more than self-restraint and withdrawal, came to be encouraged and highly valued in the contemporary Chinese cultural context.

Regarding the connection between public policy and child development, Foster and Kalil (2005, p. 825) noted that public policies not only directly impact the child but also reshape the developmental contexts in the child’s life (potentially through affecting “the experience, expectations, and perceptions of the personnel who represent the program to participants”). Relatedly we propose that the sociopolitical changes may affect the beliefs and attitudes that social partners of young children (e.g., parents) have about how to react to the behavioral expressions of inhibition/shyness. This may further contextualize the associations between early inhibition/shyness and later social competence (Chen, 2019; Chen et al., 2005). Consequently, the positive developmental implications of inhibition/shyness once visible in the Chinese culture may gradually diminish, especially in the urban areas where economic reforms first took place resulting in fierce competition for good educational opportunities and favorable job positions (Chen, 2019; Yang et al., 2015).

In line with this trend, based mainly on samples from the 2000s and 2010s birth cohorts, a recent meta-analysis revealed that shyness is associated with more behavioral problems, poorer peer relationship quality, and lower levels of school social competence in Chinese children (X. Zhang et al., 2021). Moreover, the direction of this association differs between urban and rural areas. Specifically, among the samples of urban Chinese children, shyness predicted poorer social adjustment, poorer academic outcomes, and more peer problems (Chen et al., 2005; Chen, Wang, & Wang, 2009; Liu et al., 2012). In contrast, shyness remained predictive of higher levels of social adjustment and academic achievement (Chen et al., 2011) and better peer relationship quality (Chen, Wang, & Wang, 2009) for rural or rural migrant Chinese children.

Although these preliminary findings imply that the socialcultural shift may have affected the link between inhibition/shyness and child outcomes, most studies have focused on school-aged children and school competence. Surprisingly few studies have focused on these associations across infancy and the preschool years when the behavioral display of inhibition/shyness starts to become distinct. Few studies have adopted cross-temporal designs (Greenfield, 2018), thus limiting their capacity for directly delineating consistencies and changes in the directions of associations with inhibition/shyness across historical time. To this end, we conducted this research to address the question of how associations will be between early inhibition/shyness and later social competence among contemporary young Chinese children who were raised in a context undergoing dramatic macrolevel, sociopolitical changes. We extend the existing studies downward to the infancy and preschool period. Furthermore, we use a multisample design to test our research questions, which enables an in-depth understanding of the impacts of sociohistorical changes on early childhood inhibition/shyness and its developmental implications (see also Chen et al., 2005; Liu et al., 2012 for studies using this design with school-aged children and adolescents).

Two indicators of social competence in early childhood—the ability of being compliant and cooperative and the ability of being prosocial and altruistic—are examined in this research. While

cooperative behaviors and prosocial behaviors are both culturally salient (Chen et al., 2000) and likely affected by children's internalization of individualistic values such as an emphasis on personal interests, the extent of the impacts by such social changes may vary for these two behavioral outcomes. Prosocial behaviors, referring to actions conferring benefits on others (Giannotta et al., 2011; e.g., comforting others in distress; sharing with others in need), focus on the outcomes for others and require a motivation to promote others' welfare (Eisenberg et al., 2016). In comparison, cooperative behaviors refer to coordinated actions with the aim of achieving a shared goal (Giannotta et al., 2011; e.g., complying with parental rules willingly; endorsing and adopting adults' agenda). Cooperative behaviors focus on a net gain for all participants including the actor, and thereby require a motivation orienting to one's own welfare in addition to that for benefiting others (Eisenberg et al., 2016). As such, being prosocial may be less compatible with the emphasis on personal needs and interests than being cooperative hypothetically.

Empirical evidence supports the division of these two indicators of social competence with Chinese children. For cooperative behaviors, Chinese children have still been more compliant and cooperative than their counterparts from the WEIRD populations (Chen et al., 2003; Ding et al., 2021; Huang & Lamb, 2014). For prosocial behaviors, mixed findings have already been reported on the differences between Chinese children and children from the WEIRD populations. One study showed that Chinese children shared less than children from the WEIRD cultures (Cowell et al., 2017), whereas two studies found little cultural differences in prosocial behaviors (Samek et al., 2020; Song et al., 2021). Seemingly, the social and ideological changes that occurred in the past two decades have more strongly affected Chinese children's values and attitudes about prosocial behaviors than their values of cooperative behaviors.

Thus far, predictions of early childhood inhibition/shyness to later cooperative and prosocial behaviors remain inconclusive in the Chinese cultural context. To our best knowledge, only three studies have tested the association between inhibition/shyness and cooperative behaviors with young Chinese children, and only another three for prosocial behaviors in this age group. Specifically, inhibition/shyness was found to be positively (Chen, Chen, et al., 2009; Dong et al., 2018) or negatively associated with cooperative behaviors (Chen et al., 2014). Moreover, inhibition/shyness was found to be negatively (Li et al., 2016; Zhai et al., 2020) or not associated (Zhu et al., 2023) with prosocial behaviors. However, these studies have used small samples and none of them has included both observations and parental reports to assess child temperament and social competence outcomes. Moreover, some studies did not evaluate children's responses in social and nonsocial situations simultaneously (e.g., Dong et al., 2018; Zhu et al., 2023) while others did so. An inclusion of these two assessment methodologies to evaluate children's behaviors in social and nonsocial contexts together with using larger samples can ensure a more accurate delineation of the sources of variations in associations between inhibition/shyness and social competence (i.e., deriving only from parental perceptions or readily occurring to children's observable behavioral patterns).

In this research, we aimed to address the gaps in the existing studies and provide nuanced knowledge of the developmental implications of early inhibition/shyness in the contemporary Chinese cultural context. We scrutinize (a) how inhibition/shyness predicts cooperative behaviors and (b) how inhibition/shyness predicts prosocial behaviors. Given the inconsistent findings in the literature,

we tentatively hypothesize that shyness/inhibition would be negatively related to cooperative behaviors, presumably in the most recent birth cohorts of children and unlikely in the oldest cohorts of children. Furthermore, we expect that shyness/inhibition would be negatively related to prosocial behaviors, presumably in all the cohorts of children given that prosocial behaviors are more susceptible to the influences of internalization of individualistic values as a consequence of recent social changes in China.

Three samples of young Chinese children, whose years of birth ranged from 2009 to 2019, were included to test these two hypotheses. Across the three studies reported here, inhibition/shyness as well as cooperative and prosocial behaviors were assessed using parental reports and observations. It is also noteworthy that two samples were born after the implementation of the national policies for early childhood development and education while another sample was born before that. This offers an opportunity to examine the pattern of associations with shyness/inhibition in relation to changes in the macrolevel, sociopolitical context. Furthermore, children in the three samples vary in their age ranges, which enables an inspection of age-related effects.

This research was not preregistered; it has a combination of exploratory features and confirmatory features. The data, study materials, and analysis code that support the findings of this research are available from the cofirst authors and corresponding author upon reasonable request. We took the level of .10 as a trend for a significant result owing to the research focus on the potential changes in the directions of associations. According to the pooled association ($r = -.22$) found in the meta-analysis by X. Zhang et al. (2021), at least 127 and 160 participants are needed to obtain the power of .80 at the significance levels of .10 and .05, respectively. Considering the complexity of the research designs and our focus on potential changes in associations across historical time, we first report the findings from the most recent birth cohort (2016–2019), followed by the findings from the older (2014–2015) and oldest birth cohorts of children (2009–2010).

Study 1

Method

Participants and Procedure

The participants in Study 1 were drawn from an ongoing project that examines the (co)predictive roles of parental practices and preschoolers' temperament in social development. This project was approved by the Ethics Committee of Nanjing Normal University (study title: 5- to 6-year-old children's sharing behaviors toward older siblings; Protocol: NNU202106028). We used data from the first wave, which were collected through the professional data platform "Credamo" in November 2022. Credamo provides the opportunity to recruit attentive, nationally representative samples of participants. Mothers with 3- to 6-year-olds were eligible to participate in the project. We excluded 255 mothers because they failed the attention tests or responded to the survey unreasonably fast (less than 2 s per item).

A total of 700 mothers ($M_{\text{age}} = 31.57 \pm 5.47$ years) were included in this study, who were from 28 provinces of China. This sample is well-powered (i.e., $n \geq 127$) for the planned analyses. The mothers filled in the online questionnaires using mobile phones (94.7%) or other electronic devices (5.3%). The children (361 boys

and 339 girls) of these mothers had a M_{age} of 52.92 ± 10.20 months. Most parents were highly educated, with 81.6% of mothers and 87.6% of fathers holding a bachelor's or higher level of education. For 25.4% of the families, the family yearly income was lower than 150,000 Yuan (\approx low to lower-medium income), for 23.9%, between 160,000 and 200,000 Yuan (\approx medium income), for 28.0%, between 210,000 and 300,000 Yuan (\approx upper-medium to high income), and for 22.6%, higher than 300,000 Yuan (\approx very high income). Thus, most children were from middle- or upper-class Chinese families (see the definition in Su et al., 2023; p. 83). Most children (78.4%) were the only child at home while the others (21.6%) had at least one sibling.

Measures

Inhibition/Shyness. Parents rated child fear and shyness using the short form of the Children's Behavior Questionnaire (CBQ-SF; Putnam & Rothbart, 2006). The fear subscale (e.g., "Is afraid of loud noises") and the shyness subscale (e.g., "Acts shy around new people") both have six items. Parents reported on child behaviors in the described situations during the past 6 months on a 7-point Likert-type scale ranging from 1 (*extremely untrue of your child*) to 7 (*extremely true of your child*). The reliability was good for the fear and shyness subscales, the Cronbach's α s = .86 and .82, respectively. The mean scores of these subscales were used.

Cooperative Behaviors. We selected three items from the inhibitory control subscale of the CBQ-SF to index child cooperative behaviors (see Kochanska et al., 1994, p. 854, for discussions on this point). These items are "Can wait before entering into new activities if he/she is asked to," "Is good at following instructions," and "Can easily stop an activity when he/she is told 'no.'" These items were selected because they are similar to the items in the other assessments in Studies 2 and 3 that tap cooperative behaviors. The internal consistency of these three items was good, $\alpha = .73$. The mean score of these items was used.

Prosocial Behaviors. Parents rated child prosocial behaviors using the same-named subscale of the Strengths and Difficulties Questionnaire (SDQ; Du et al., 2008; Goodman, 1997). This subscale has five items (e.g., "Helpful if someone is hurt, upset or feeling ill") and parents responded to these items using a 3-point scale, including 0 (*not true*), 1 (*somewhat true*), and 2 (*certainly true*). The reliability of this subscale was good, $\alpha = .76$. The mean score of this subscale was used.

Results

The means, SD s, and correlations among variables are presented in Table 1. No gender difference was found in child fear, shyness, cooperative behaviors, and prosocial behaviors, F s < 2.87, p s > .30. Paternal education levels had a negative effect on child shyness, $F(5, 699) = 2.27$, $p < .05$, Cohen's $d = 0.14$. Children whose fathers had a high school or lower levels of education had higher shyness scores relative to children whose fathers had a bachelor's or higher levels of education. Paternal education levels did not predict other variables of interest. Neither maternal education levels nor family yearly income predicted any variables of interest, p s > .13. Thus, only paternal education levels were controlled for.

For correlations, child fear and shyness were moderately correlated with each other, $r = .58$, $p < .001$. Fear and shyness were

Table 1

Means, Standard Deviations, and Correlations Among Variables in Study 1

Variable	<i>N</i>	<i>M</i>	<i>SD</i>	1	2	3	4
1. MR fear	700	3.66	1.41	—			
2. MR shyness	700	3.06	1.21	.58**	—		
3. MR cooperative behaviors	700	5.73	0.93	-.19**	-.26**	—	
4. MR prosocial behaviors	700	1.57	0.38	-.28**	-.43**	.46**	—

Note. MR = mother-reported.

** $p < .01$.

both negatively associated with cooperative behaviors and prosocial behaviors, r s < $-.19$, p s < .001. Moreover, cooperative behaviors and prosocial behaviors were positively interrelated, $r = .46$, $p < .001$. Given the coherence of the two indicators of inhibition/shyness, we computed a composite for these indicators. The factor analysis yielded one factor that explained 78.9% of the total variance (both factor loadings $\geq .78$). The factor score was saved and regressed onto cooperative and prosocial behaviors. After accounting for paternal education levels and the covariance between cooperative and prosocial behaviors, the composite was associated with fewer cooperative behaviors, $\beta = -.25$, $p < .001$, and fewer prosocial behaviors, $\beta = -.39$, $p < .001$.

Summary of Findings

In Study 1, inhibition/shyness was associated with fewer cooperative behaviors and prosocial behaviors during the preschool years. This finding is in line with the meta-analysis (X. Zhang et al., 2021) and some recent Chinese studies (Chen et al., 2014; Zhai et al., 2020). Moreover, fear and shyness were moderately interrelated. This result suggests that these two indicators not only capture the nature of inhibition/shyness, but also reflect unique behavioral expressions of this trait.

While the size and representativeness of the Study 1 sample were adequate, Study 1 has some limitations. First, this study is cross-sectional, and all the assessments are based on maternal report. These issues may cause spurious correlations (e.g., due to common method bias or maternal mental health issues), possibly compromising the trustworthiness of results. Second, this study only examined the associations between inhibition/shyness and cooperative and prosocial behaviors during the preschool ages. It is unclear if the same directions of associations will be shown when children are younger, before the behavioral patterns of the inhibition/shyness trait consolidate. Thus, a longitudinal observational sample of Chinese children before the preschool years is warranted to test the overtime associations between inhibition/shyness and social competence. In Study 2, we addressed these limitations and attempted to replicate and extend our findings in Study 1.

Study 2

Method

Participants and Procedure

The participants were drawn from an ongoing project, BELONGS 2015 (Beijing Longitudinal Study 2015), which began in 2015 when infants were 6 months old. This project was approved by the Ethics

Committee of Peking University First Hospital (study title: The interaction of early rearing environment and the development of infant self-regulation: A multilevel longitudinal study; Protocol: 2015[871]). The information of this sample has been published elsewhere (Dong et al., 2022). In this study, we focused on the assessments of inhibition/shyness at Wave 1 (6.26 ± 0.36 months), Wave 2 (14.62 ± 0.57 months), and Wave 3 (24.77 ± 2.39 months), and assessments of cooperative and prosocial behaviors at Wave 4 (37.23 ± 1.24 months). Children who participated at least once at Waves 1, 2, and 3 and had valid data on one of the assessments of inhibition/shyness were included ($n = 251$, 133 boys and 118 girls). The sample size is sufficient (i.e., $n \geq 127$) for the planned analyses.

Another 43 participants (19 boys and 24 girls) were excluded either because they only participated at Wave 4 or because their parents did not respond to the questionnaires at Waves 1, 2, and 3 (but they participated at least once in the laboratory visits during these waves). The excluded and included samples did not differ in child gender ratio, $\chi^2(1) = 1.14$, $p = .29$, child age at Wave 4, Welch's F test, $F(1, 24.96) = 2.70$, $p = .11$, maternal age, $F(1, 25.74) = 0.20$, $p = .66$, maternal education levels, Mann-Whitney U test, $Z = 0.06$, $p = .96$, and maternal monthly income, $Z = -1.03$, $p = .30$. The included children were from highly educated, middle-class, urban Chinese families, as indexed by more than 90% of parents having completed college or higher levels of education and by the modes of maternal and paternal monthly income between 6,000 and 10,000 yuan (medium income).

At 6, 15, and 25 months, a battery of questionnaires was sent to the participants' homes and mothers were asked to bring them back completed during the laboratory visits. At 37 months, during the laboratory visit mothers completed the questionnaires that assessed child cooperative and prosocial behaviors. Children participated in a series of observational tasks for 1.5–2 hr, including those that measured cooperative and prosocial behaviors.

Measures

Inhibition/Shyness. At 6 months, mothers rated the fear subscale in the short form of the Revised Infant Behavior Questionnaire (Jones et al., 2021; Putnam et al., 2014). The fear subscale has six items (e.g., "How often during the last week did the baby startle at a sudden change in body position?") and mothers responded to these items on a 7-point Likert-type scale ranging from 1 (*never*) to 7 (*always*). The reliability of the fear subscale was good, $\alpha = .78$. The mean score of this subscale was used.

At 15 months, mothers rated the inhibition to novelty subscale in the Chinese version of the Infant-Toddler Social and Emotional Assessment (CITSEA; Briggs-Gowan & Carter, 1998; J. Zhang et al., 2009). The inhibition to novelty subscale has six items (e.g., "Takes a while to speak in unfamiliar situations," "is shy with new adults," and "is quiet or less active in new situations"). Mothers responded to these items on a 3-point scale, including 0 (*not true or rarely*), 1 (*sometimes true or sometimes*), and 2 (*very true or often*). The reliability of the inhibition to novelty subscale was good, $\alpha = .70$. The mean score of this subscale was used.

At 25 months, mothers rated the short form of the Early Childhood Behavior Questionnaire (Gartstein & Putnam, 2018; Putnam et al., 2006). The eight-item fear subscale (e.g., "During everyday activities, how often did your child seem frightened for

no apparent reason?") and the five-item shyness subscale (e.g., "In situations where s/he is meeting new people, how often did your child turn away?") were used. Mothers responded to these items on a 7-point Likert-type scale ranging from 1 (*never*) to 7 (*always*). The reliability was good for the fear and shyness subscales, $\alpha_s = .81$ and $.80$, respectively. The mean scores of these subscales were used.

Cooperative Behaviors. There are three indicators of cooperative behaviors at 37 months. First, in the presence of the mother, the experimenter asked the mother to guide, but not to directly help, the child to put away toys into a box (Kochanska et al., 2001). This task lasted for 3 min or until the child put away all the toys. The child's behavior within every 10-s segment was coded. We focused on committed compliance, which represents that the child enthusiastically and continuously cooperates with mothers and puts away toys needless of maternal prompts. The interrater reliability between two coders was adequate, the Cohen's $\kappa = .91$. The frequency of committed compliance was divided by the total number of intervals to create a proportion score for analyses. Second, in the absence of the mother, the child was asked to adhere to maternal rules given before she left the room and concentrate on tedious sorting and cleaning-up work (Kochanska et al., 2001). The task lasted for 5 min or until the child put away all the toys. The child's behavior within every 10-s segment was coded into one of two broad categories: (a) internalized cleanup or (b) oppositional behaviors. The latency of the first oppositional behavior was recorded using 1-s units (0–300 s). The interrater reliability between two coders was good, $\kappa = .95$. The proportion score of internalized cleanup and latency were significantly correlated, $r = .83$, $p < .001$. They were standardized and averaged to create a composite of internalization of maternal rules. Third, mothers rated child compliance using the CITSEA (Briggs-Gowan & Carter, 1998; J. Zhang et al., 2009). The compliance subscale has seven items (e.g., "Puts toys away after playing") and the reliability of this scale was acceptable, $\alpha = .62$. The mean score of this subscale was used.

Prosocial Behaviors. There were two indicators of prosocial behaviors at 37 months. First, a female experimenter, who had not interacted with the child, pretended to injure her leg when helping to move a table and displayed painful facial expressions and distressed vocalizations for 1 min (Zahn-Waxler et al., 1992). For every 5 s, we coded if children showed prosocial reactions, including physical comfort (e.g., pats), verbal comfort (e.g., ask "Are you okay?"), helping (e.g., help to move the table), indirect helping (e.g., gets the mother to help), and sharing (e.g., give the experimenter his or her toy). Three coders were trained by an expert and coded the videos. The interrater reliability was good for prosocial reactions indicated by .97 of the mean intraclass correlation among the three coders. The total frequency of these prosocial reactions was used. Second, mothers rated child prosocial peer relationships using the CITSEA (Briggs-Gowan & Carter, 1998; J. Zhang et al., 2009). The prosocial peer relations subscale has four items (e.g., "Ask for things nicely when playing with other children.") and the reliability of this scale was good, $\alpha = .74$. The mean score of this subscale was used.

Results

The means, SD s, and correlations among variables are presented in Table 2. Regarding gender differences, compared with boys, girls had slightly higher levels of mother-reported behavioral inhibition at 6 months, $F(1, 197) = 3.12$, $p = .08$, $d = 0.25$, and higher

Table 2
Means, Standard Deviations, and Correlations Among Variables in Study 2

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9
1. MR fear 6 months	199	2.93	1.19	—								
2. MR inhibition to novelty 15 months	163	0.86	0.41	.21*	—							
3. MR fear 25 months	158	3.06	1.01	.30**	.33**	—						
4. MR shyness 25 months	159	3.85	1.20	.19*	.38**	.46**	—					
5. O committed compliance 37 months	134	0.92	0.17	.02	-.01	-.09	-.09	—				
6. O internalization of M rules 37 months	134	0	0.96	-.01	-.03	-.09	-.14	.16 [†]	—			
7. MR compliance 37 months	164	1.18	0.32	-.14	-.01	-.25**	-.07	-.15 [†]	.10	—		
8. O prosocial behaviors 37 months	159	1.25	2.49	-.16 [†]	-.09	-.15 [†]	-.19*	-.06	.06	-.19*	—	
9. MR prosocial peer relationships 37 months	161	1.45	0.46	-.22*	-.24**	-.23*	-.19*	.07	.16 [†]	.31**	.04	—

Note. MR = mother-reported; M = mother; O = observed.

[†] $p < .10$. * $p < .05$. ** $p < .01$.

levels of mother-reported compliance at 37 months, $F(1, 162) = 3.83$, $p = .05$, $d = 0.30$. No gender difference was found on the other variables, $F_s < 2.49$, $p_s > .11$. None of the variables of interest were associated with maternal and paternal education levels (i.e., a high school or lower levels of education vs. college or higher levels of education), $F_s < 1.83$, $p_s > .17$. Neither maternal nor paternal monthly income was related to any variables of interest, $-.12 < r_s < .10$, $p_s > .17$.

With respect to correlations (see Table 2), the indicators of inhibition/shyness were longitudinally stable from 6 months to 25 months, $r_s > .18$, $p_s < .04$. Child fear at 25 months was negatively associated with mother-reported compliance at 37 months, $r = -.25$, $p < .01$. All the indicators of inhibition/shyness were negatively associated with mother-reported prosocial peer relationships at 37 months, $r_s < -.19$, $p_s < .03$. Except for child inhibition to novelty at 15 months ($r = -.09$, $p = .29$), the indicators of inhibition/shyness tended to relate negatively to observed prosocial behaviors as well, $r_s < -.15$, $p_s < .09$. The indicators of cooperative behaviors were only weakly interrelated, and the indicators of prosocial behaviors were not correlated. Cooperative behaviors were not consistently associated with mother-reported and observed prosocial behaviors.

Given the stability of the inhibition/shyness trait in infancy, we computed a composite for these indicators. The factor analysis yielded one factor that explained 48.7% of the total variance (all factor loadings $\geq .55$). The factor score was saved and used as the predictor in the regression model. After controlling for child gender and the covariance among social competence outcomes, infancy inhibition/shyness tended to predict fewer observed prosocial behaviors, $\beta = -.14$, $p = .06$, and significantly predicted poorer mother-reported prosocial peer relationships, $\beta = -.24$, $p < .001$, and lower levels of mother-reported compliance, $\beta = -.15$, $p = .04$. Infancy inhibition/shyness did not predict observed committed compliance, $\beta = -.05$, $p = .48$, and observed internalization of maternal rules, $\beta = -.10$, $p = .18$.

Summary of Findings

Similar to the correlation and regression results in Study 1, we found that among young Chinese children in Study 2, inhibition/shyness in infancy negatively predicted fewer observed prosocial behaviors and poorer mother-reported prosocial peer relationships at 37 months. This result confirmed that inhibited/shy children are less likely to engage in prosocial behaviors toward others in need possibly because this situation is challenging for them, as it requires interacting with unfamiliar social partners (i.e., adults and peers).

Moreover, consistent with Study 1, inhibition/shyness in infancy predicted lower scores on mother-reported compliance at 37 months. However, infancy inhibition/shyness did not predict observed committed compliance and internalization of maternal rules at 37 months. In other words, according to the perceptions of parents, inhibited/shy young Chinese children may not comply with social rules at the early preschool age. Based on observational tasks, these children did not differ from their peers on the behavioral reactions toward rules exerted with and without maternal surveillance. It is noteworthy though that the participants of Study 2 were younger than the participants of Study 1. Possibly, in infancy, children who display early indicators of inhibition/shyness may readily avoid approaching others and offering help, but they are capable of cooperating with parents with whom they are familiar, though their parents may somehow underestimate their levels of cooperation.

Although Study 2 addressed the limitations that we noted in Study 1, some other limitations remain. First, in Studies 1 and 2, we only included and examined parental reports on children's inhibition/shyness trait. Despite the consistency found between parental reports and observation for assessing inhibition/shyness (Kochanska, 1998; Smith et al., 2012), there is a need to extend our findings with an inclusion of observed inhibition/shyness. Second, as noted above, the two policies in relation to what qualities should be cultivated in Chinese children in early childhood were enacted in 2011 and 2012. The samples in Studies 1 and 2 were both born and assessed after the implementation of these national policies. How the associations between inhibition/shyness and social competence will be for young children born before the enactment of these policies remains unknown.

To address these limitations, we included Study 3. We used the data from a research project initiated in 2010, a time before the implementation of the influential policies of early childhood development and education. Participants in Study 3 can be seen as children (and parents) who experienced the transition of the macro-level, sociopolitical contexts. Moreover, we used an observational task to evaluate children's variations in active avoidance of unfamiliar environments and people together with collecting parent-reported inhibition/shyness. Finally, participants in Study 3 had an age range across the infancy and preschool periods (i.e., from 14 to 60 months), which may help to clarify whether participants' age gaps between Study 1 (from 36 to 72 months) and Study 2 (from 6 to 37 months) cause the difference found between these two studies in the predictions of inhibition/shyness to cooperative behaviors.

Study 3

Method

Participants and Procedure

The sample of BELONGS 2010 (Beijing Longitudinal Study 2010), a project began in 2010 when infants were 6 months old, was used. This project was approved by the Ethics Committee of Peking University First Hospital (study title: The interaction of early rearing environment and the development of infant self-regulation: A multilevel longitudinal study; Protocol: 2015[871]). The characteristics of this sample have been published elsewhere (Dong et al., 2018). In this study, we focused on the assessments of inhibition/shyness at Wave 3 (14.09 ± 0.84 months), Wave 4 (24.79 ± 1.13 months), and Wave 5 (37.81 ± 1.04 months), and assessments of cooperative and prosocial behaviors at Wave 6 (60.35 ± 0.72 months). Children who participated at least once at Waves 3–5 and had valid data on one of the assessments of inhibition/shyness were included ($n = 95$, 42 boys and 53 girls). This sample is underpowered (i.e., $n < 127$). To compensate for this issue, multiple measures were utilized to assess the same constructs so as to ensure the robustness of our results (following the recommendations of Duncan et al., 2014).

Another 21 participants (13 boys and eight girls) were excluded because they only participated in Waves 1 and 2 and dropped out from the project (e.g., moving to another city). The excluded and included samples did not differ in child gender ratio, $\chi^2(1) = 2.16$, $p = .14$, child age at Wave 1, $F(1, 17.62) = 0.05$, $p = .83$, maternal age, $F(1, 14.33) = 0.62$, $p = .44$, maternal monthly income, $Z = 0.34$, $p = .74$. Mothers of the included children had a slightly higher level of education than mothers who were excluded, $Z = 1.85$, $p = .06$. The included children were from highly educated, middle-class, urban Chinese families, as indexed by more than 90% of parents having completed college or higher levels of education and by the modes of maternal monthly income between 3,000 and 6,000 yuan (low to lower-medium income) and paternal monthly income above 10,000 yuan (upper-medium to high income).

At 14 and 25 months, mothers filled in the CITSEA during the laboratory visits in a separate room using a computer. At 38 months, the children participated in a series of observational tasks for 1.5–2 hr, including the tasks that assess inhibition/shyness, cooperative behaviors, and prosocial behaviors. At 60 months, the children participated in a series of observational tasks for about 2–2.5 hr, including those that assess cooperative behaviors and prosocial behaviors.

Measures

Inhibition/Shyness. At 14 and 25 months, mothers rated the six-item inhibition to novelty subscale in the CITSEA (Briggs-Gowan & Carter, 1998; J. Zhang et al., 2009). The reliability of this subscale could not be computed in Study 3 as we were unable to export maternal responses to individual items. Instead, the computer automatically calculated and exported the mean score of this subscale. According to the report on this computer-assisted assessment (J. Zhang et al., 2009), the internal consistency ($\alpha = .68$) and test–retest reliability ($r = .73$) of this subscale was good. The mean scores of inhibition to novelty were used.

At 38 months, we coded children's behavioral reactions in the initial introduction to the laboratory (Putnam & Stifter, 2005). A female

experimenter waited outside the laboratory building and greeted the child when he or she arrived with his or her family. After 1-min interaction with the family, the experimenter led the child and his or her parents to the laboratory. Throughout the process, a second experimenter observed the interactions between the first experimenter and the child and coded the child's behaviors. The first experimenter who interacted with the child also rated the child's behaviors retrospectively after arriving at the laboratory. Child behaviors including gaze aversion of the experimenter, physical avoidance from the experimenter, verbal hesitancy related to the experimenter's greetings, intensity of self-initiated nondistress vocalizations, positivity (reverse-coded), and negativity were rated by the two experimenters on 5-point scales. The ratings of these coding categories were averaged for each experimenter (see Putnam & Stifter, 2005). Because the mean rating scores of the two experimenters were consistent, $r = .44$, $p < .001$, we averaged the two mean rating scores to create a final score for child-observed inhibition/shyness.

Cooperative Behaviors. At 38 months, we observed child committed compliance in a cleanup task with maternal surveillance (Kochanska et al., 2001). The procedure and coding scheme are similar to that reported in Study 2. The interrater reliability between two coders was adequate, $\kappa = .84$. The proportion score of committed compliance was used.

At 60 months, there were three indicators of cooperative behaviors. First, the child was asked to adhere to maternal rules given before she left the room and concentrate on tedious sorting and cleaning-up work (Kochanska et al., 2001). The procedure and coding scheme is similar to that presented in Study 2. The interrater reliability between two coders was good, $\kappa = .97$. The proportion score of internalized cleanup and latency ($r = .59$, $p < .001$) were standardized and averaged to create a composite of internalization of maternal rules. Second, the "cheating" game task (Kochanska et al., 2001) was administered, which requires the child to follow the prohibition rules conveyed by an experimenter. After a short practice session, the experimenter told the child the behaviors that he or she should not do when playing the game (i.e., facing the target instead of throwing backward, leaving the marked area, throwing with the dominant hand rather than the nondominant hand, retrieving the ball after throwing, and sticking a ball manually), explained the meaning of the word "cheating," and then left the child to play alone for 3 min. We coded the prohibited cheating behaviors and behavior compatible with rules for every 3-s segment and recorded the latency of the first cheating behavior by 1-s units (0–180 s). The interrater reliability between two coders was good, $\kappa = .91$. The proportion score of behavior compatible with rules and log-transformed nonnormally distributed latency ($r = .35$, $p < .01$) were standardized and averaged to create a composite of internalization of experimenter's rules. Third, mothers rated child internalization in everyday life using the internalized conduct scale from the My Child questionnaire (Kochanska et al., 1994). Mothers rated the 20 items (e.g., "Clearly hesitates before doing something forbidden, even when alone") on a 7-point Likert-type scale, ranging from 1 (*extremely untrue, not at all characteristic*) to 7 (*extremely true, very characteristics*). The reliability of this scale was good, $\alpha = .85$. The mean score of this subscale was used.

Prosocial Behaviors. At 38 months, a female experimenter, who had not interacted with the child, pretended to injure her leg when helping to move a table and displayed painful facial expressions and distressed vocalizations for 1 min (Zahn-Waxler et al., 1992). The coding scheme is similar to that used in Study 2 and

the interrater reliability between two coders was good, $\kappa = .95$. The total frequency of children's prosocial reactions was used.

At 60 months, there were two indicators of prosocial behaviors. First, a female experimenter, who had not interacted with the child, pretended to get her fingers injured when attempting to use a binder clip and displayed painful facial expressions and distressed vocalizations for 1 min. Later, the same female experimenter pretended to spill all the pieces of a finished jigsaw puzzle on the floor when showing it to the child. The experimenter then displayed disappointed expressions and distressed vocalizations for 1 min. The coding scheme for these two tasks is the same as the one used in Study 2. The interrater reliability between two coders was good for the two tasks, $\kappa_s = .97$ and $.98$. The frequencies of children's prosocial reactions in these two tasks were correlated, $r = .27$, $p = .03$. These two frequencies were averaged to increase the assessment reliability and index observed prosocial behaviors at 60 months. Second, mothers responded to the five-item prosocial behavior subscale of the SDQ (Du et al., 2008; Goodman, 1997). The descriptions of this subscale are provided above in Study 1. The reliability of this scale was acceptable, $\alpha = .69$. The mean score of this subscale was used.

Results

The means, *SDs*, and correlations among variables are presented in Table 3. Regarding gender differences, compared to boys, girls had slightly higher levels of mother-reported inhibition to novelty at 14 months, $F(1, 74) = 3.24$, $p = .08$, $d = 0.42$, somewhat higher levels of observed committed compliance at 38 months, $F(1, 63) = 3.74$, $p = .06$, $d = 0.49$, and higher levels of observed internalization of maternal rules at 60 months, $F(1, 73) = 5.36$, $p = .02$, $d = 0.54$. No gender difference was found on the other variables, $F_s < 2.31$, $p_s > .13$. Compared to children whose mothers or fathers with a high school or lower levels of education, children whose mothers or fathers with college or higher levels of education showed more internalization of maternal rules at 60 months, $F_s > 6.81$, $p_s < .01$, and had higher scores on mother-reported internalization in everyday life at 60 months, $F_s > 5.00$, $p_s < .03$. Moreover, maternal monthly income was marginally positively related to observed prosocial behaviors at 38 months, $r = .24$, $p = .06$, and paternal monthly income was negatively related to inhibition to novelty at 25 months, $r = -.23$, $p < .05$. Given that maternal and paternal education levels were highly correlated, Spearman's rank correlation, $\rho = .77$, $p < .001$, but

maternal and paternal monthly income was only moderately correlated, $r = .35$, $p < .01$, we chose to control for child gender, maternal education levels, and maternal and paternal monthly income.

With respect to correlations among variables (see Table 3), inhibition/shyness at the adjacent waves tended to be correlated, between 14 and 25 months, $r = .22$, $p = .07$, and between 25 and 38 months, $r = .40$, $p < .01$. Inhibition to novelty at 25 months tended to relate negatively to observed prosocial behaviors at 38 months, $r = -.24$, $p = .07$, and observed prosocial behaviors at 60 months, $r = -.25$, $p = .04$, and mother-reported prosocial behaviors at 60 months, $r = -.32$, $p = .01$. Observed inhibition/shyness at 38 months was negatively associated with observed prosocial behaviors at 38 months, $r = -.38$, $p < .01$, and mother-reported prosocial behaviors at 60 months, $r = -.30$, $p = .02$. All the associations between the indicators of inhibition/shyness and cooperative behaviors were nonsignificant. The indicators of cooperative behaviors were generally not interrelated. The indicators of prosocial behaviors were only weakly interrelated. Observed and mother-reported cooperative behaviors were not consistently associated with observed and mother-reported prosocial behaviors.

We estimated a composite for the corresponding indicators of inhibition/shyness at 14, 25, and 38 months, although their associations were somewhat weaker than the indicators of inhibition/shyness in Study 2. The factor analysis yielded one factor that explained 49.5% of the total variance (all factor loadings $\geq .48$). The factor score was used as the predictor in the regression model. After controlling for child gender, maternal education levels, maternal and paternal monthly income, and the covariance between social competence outcomes, early childhood inhibition/shyness predicted fewer observed prosocial behaviors at 60 months, $\beta = -.20$, $p = .04$, and mother-reported prosocial behaviors at 60 months, $\beta = -.29$, $p < .01$. Early childhood inhibition/shyness did not predict observed committed compliance at 38 months, $\beta = -.18$, $p = .22$, observed internalization of maternal rules at 60 months, $\beta = .04$, $p = .74$, observed internalization of experimenter's rules at 60 months, $\beta = .04$, $p = .69$, and mother-reported internalization at 60 months, $\beta = -.09$, $p = .34$. Early childhood inhibition/shyness did not predict observed prosocial behaviors at 38 months, $\beta = -.23$, $p = .15$, though this standardized coefficient was compatible with those for predicting prosocial behaviors at 60 months (due to a higher level of missingness for observed prosocial behaviors at 38 months).

Table 3
Means, Standard Deviations, and Correlations Among Variables in Study 3

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10
1. MR inhibition to novelty 14 months	76	0.91	0.43	—									
2. MR inhibition to novelty 25 months	79	0.99	0.48	.22 [†]	—								
3. O inhibition/shyness 38 months	66	3.37	0.84	.06	.40**	—							
4. O committed compliance 38 months	65	0.75	0.27	-.05	-.18	-.06	—						
5. O prosocial behaviors 38 months	66	1.44	3.04	-.19	-.24 [†]	-.38**	-.24 [†]	—					
6. O internalization of M rules 60 months	75	0	0.89	.07	.04	-.09	-.01	-.01	—				
7. O internalization of E rules 60 months	76	0	0.82	-.10	.13	.08	.07	-.08	.15	—			
8. MR internalization 60 months	75	4.12	0.78	-.15	-.07	-.18	-.14	.19	.27*	-.02	—		
9. O prosocial behaviors 60 months	77	3.30	3.29	-.20	-.25*	-.14	-.06	.31*	-.09	.00	-.03	—	
10. MR prosocial behaviors 60 months	75	2.40	0.39	-.15	-.32**	-.30*	.02	.03	-.12	.02	.30**	.08	—

Note. MR = mother-reported; O = observed; M = mother; E = experimenter.

[†] $p < .10$. * $p < .05$. ** $p < .01$.

Summary of Findings

In Study 3, we replicated the negative association between inhibition/shyness and prosocial behaviors found in Studies 1 and 2. This finding is robust against different assessment methodologies (observation and parental reports) and provides further evidence to support the theoretical justification in Eisenberg et al. (2016) regarding prosocial acts asking for stronger social motivations to attend to others' welfare and actively approach others. In contrast, unlike Studies 1 and 2, early childhood inhibition/shyness did not predict any indicators of cooperative behaviors in Study 3, assessed by either observational tasks or maternal reports.¹ Therefore, it seems that associations between inhibition/shyness and cooperative behaviors are less consistent across the three studies reported here in comparison with associations with prosocial behaviors.

General Discussion

Associations between early inhibition/shyness and later social maladjustment have been well established in the WEIRD populations (Fox et al., 2023; Pérez-Edgar & Guyer, 2014; Rubin et al., 2009). However, the assumption that such associations are universal was busted when Chen et al. (1998, 2005, 2021) unveiled the culturally specific implications of inhibition/shyness for favorable developmental outcomes in Chinese children who were born about 30 years ago. In contrast to their counterparts from WEIRD cultures, inhibited/shy Chinese children were accepted by peers and regarded as socially mature by parents and teachers (Chen et al., 1998, 2021). Nevertheless, recent studies on school-aged Chinese children and adolescents have come to show unfavorable consequences of inhibition/shyness (X. Zhang et al., 2021), denoting its mismatch with the personal qualities emphasized in the contemporary Chinese cultural context after 40 years of social reforms (especially those in the recent two decades).

Against this background, our research was designed to revisit how inhibition/shyness is predictive of later cooperative and prosocial behaviors in three samples of young Chinese children who were born in the last 15 years. Our research is particularly valuable for understanding developmental implications of specific temperamental traits (i.e., behavioral inhibition and shyness) in the transition period of sociopolitical contexts. This is because cultivating cooperative and prosocial behaviors continues to be highlighted as a critical educational goal in China according to the recent national educational policy (The Ministry of Education of China, 2012). Since these social competencies are similarly highly valued across the pre-reform and reform eras of the Chinese society, a tweak of directions of associations with inhibition/shyness from the Chen et al. studies to our research is most likely owing to the changes in the cultural values of this temperamental trait over historical time.

There are similarities and differences in the findings of the current three studies. Regarding similarities, first, the coherence of indicators of inhibition/shyness against the variations of the developmental stages (infancy or the preschool ages, Studies 1 and 2) and assessment methodologies (observation or adults' report, Study 3) is confirmed. Measurements that index children's behavioral reactions in unfamiliar social and nonsocial situations are interrelated at the moderate level, indicating that these indicators all attribute to the fundamental psycho-behavioral quality of inhibition/shyness but also represent unique aspects of this trait to a certain extent (Fox et al., 2023; Rubin et al., 2009).

Second, converging evidence supports a negative prediction of inhibition/shyness to later prosocial behaviors throughout early childhood. Our results support the premise in Eisenberg et al. (2016) that prosocial behaviors require a strong social motivation to actively approach others and act altruistically. Because inhibited/shy children share a similar physiological, neural, and cognitive profiles with those who have social anxiety (Pérez-Edgar & Guyer, 2014), inhibited/shy children may find it difficult to regulate their overplayed physiological systems (Kagan et al., 1988) and overcome their attention biases to threat (e.g., negative evaluations from others; Rubin et al., 2009). Therefore, approaching others and engaging in prosocial acts may be arduous for these children who are physiologically underprepared for interacting with others (see Karasewich et al., 2023).

With respect to differences, inconsistent patterns were shown for the associations between early inhibition/shyness and later cooperative behaviors across the current three studies. In chronological order, early childhood inhibition/shyness was not predictive of indicators of cooperative behaviors (for those born in 2009–2010, Study 3), showed a mixed pattern of associations (for those born in 2014–2015, Study 2), and was weakly but significantly related to fewer cooperative behaviors (for those born in 2016–2019, Study 1). Overall, there is a detectable trend toward a negative connection between these two constructs over historical time. Nevertheless, it should be noted that the assessment methods used in the three studies varied. This could contribute to variations in the results on the relations between shyness/inhibition and cooperative behaviors, though such methodological differences seem to have little impact on the associations with prosocial behaviors.

The differences in the associations with cooperative behaviors across our studies may imply that parental perceptions of child inhibition/shyness are gradually changing across the past decade, especially regarding whether an inhibited/shy child is an obedient and compliant child. Social changes impart cultural meanings of behaviors (Chen, 2019). Presumably, Chinese parents progressively become concerned about whether young children can autonomously "choose" to cooperate with others and voluntarily take in adults' rules, rather than passively obeying and following parental directions. In this sense, the behavioral display of inhibition/shyness might no longer be deemed as socially mature and self-disciplined. Instead, parents may be inclined to view these behaviors as a child being emotionally aroused and lacking in self-confidence. This might potentially explain the mixed pattern of associations found between inhibition/shyness and cooperative behaviors across the three birth cohorts (2009–2010, 2014–2015, and 2016–2019) from which our samples were drawn.

Strengths, Limitations, and Future Directions

The current research has at least three strengths. First, we adopted a cross-temporal design (Greenfield, 2018) and leveraged data from three samples of young Chinese children to test our research questions. Second, multimethod assessments were administered to measure children's inhibition/shyness and social competence longitudinally. Third, we considered behavioral inhibition in early childhood, extending the previous studies that focus mostly on shyness of school-aged

¹ These results are robust against an inclusion or exclusion of covariates.

Chinese children and adolescents. Overall, these strengths enable us to clarify how early inhibition/shyness is differentially predictive of prosocial behaviors and cooperative behaviors in the contemporary Chinese cultural context.

Our research also has limitations. First, while the inhibition/shyness trait is rooted in children's differences in physiological underpinnings, we did not have assessments on these indicators. Across the studies, we only used one observational task to evaluate children's behavioral reactions in unfamiliar situations. Given the importance of the physiological and behavioral characteristics for qualifying the inhibition/shyness trait, our findings need to be interpreted with a consideration of these methodological limitations. Second, we only considered child social competence observed in interactions with adults but not with peers. Of particular relevance is that inhibited/shy children may find it relatively challenging to take the lead in the interactions with these socially competent partners, especially unfamiliar adults. Thus, our findings may not be applied to the associations with social competence outcomes assessed in the presence of familiar peers or when interpersonal interactions are not necessary (Karasewich et al., 2023). Third, the sociodemographic backgrounds are somehow alike across our three samples (i.e., children from highly educated middle-class families). Given that the associations with shyness for adjustment outcomes could be reversed for rural children as compared with urban children (Chen, Wang, & Wang, 2009), a lack of participants from other socioeconomic strata limits our capacity to determine the generalizability of the current findings to the different populations of young Chinese children. Fourth, for Study 1 specifically, we used a proxy measure of cooperative behaviors and a cross-sectional design. Thus, replication studies are needed to confirm our results in Study 1. We, and other researchers, should design and conduct multiinformant, multimethod, and multisituation longitudinal studies in inhibition/shyness to address these limitations in the future.

Deriving from the current findings, there are several future directions. First, we surmise that the changes in associations between inhibition/shyness and cooperative behaviors are due, at least in part, to ideological changes in the Chinese society toward a negative evaluation of this temperamental trait, yet there is a lack of direct evidence that supports this hypothesis. Thereupon, a possible direction is to examine how parents of various birth cohorts of children differ in their views about the inhibition/shyness trait, in concert with social changes occurring in China over the past 40 years. Second, a process that might bridge early inhibition/shyness and later social competence is how social partners of inhibited/shy children (e.g., parents, peers, and teachers) react to these children's behavioral expressions in daily life (Chen et al., 2021). However, this process has seldom been examined and this can be a direction for future research. Third, urban–rural differences in the directions of predictions of inhibition/shyness to social competence have seldom been examined for young Chinese children. Given that much of the economic and social gains in urban areas have not been felt in rural areas (Chen et al., 2011), conducting such group comparisons may expand the understanding of how ongoing macrolevel, sociopolitical changes sculpt group variations in the perceptions and evaluations of the inhibition/shyness trait from a young age in contemporary Chinese society. Fourth, at a conceptual level, the inhibition/shyness trait that we assessed mainly represents fearful or avoidant shyness, which emerges early in infancy and is rooted in temperament-based, psychophysiological differences in responses to novelty (Schmidt & Poole,

2019). Another dimension—self-conscious or conflicted shyness—concerns conflicting emotions of fear and interest in social situations, which does not emerge until the preschool years and coincides with increasing levels of self-awareness and a need to be socially integrated with others (Schmidt & Poole, 2019). Stepping out of our findings, future research may further compare relations between self-conscious shyness and social competence across various cohorts of Chinese children to add to the knowledge of how social changes have sculpted the implications of the shyness trait for child development.

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