




Exploring Similarities and Differences Between Shyness and Social Anxiety: An Analysis of Their Relations with Social Emotional and Language Outcomes in Hong Kong Kindergarteners

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Abstract

This study investigates the similarities and differences between Hong Kong kindergarteners' shyness and social anxiety and their possible relations with social emotional adjustment and the development of receptive language abilities. Data were collected from three kindergartens, with 71 children (mean age = 52.6 months, $SD = 7.28$; 48% boys) and their major caregivers participating at two time points, six months apart. Findings showed that children's shyness and social anxiety levels were strongly correlated, and both were moderately correlated with children's social emotional difficulties. Interestingly, children's shyness uniquely predicted social emotional difficulties beyond social anxiety, but children's social anxiety did not significantly predict their difficulties beyond shyness. Additionally, neither shyness nor social anxiety were found to be associated with children's Cantonese receptive language skills. Our results highlight the strong similarities between shyness and social anxiety. Given the intricate interplay among the constructs examined in this study, more research is needed to further understand their relations and interactions. This knowledge may help educators to identify appropriate intervention targets to facilitate better language outcomes among shy and socially anxious kindergarteners.

Keywords Kindergarteners · Receptive language · Shyness · Social anxiety · Social emotional difficulties

Résumé

Cette étude examine les similitudes et les différences entre la timidité et l'anxiété sociale des enfants de maternelle de Hong Kong et leurs relations possibles avec l'adaptation émotionnelle sociale et le développement des capacités de langage

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réceptif. Les données ont été recueillies dans trois jardins d'enfants, avec 71 enfants (âge moyen = 52,6 mois, écart-type = 7,28 ; 48 % de garçons) et leurs principaux responsables participant à deux moments, à six mois d'intervalle. Les résultats ont montré que les niveaux de timidité et d'anxiété sociale des enfants étaient fortement corrélés, et que les deux étaient modérément corrélés avec les difficultés socio-affectives des enfants. Il est intéressant de noter que la timidité des enfants prédit de manière unique les difficultés socio-affectives au-delà de l'anxiété sociale, mais que l'anxiété sociale des enfants ne prédit pas de manière significative leurs difficultés au-delà de la timidité. En outre, ni la timidité ni l'anxiété sociale n'ont été associées aux compétences linguistiques réceptives des enfants en cantonais. Nos résultats soulignent les fortes similitudes entre la timidité et l'anxiété sociale. Étant donné l'interaction complexe entre les concepts examinés dans cette étude, d'autres recherches sont nécessaires pour mieux comprendre leurs relations et leurs interactions. Ces connaissances pourraient aider les éducateurs à identifier des cibles d'intervention appropriées pour favoriser de meilleurs résultats linguistiques chez les enfants timides et socialement anxieux de la maternelle.

Resumen

Este estudio investiga las similitudes y diferencias entre la timidez y la ansiedad social de los niños de jardín de infancia de Hong Kong y sus posibles relaciones con el ajuste emocional social y el desarrollo de las capacidades del lenguaje receptivo. Se recogieron datos de tres jardines de infancia, con 71 niños (edad media = 52,6 meses, DE = 7,28; 48% varones) y sus cuidadores principales que participaron en dos momentos, con seis meses de diferencia. Los resultados mostraron que los niveles de timidez y ansiedad social de los niños estaban fuertemente correlacionados, y ambos estaban moderadamente correlacionados con las dificultades socioemocionales de los niños. Curiosamente, la timidez de los niños predijo de forma única las dificultades emocionales sociales más allá de la ansiedad social, pero la ansiedad social de los niños no predijo de forma significativa sus dificultades más allá de la timidez. Además, ni la timidez ni la ansiedad social se asociaron con las habilidades lingüísticas receptivas cantonesas de los niños. Nuestros resultados ponen de relieve las grandes similitudes entre la timidez y la ansiedad social. Dada la intrincada interacción entre los constructos examinados en este estudio, se necesita más investigación para comprender mejor sus relaciones e interacciones. Este conocimiento puede ayudar a los educadores a identificar objetivos de intervención apropiados para facilitar mejores resultados lingüísticos entre los niños de preescolar tímidos y socialmente ansiosos.

Introduction

Kindergarten is one of the earliest contexts in which children acquire their social and early academic skills. Children at this stage have increasing opportunities to interact with others and engage in prosocial behaviors, which may increase their social skills and promote positive relationships with peers and teachers (Sette et al., 2018). The

kindergarten years are also a crucial time for children to develop their language abilities. During this period, children's language skills expand rapidly as they engage in various language-rich activities and interactions with peers and teachers.

Nonetheless, kindergarten context can be particularly stressful for shy children, as they are often more inhibited and appear more fearful and socially anxious in others' presence (Coplan & Arbeau, 2008). As such, research on social development in kindergarteners has revolved around how children's shyness is related to their social functioning and school readiness (Jones et al., 2014; Rubin et al., 2009). Given the significance of language in a child's overall development, this study investigates the relationship between shyness, social anxiety, and children's language development, in hopes of providing valuable insights into understanding the unique challenges faced by shy or socially anxious children in the kindergarten setting and identify potential areas of support.

Shyness and Social Anxiety in Kindergarten Children

Shyness is a temperamental trait characterized by wariness toward novel social situations and high levels of self-consciousness in perceived social evaluation (Coplan et al., 2004; Sette et al., 2018). Shyness can be manifested as social disengagement that may contribute to children being less inclined to initiate or engage in direct interactions, particularly with unfamiliar peers. However, shy children may still have a desire for social interaction and may choose to sit alone while attentively observing others interact or engage in parallel play with other children (Lane & Bowman, 2021). LaBounty et al., (2018) also found that infants with a shy temperament style demonstrated a longer attention span for novel stimuli. Nonetheless, other research has noted that shy children are prone to experience elevated physiological and emotional reactivity in social situations (Fox et al., 2005) and their desire to interact with peers may be inhibited by feelings of fear and anxiety (Jones et al., 2014).

Social anxiety is defined as the experience of excessive fear of the possibility of being evaluated by others in real or imagined social situations, thereby causing distress and avoidance of social interaction (Morrison & Heimberg, 2013). The presentation of social fear can be displayed in various forms, including physiologically reactive symptoms such as heart palpitations, sweating, flushes, and trembling (Heiser et al., 2009). Several longitudinal studies have revealed a correlational relationship between children's shyness and their social anxiety. Heightened shyness levels in early childhood have been found to predict the development of anxiety disorders, particularly social anxiety disorder (Chronis-Tuscano et al., 2015; Clauss & Blackford, 2012).

Recent studies have indicated that social anxiety disorder typically emerges during childhood, with an estimated lifetime prevalence rate ranging from approximately 8 to 13% (Colonnese et al., 2017). Various factors contribute to the development of shyness and social anxiety in children. Firstly, temperament plays a significant role in children's expression of shyness and social anxiety (Rothbart, 2011). Longitudinal studies have consistently demonstrated that behavioral inhibition is

a major risk factor for the development of internalizing problems, including social anxiety disorder (Bayer et al., 2011; Kagan, 2012). Furthermore, parenting styles and practices exert a crucial influence on the manifestation of shyness and social anxiety in children. Hostile and overly critical maternal parenting, for instance, have been found to contribute to social withdrawal in children with behavioral inhibition (Rubin et al., 2002), while affectionate yet overprotective maternal parenting can discourage children's autonomy and further contribute to social withdrawal (Degnan et al., 2008). Importantly, there exists a co-occurring and reinforcing relationship between temperamental inhibition and maladaptive parenting over time. Inhibited children's tendency to elicit protective behavior from parents hinders their opportunities to overcome social challenges, thus reinforcing the expression of shyness and social anxiety (Degnan et al., 2008). Thus, the role of behavioral inhibition, along with the influence of parenting styles, indirectly suggests a potential relationship between shyness and social anxiety in children, with shyness potentially serving as a precursor or early manifestation of social anxiety.

By definition, the conceptualizations of shyness and social anxiety appear to overlap. Nonetheless, it remains unclear whether the two constructs are qualitatively distinct or whether they exist along a continuum and merely differ in severity of symptoms. The heterogeneity of shyness hypothesis proposes that shyness is a broader and more heterogeneous construct than social anxiety, and the two constructs are qualitatively distinct with some shared properties (Heiser et al., 2003, 2009; Poole et al., 2017). In particular, Coplan and Rubin (2010) emphasized that while social anxiety is more focused on the fear of negative evaluation, shyness encompasses a broader range of experiences and includes both the emotional and behavioral aspects of social withdrawal. Thus, shyness can be seen as a precursor or risk factor for the development of social anxiety, but not all shy individuals will necessarily develop clinically significant social anxiety.

By observing participants' distress using the Subjective Units of Distress Scale and measuring heart rate and skin conductance during a 3-min unstructured conversation task with a stranger, Heiser et al. (2009) found differences in the presentation of social anxiety among a group of highly shy individuals. Within the highly shy group, approximately one-third did not have any social fears, one-half did not display avoidant behavior, and one-third did not experience any somatic symptoms when encountering feared social situations (Heiser et al., 2009). Chavira et al. (2002) also noted that out of the 2202 participants classified as highly shy (90th percentile) in their study, only 49% of them had social anxiety as self-reported on the Social Phobia Scale and Social Interaction Anxiety Scale, indicating that an individual can be extremely shy yet does not have social anxiety. Taken together, these studies lend support to the hypothesis that shyness and social anxiety share certain characteristics but are partially distinct, with shyness being a broader construct than social anxiety (Heiser et al., 2003, 2009; Poole et al., 2017).

However, some researchers argued that shyness and social anxiety exist along a continuum, with social anxiety viewed as an extreme form of shyness (Dalrymple & Zimmerman, 2013; Hofmann et al., 2004; Schneier et al., 2002). Specifically, support for the continuum hypothesis suggests that shyness and social anxiety share common features with varying degrees of severity, including social skills deficits

(e.g., aversion of gaze), avoidance of social situations, and fear of negative evaluation (Dalrymple & Zimmerman, 2013). Thus, as shyness increases, an individual's social fears and the number of avoidant behaviors also increase significantly (Henderson et al., 2014). Moreover, those with social anxiety are observed to display more impaired social functioning than shy individuals (Hofmann et al., 2004). This aligns with the understanding that social anxiety represents a heightened manifestation of shyness in terms of its impact on social functioning and the level of impairment experienced by individuals.

Despite various hypotheses, the manner in which shyness and social anxiety manifest in young children and their distinctive characteristics are still unclear. In our study, we aim to investigate the unique aspects of these constructs by examining their distinct impacts on children's socioemotional difficulties, specifically peer problems, emotional problems, and prosocial behaviors. Previous research has shown that shyness and social anxiety in young children are associated with school adjustment difficulties (Zhu et al., 2019). The transition to formal schooling can be particularly stressful for shy and anxious kindergarteners. Challenges these children face entering kindergarten include adjusting to a novel school environment, meeting a large group of unfamiliar peers, and adapting to new demands (e.g., following school schedules and rules; Zhu et al., 2019). Furthermore, shy and anxious children often take longer to respond in conversations and speak less frequently; thus, teachers and peers tend to perceive them more negatively (Crozier & Perkins, 2002). Considering these factors, our study aims to examine both shyness and social anxiety and their associations with kindergarten children's socioemotional difficulties, with the goal of unraveling their similarities and distinctiveness. Specifically, we seek to clarify whether shyness has a unique impact on socioemotional difficulties beyond social anxiety, shedding light on the nuanced differences between these two constructs. By studying these associations, we hope to advance our understanding of shyness and social anxiety in young children and their implications for social and emotional well-being.

Shyness, Social Anxiety, and Receptive Language

Spere and Evans (2009) found that shyness in junior kindergarten predicted compromised receptive and expressive vocabulary in senior kindergarten. Likewise, Strand et al. (2011) found a unidirectional relation between shyness and social anxiety in kindergarten and the development of receptive vocabulary six months later, suggesting that early shy and socially anxious behaviors might impact the emergence of children's receptive language skills. According to researchers, the combination of shyness and social anxiety can potentially hinder children's verbal participation and practice with others, thereby limiting their ability to communicate effectively (Evans, 2010). Such communication includes hearing and discriminating language sounds and understanding and following oral instructions (Strand et al., 2011). Therefore, the effects of shyness and social anxiety on children's social communication may be partially responsible for their deficits in receptive language.

Nonetheless, several studies have found no significant associations between children's shyness and receptive language (Smith Watts et al., 2014; Zhu et al., 2019). For example, Smith Watts et al. (2014) found that both shyness observed in person and reported by parents of toddlers at ages 14, 20, and 24 months had minimal associations with their receptive language development. It was hypothesized that weaker language skills in shy and socially anxious children might be better explained by their reticence to respond rather than deficiencies in language development (Smith Watts et al., 2014). The existing research provides limited insights into whether shyness and social anxiety directly hinder language acquisition or if other factors explain the observed language difficulties. Thus, the inconsistent findings and lack of consensus regarding the association between shyness, social anxiety, and receptive language development calls for further investigation to clarify the nature and extent of the relationship between these constructs.

The Present Study

The present study sets apart from previous work in this area by adopting a prospective design to address the similarities and differences between kindergarteners' shyness and social anxiety, and their possible relations with social adjustment and the development of receptive language skills. To our knowledge, the relations between these constructs have not been studied previously in young children, let alone in a prospective design across time points.

To examine the similarities and differences between shyness and social anxiety, we assessed kindergarten children's shyness and social anxiety using the Revised Cheek and Buss Shyness Scale (Cheek, 1983) and Preschool Anxiety Scale (Spence et al., 2001) at the beginning of the 6-month period. Using correlation and hierarchical regression analyses, we further examined their concurrent associations with children's social emotional difficulties (e.g., peer problems, prosocial behaviors, and emotional symptoms) as reported by parents in the Strengths and Difficulties Questionnaire (Goodman, 1997). If social anxiety is simply an extreme form of shyness, we should observe stronger correlations between social anxiety and social emotional difficulties than between shyness and social emotional difficulties. If shyness and social anxiety are qualitatively distinct, we would expect to observe unique contributions of shyness and social anxiety, respectively, in their associations with social emotional difficulties. By unraveling the similarities and distinctiveness between these traits and examining their associations with socioemotional problems and prosocial behaviors, our research adds new insights into the challenges faced by shy and socially anxious kindergarteners in their social interactions and relationships.

Moreover, we seek to investigate whether children's shyness and social anxiety are associated with their receptive language, both concurrently and across time points. To do so, hierarchical regression analyses were conducted to explore whether shyness and social anxiety significantly predicted children's receptive language development across a 6-month period. We hypothesized that both shyness and social anxiety would be associated with children's receptive language. Furthermore, we would anticipate

observing distinct impacts of shyness and social anxiety on their associations with receptive language, highlighting the differences between these constructs.

Overall, our study recognizes the importance of social adjustment, considering the potential implications of shyness and social anxiety on children's social interactions and relationships. By examining the associations between these traits, we aim to provide insights into the social emotional development of kindergarteners who experience shyness and social anxiety.

Method

Participants

The study was reviewed and approved by the Departmental Research Ethics Committee at the authors' institution prior to the recruitment of participants. Seventy-one Cantonese-speaking kindergarteners in Hong Kong (mean age=52.6 months, SD=7.28; 37 boys and 34 girls) were recruited using random sampling from three local kindergartens, where the medium of instruction was Cantonese. A flier introducing the research and a parent consent form were disseminated to all parents of Year 1 and Year 2 kindergarteners in these three schools. A total of 115 parents consented to participate in the research; however, only seventy-one of them responded to our contact and participated at both time points. All children included in this study were native Cantonese speakers and were not diagnosed with special educational needs. Parents of the participating children were requested to fill out an online questionnaire regarding their demographic information, and their children's social anxiety, shyness, and social emotional difficulties. Due to the COVID-19 restrictions, all three kindergartens requested the data collection to be completed online via Zoom outside of school hours.

Procedures

Consent forms were obtained from the parents via the kindergarten teachers, and parents who agreed to have their children participate in the study were contacted by the first author to schedule an individual testing session for the child to be conducted via Zoom by trained experimenters. Children were assessed twice, six months apart, at Time 1 and Time 2, respectively, with the receptive language task. Data on children's demographics, social anxiety, shyness, and social emotional difficulties were collected from their parents at Time 1 only.

Measures

Child Assessment

Receptive Language Children's receptive language was assessed using the revised version of the Peabody Picture Vocabulary Test, with 40 items in total (PPVT; Dunn & Dunn, 1981). Each item consisted of four pictures, and children were asked to

select from the four pictures the one that best matched the vocabulary they heard. Two sample items were shown before the 40 test items, and one point was awarded for each correct answer. The revised version has been used in other local research with Hong Kong kindergarteners. Lo and Shum (2021) reported a Cronbach's alpha of 0.89 for this task for their kindergarten sample. Moreover, recent research findings indicated that the virtual administration of the PPVT was reliable, and the results were consistent with the outcomes found with in-person testing (Duricy et al., 2023). Cronbach alphas for the current sample were 0.77 and 0.84, respectively, at Time 1 and Time 2. Test–retest reliability was calculated to be 0.71.

Parent Questionnaire

Demographic Information This part of the questionnaire comprised questions on the child's sex, date of birth, who the primary caregiver was, the caregiver's age, education level and occupational status, monthly household income, number of siblings, and average number of playdates per month the child had before the pandemic outbreak.

Shyness The Chinese version of the Cheek and Buss questionnaire consists of 16 items modified from the original 20-item scale for assessing children's shyness (Cheek & Melichor, 1985). The original scale was developed to correspond to the physiological, behavioral, and affective aspects of shyness described in previous research (Cheek, 1983). The 20-item shyness scale is generally considered a sound measure of shyness with good psychometric properties (Cheek & Krasnoperova, 1999; Hopko et al., 2005). The internal reliability of the 20-item scale was 0.94, and its test–retest reliability was 0.91 (Cheek & Melchior, 1985; Melchior & Cheek, 1990). The modified Chinese version is a parent/caregiver report and has been used among Hong Kong kindergarteners in previous research (Tong et al., 2011). Each item was rated on a 5-point Likert scale ranging from 1 (*very characteristic/true*) to 5 (*extremely uncharacteristic/untrue*). The raw scores were reverse coded such that high scores reflected high levels of shyness. Cronbach's alpha for the current sample was 0.92.

Social Anxiety The Preschool Anxiety Scale is a 28-item parent-rated questionnaire that measures children's overall anxiety levels (Leung et al., 2019). Given that the current study focused on children's social anxiety level, only the six items under the social anxiety subscale were included. Parents were asked to rate on a five-point scale from 0 (*not at all*) to 4 (*very often true*) regarding how often each item was true for their child. The subscale score was calculated by adding the item scores. High scores reflected high levels of social anxiety. The Social Anxiety subscale demonstrated acceptable internal consistency, with a Cronbach's alpha coefficient of 0.77 (Leung et al., 2019). Cronbach's alpha for the current sample was 0.85.

Social Emotional Difficulties The Strengths and Difficulties Questionnaire (SDQ) is a 25-item checklist for screening children and youth for behavioral problems (Goodman et al., 2003; Lai et al., 2010; Silva et al., 2015). Parents were asked to respond based on the behavior of their child over the past six months. Each subscale consists of five items rated on a 3-point scale of "*not true*", "*somewhat true*", or

“*certainly true*”. The subscale score was calculated by adding the scores of the five items. Three subscales were used in this study to identify children’s social emotional difficulties, namely, peer problems subscale, prosocial behaviors subscale, and emotional problems subscale. Cronbach’s alphas for the three subscales in the current sample were 0.50, 0.68, and 0.63, respectively. The prosocial behaviors subscale was reversely coded and combined with the peer problems subscale and emotional problems subscale to give a total score for social emotional difficulties, a higher score of which signified more difficulties observed. Cronbach’s alpha for the total score of social emotional difficulties was 0.75 in this study.

Results

Table 1 shows the demographic information of the participating children and their families. Thirty-one percent of participating children were single child, while 60.6% with one sibling, 7.0% with two siblings, and 1.4% with three siblings. More than half of the participants were from families with a monthly household income higher than the median monthly household income in Hong Kong. Likewise, more than half of the participants’ major caregivers were their mothers, and they were reported to spend more than three hours together daily. Regarding how participants spent their leisure time, 71.8% of the children were reported to have playdates once a week prior to COVID-19 restrictions; while, 15.5% had playdates once a month and 12.7% had playdates once every two months.

An analysis was conducted to examine the data for normality and outliers prior to testing the hypotheses. Nonparametric analyses were subsequently conducted as tests for normality of outcome measures were statistically significant. In particular, Spearman correlations were used in bivariate analyses instead of Pearson correlations. Means and standard deviations of the raw scores for measures at Time 1 and Time 2, the reliability coefficients (Cronbach’s alphas) of these measures, and the skewness and kurtosis values are presented in Table 2. No significant sex differences were found for all measures at both time points ($ps > 0.05$). Additionally, correlational analysis was conducted between demographic measures and outcome variables. Only child’s age was significantly correlated with all outcome variables ($ps < 0.05$) and included as a controlled variable in the main analyses.

Shyness, Social Anxiety, and Social Emotional Difficulties

Spearman correlations among all variables at Time 1 and Time 2 are presented in Table 3, upon controlling for the child’s age. The correlation results (Table 3) revealed that children’s shyness and social anxiety were strongly correlated ($\rho = 0.73$; $p < 0.001$). Furthermore, both shyness and social anxiety were similarly correlated with children’s overall social emotional difficulties (shyness: $\rho = 0.63$, $p < 0.001$; social anxiety: $\rho = 0.53$, $p < 0.001$), peer problems (shyness: $\rho = 0.51$, $p < 0.001$; social anxiety: $\rho = 0.44$, $p < 0.001$), emotional problems (shyness: $\rho = 0.53$, $p < 0.001$; social anxiety: $\rho = 0.48$, $p < 0.001$), and their prosocial behaviors

Table 1 Demographic information of the participating children and their families

| Category | Variable | <i>M/n</i> ^a | <i>SD/%</i> ^a | |
|---|--|-------------------------|--------------------------|--------|
| Child | Age (months) | 52.6 | (7.3) | |
| | <i>Sex</i> | | | |
| | Male | 37 | (52.1) | |
| | Female | 34 | (47.9) | |
| | <i>Grade</i> | | | |
| | K1 | 37 | (52.1) | |
| | K2 | 34 | (47.9) | |
| | <i>Number of siblings</i> | | | |
| | 0 | 22 | (31.0) | |
| | 1 | 43 | (60.6) | |
| | 2 | 5 | (7.0) | |
| | 3 | 1 | (1.4) | |
| | <i>Average number of playdates prior to COVID-19</i> | | | |
| | Once a week | 51 | (71.8) | |
| | Once a month | 11 | (15.5) | |
| | Once every two months | 9 | (12.7) | |
| | Caregiver | <i>Relationship</i> | | |
| | | Father | 3 | (4.2) |
| | | Mother | 51 | (71.8) |
| Other ^b | | 17 | (23.9) | |
| <i>Age (years)</i> | | | | |
| Below 20 | | 0 | (0.0) | |
| 20–30 | | 6 | (8.5) | |
| 30–40 | | 43 | (60.6) | |
| 40–45 | | 14 | (19.7) | |
| 45 above | | 8 | (11.3) | |
| <i>Education level</i> | | | | |
| Primary | | 5 | (7.0) | |
| Secondary | | 12 | (16.9) | |
| Tertiary | | 54 | (76.1) | |
| <i>Occupation status</i> | | | | |
| Unemployed | 31 | (43.7) | | |
| Employed | 40 | (56.3) | | |
| <i>Monthly household income (HKD)^c</i> | | | | |
| Below 30,000 | 10 | (14.1) | | |
| 30,000–40,000 | 13 | (18.3) | | |
| Above 40,000 | 48 | (67.6) | | |

^aMeans and standard deviations (in brackets) of child's age, all other variables are presented as number of persons and percentages (in brackets)

^bOther relationships included grandparent ($n=8$) and domestic helper ($n=9$)

^cMedian monthly household income in Hong Kong in 2020=HKD \$34,500. (Source: General Household Survey, Census and Statistics Department)

Table 2 Reliabilities (Cronbach's alpha), means, and standard deviations (SD) of all measures

| Measure (highest possible score) | Time 1 | | | | | Time 2 | | | | |
|---------------------------------------|-------------|-------|-------|----------|----------|-------------|-------|------|----------|----------|
| | Reliability | M | SD | Skewness | Kurtosis | Reliability | M | SD | Skewness | Kurtosis |
| Shyness (85) | 0.92 | 42.86 | 11.23 | 0.17 | -0.98 | - | - | - | - | - |
| Social Anxiety (24) | 0.85 | 9.83 | 4.64 | 0.15 | -0.31 | - | - | - | - | - |
| Social Emotional Difficulties (30) | 0.75 | 8.06 | 4.27 | 0.84 | 0.39 | - | - | - | - | - |
| Peer Problems (10) | 0.50 | 2.46 | 1.67 | 0.34 | -0.54 | - | - | - | - | - |
| Prosocial Behaviors ^a (10) | 0.68 | 6.61 | 1.92 | -0.25 | 0.07 | - | - | - | - | - |
| Emotional Problems (10) | 0.63 | 2.20 | 1.90 | 0.84 | 0.27 | - | - | - | - | - |
| Receptive Language (40) | 0.77 | 29.65 | 5.45 | -0.79 | 0.54 | 0.84 | 33.24 | 5.08 | -2.35 | 10.70 |

^aMean subscale score presented without reversing the scores

(shyness: $\rho = -0.25$, $p = 0.03$; social anxiety: $\rho = -0.26$, $p = 0.03$). Importantly, we did not observe stronger correlations between social anxiety and social emotional difficulties than between shyness and social emotional difficulties.

To further examine whether shyness and social anxiety are distinct, hierarchical regression analyses were conducted to investigate the unique impacts of shyness and social anxiety on social emotional difficulties and the subscales of the SDQ. Table 4 shows that children's shyness uniquely explained approximately 9% of the variance of total social emotional difficulties beyond social anxiety ($\Delta R^2 = 0.09$, $F[1, 67] = 10.12$, $p < 0.01$), with Cohen's effect size value of $f^2 = 0.78$. Furthermore, it also uniquely explained approximately 10% variance of their peer problems ($\Delta R^2 = 0.10$, $F[1, 67] = 8.83$, $p < 0.01$) and 7% variance of their emotional problems ($\Delta R^2 = 0.07$, $F[1, 67] = 6.35$, $p = 0.01$), with an effect size of $f^2 = 0.62$ and $f^2 = 0.66$, respectively. By contrast, children's social anxiety did not significantly predict the total social emotional difficulties and the subscale scores beyond shyness. Based on the current sample size and effect size of $f^2 = 0.60$, with $\alpha = 0.05$, the post hoc power reached over 0.99.

Shyness, Social Anxiety, and Receptive Language

Based on the Spearman partial correlation results (Table 3), there was no significant association between shyness and receptive language skills at Time 1 ($\rho = -0.04$; $p = 0.74$), nor between social anxiety and receptive language skills at Time 1 ($\rho = 0.04$; $p = 0.78$). Across time points, both shyness and social anxiety at Time 1 were not significantly correlated with receptive language at Time 2.

Hierarchical regressions were further conducted to predict receptive language at Time 1 and Time 2, with children's age entered as a controlled variable in the first step, social anxiety in the second step, shyness in the third step, and the interaction between shyness and social anxiety in the final step (Table 5). Analogous hierarchical regressions were performed by entering shyness in the second step

Table 3 Spearman partial correlations among all measures at Time 1 and Time 2 after controlling for child's age

| Variable | 1 | 2 | 3 | 3a | 3b | 3c | 4 | 5 |
|----------------------------------|---------|---------|----------|---------|-------|--------------------|---------|------|
| <i>Time 1</i> | | | | | | | | |
| 1. Shyness | – | | | | | | | |
| 2. Social anxiety | 0.73*** | – | | | | | | |
| 3. Social emotional difficulties | 0.63*** | 0.53*** | – | | | | | |
| 3a. Peer problems | 0.51*** | 0.44*** | 0.79*** | – | | | | |
| 3b. Prosocial behaviors | –0.25* | –0.26* | –0.69*** | –0.31** | – | | | |
| 3c. Emotional problems | 0.53*** | 0.48*** | 0.65*** | 0.47*** | –0.15 | – | | |
| 4. Receptive language | –0.04 | 0.04 | –0.05 | –0.02 | 0.10 | –0.10 | – | |
| <i>Time 2</i> | | | | | | | | |
| 5. Receptive language | –0.01 | –0.02 | –0.01 | 0.07 | 0.10 | –0.22 ^a | 0.61*** | 0.15 |

^a $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 4 Hierarchical regression analyses predicting social emotional difficulties from shyness and social anxiety

| Variable | Total social emotional difficulties | | | Peer problems | | | Emotional problems | | | Prosocial behaviors | | |
|----------------|-------------------------------------|-------|---------------------|--------------------|-------|---------------------|--------------------|-------|---------------------|---------------------|-------|--------------------|
| | β | R^2 | ΔR^2 | β | R^2 | ΔR^2 | β | R^2 | ΔR^2 | β | R^2 | ΔR^2 |
| <i>Step 1</i> | | | | | | | | | | | | |
| Child's age | -0.10 | 0.01 | 0.01 | -0.11 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 | 0.12 | 0.02 | 0.02 |
| <i>Step 2</i> | | | | | | | | | | | | |
| Social anxiety | 0.23 ^a | 0.28 | 0.28 ^{***} | 0.12 | 0.18 | 0.18 ^{***} | 0.24 | 0.24 | 0.24 ^{***} | -0.26 | 0.20 | 0.09 ^{**} |
| <i>Step 3</i> | | | | | | | | | | | | |
| Shyness | 0.44 ^{**} | 0.38 | 0.09 ^{**} | 0.44 ^{**} | 0.28 | 0.10 ^{**} | 0.36 [*] | 0.30 | 0.07 [*] | -0.07 | 0.12 | 0.00 |
| <i>Step 2</i> | | | | | | | | | | | | |
| Shyness | 0.44 ^{**} | 0.35 | 0.35 ^{***} | 0.44 ^{**} | 0.27 | 0.27 ^{***} | 0.36 [*] | 0.28 | 0.27 ^{***} | -0.07 | 0.09 | 0.06 [*] |
| <i>Step 3</i> | | | | | | | | | | | | |
| Social anxiety | 0.23 ^a | 0.38 | 0.03 ^a | 0.12 | 0.28 | 0.01 | 0.24 | 0.30 | 0.03 | -0.26 | 0.12 | 0.03 |

^a $p < 0.10$; ^{*} $p < 0.05$; ^{**} $p < 0.01$; ^{***} $p < 0.001$

Table 5 Hierarchical regression analyses predicting receptive language at Times 1 and 2 from shyness and social anxiety at Time 1

| Variable | Receptive language | | | | | |
|--------------------------|--------------------|-------|-------------------|-------------------|-------|-------------------|
| | Time 1 | | | Time 2 | | |
| | β | R^2 | ΔR^2 | β | R^2 | ΔR^2 |
| <i>Step 1</i> | | | | | | |
| Child's age | 0.44 ^a | 0.20 | 0.20 ^a | 0.42 ^a | 0.22 | 0.22 ^a |
| <i>Step 2</i> | | | | | | |
| Social anxiety | 0.01 | 0.20 | 0.00 | -0.02 | 0.22 | 0.00 |
| <i>Step 3</i> | | | | | | |
| Shyness | -0.08 | 0.21 | 0.01 | 0.11 | 0.22 | 0.00 |
| <i>Step 2</i> | | | | | | |
| Shyness | -0.08 | 0.21 | 0.01 | 0.11 | 0.22 | 0.01 |
| <i>Step 3</i> | | | | | | |
| Social anxiety | 0.01 | 0.21 | 0.00 | -0.02 | 0.22 | 0.00 |
| <i>Step 4</i> | | | | | | |
| Shyness * Social anxiety | -0.18 | 0.24 | 0.03 | -0.17 | 0.25 | 0.03 |

^a $p < 0.001$

and social anxiety in the third step; while, the first and fourth steps remained the same. Results in Table 5 revealed that neither shyness, social anxiety, nor their interaction predicted receptive language at both time points. These results were contrary to our hypotheses.

Discussion

The present study examined the similarities and differences between shyness and social anxiety, and their relations with social emotional difficulties and receptive language development among Hong Kong kindergarteners. Our findings revealed that shyness and social anxiety were strongly correlated, indicating substantial similarity between the two constructs. Moreover, both shyness and social anxiety showed similar strengths of association with children's social and emotional problems. However, we discovered that children's shyness had a unique impact on their total social emotional difficulties, peer problems, and emotional problems beyond social anxiety, but children's social anxiety did not have a distinct effect on their social and emotional problems beyond shyness. Surprisingly, neither shyness nor social anxiety were found to be associated with kindergarteners' receptive language skills, contrary to our initial hypotheses. Nonetheless, our results highlight the strong similarities between shyness and social anxiety.

Shyness, Social Anxiety, and Social Emotional Adjustment

Our results showed a significant and strong correlation between shyness and social anxiety, indicating a lack of discriminant validity and supporting the idea that these constructs overlap. Furthermore, shyness and social anxiety displayed comparable levels of association with children's social emotional difficulties. Specifically, both were moderately correlated with peer problems and emotional symptoms, suggesting moderate criterion validity. These results imply that young children with elevated levels of shyness and social anxiety tend to experience more difficulties in peer relationships and show more emotional symptoms.

Our findings are consistent with previous reports which indicate the linkage between shyness, social anxiety, and socioemotional adjustment in early childhood (Arbeau et al., 2010; Eggum-Wilkens et al., 2014; Zhu et al., 2019). Among Chinese kindergarteners aged 4–5 years old, Zhu et al. (2019) observed a moderate correlation between shyness and social anxiety, and more importantly, similar levels of significant correlations of the two constructs with peer acceptance and internalizing problems, respectively. Moreover, Eggum-Wilkens et al. (2014) revealed that children's shyness during kindergarten was associated with lower school liking and lower cooperative participation in grade two, possibly due to shy children having difficulties in approaching peers or being perceived as less desirable playmates by others as a result of their shyness and anxiety. Thus, our findings reinforce the notion that shyness and social anxiety exhibit important similarities in their effects on children's social emotional behaviors.

However, despite their similarities, only children's shyness was significantly and uniquely associated with total social emotional difficulties, peer problems, and emotional problems beyond social anxiety. In contrast, social anxiety did not significantly contribute to children's social emotional difficulties beyond shyness. Our results suggest that while there are similarities between shyness and social anxiety, shyness may encompass a broader range of symptoms compared to social anxiety (Heiser et al., 2003, 2009; Poole et al., 2017). Indeed, prior research has shown that the two constructs are qualitatively distinct although they share features in cognitive, behavioral, and somatic symptoms (Poole et al., 2017). Specifically, both Heiser et al. (2009) and Chavira et al. (2002) found that not all highly shy individuals reported having social anxiety symptoms. Thus, our results provide empirical evidence in kindergarteners supporting the notion that, despite their strong similarities, shyness and social anxiety do not completely overlap and have distinct characteristics (Hoffmann et al., 2004; Poole et al., 2017). Future studies could further advance our understanding by replicating with larger and more diverse samples to enhance the reliability and generalizability of the observed associations.

Shyness, Social Anxiety, and Language

Our findings showed that both shyness and social anxiety were not significantly associated with receptive language in the current study. Although the results were somewhat surprising, several studies have indeed reported comparable findings,

showing that receptive language was minimally associated with shyness in young children (Smith Watts et al., 2014; Zhu et al., 2019).

Our results indicated that shy children might have similar levels of receptive language skills relative to their non-shy peers. Smith Watts et al. (2014) postulated that the poorer performance of shy and anxious children on language tasks might be due to their reticence to respond rather than real deficiencies in their language skills. Their findings also hinted at the possibility that shy children's performance in language tests might be hindered by the contexts of the testing that increase their anxiety (Coplan & Armer, 2005; Smith Watts et al., 2014; Zhu et al., 2019). Since kindergarteners in the present study completed the assessments in their own homes over online meeting instead of being required to interact with a stranger face-to-face, the familiarity with the environment and the presence of family members might have helped to minimize children's anxiety level considerably during the tasks. Indeed, Tolksdorf et al. (2021) also found that although shy children initially performed worse on a word retrieval task compared to their non-shy peers, they were able to catch up during the second round of testing once they became familiarized with the specific procedure and demands of the test situation. Thus, our findings support the possibility that shy children struggle with performance more than competence (Smith Watts et al., 2014).

There could be other plausible explanations for the absence of a significant association between shyness and receptive language observed in this study. For instance, Coplan and Weeks (2009) and Zhu et al. (2019) suggested that shy children who experienced less peer rejection might be able to engage in more social interactions with others, leading to more language practice and thus greater improvement in receptive language skills. Here in this study, only six participating children (8.5%) were rated by their parents to have doubts about whether others liked to play with them, suggesting that most participating children did not experience challenges with peer relationships, and thus might not be restricted in their opportunities to engage in social communications with others.

Future studies should include different testing methods and measures of receptive language, to further investigate the associations and interactions between shyness, social anxiety, and receptive language. Based on our results, shy children's language performances may be influenced by the testing method and context (Crozier & Hostettler, 2003). As such, when assessing children's language performance, test administrators should be aware of the impact of children's inhibition on their performance and try to ease children's anxiety in order to accurately evaluate their true language abilities (Crozier & Perkins, 2002). Furthermore, it is also worthwhile to incorporate measures of expressive language to gain a more holistic view of how shyness influences various aspects of language production and comprehension.

Limitations

There are a few limitations of this study that should be highlighted. First, this study involved a relatively small sample size. Due to the outbreak of COVID-19 when the study was conducted, many kindergartens rejected our invitation to participate

in this research, with only the current three kindergartens agreeing to partake in the study. While the three recruited kindergartens were located in different areas of Hong Kong, their student population mostly comprised children from families of relatively high socioeconomic status. This might result in potentially biased sampling regarding children's receptive language performance, given the possible impact of environmental factors on children's language development (Muluk et al., 2013; Sumer-Büyükabacı et al., 2021). Future studies should aim to obtain a more representative sample of the kindergarten population by recruiting participants from a range of socioeconomic backgrounds from kindergartens across the territory.

Another limitation pertains to the method of data collection. Specifically, data on children's shyness and social anxiety were collected solely based on parent ratings, which might not reflect children's functioning in other social contexts, e.g., at school. Moreover, given that the current study was conducted during the pandemic period, most kindergarteners did not have many opportunities to engage in social interactions with peers. Conceivably, this could have affected not only children's socioemotional development but also parents' ratings of children's shyness and social anxiety due to the limited opportunities to observe their children's sociability with peers. Furthermore, we could not rule out the possibility of parent biases in their ratings. Some parents might have underrated their children's reticence level to prevent their children from being seen in a negative light.

Hence, obtaining ratings from other informants (e.g., teachers) in addition to the parents would have provided a broader picture of the participating children's overall shyness and social anxiety. However, the participating schools requested not to include their teachers in the study based on the concern that the teachers might not know the children well enough individually to provide accurate ratings, due to recurrent school suspension during the pandemic. We recommended that future studies should consider collecting both parents' and teachers' ratings of children's shyness and social anxiety, as well as including peers and self as informants, to obtain a more comprehensive profile of children's social functioning in various settings.

In addition, we were unsure whether and how the use of online assessments might have affected the results. The participating schools requested all data collection to be completed online to minimize health risks to the students. Therefore, all assessments were conducted via Zoom when the children were at home. We speculated that children's home environment might have affected, to varying extents, their level of focus and their ability to remain engaged in the tasks. Furthermore, during online assessments, many children were accompanied by their parents. Although parents were instructed to sit apart from their children and not to interfere with the assessment process, it was inevitable that some children often looked to their parents for assistance when they came across unfamiliar test items. While we had reminded parents not to provide support throughout the data collection process, we could not verify if parents indeed followed the directions as they often sat behind the video camera. That said, correlations of the measure across time revealed moderate test-retest reliabilities of the assessment tasks between Time 1 and Time 2, thus providing some support to the consistency of our assessment method across time points.

Finally, it is worth noting that the Cheek and Melichor (1985) questionnaire was employed in the current study to measure shyness among the participating children. Despite its age, the questionnaire has previously been used by Tong et al. (2011) in a study conducted with Hong Kong kindergarteners, supporting its appropriateness for use in this context. Furthermore, the questionnaire was translated and adapted to align with the cultural and linguistic context of our participants, enhancing its relevance and applicability in this study (Tong et al., 2011). However, the development of this questionnaire predates recent advancements in the understanding of shyness, and it may not fully capture the multidimensional nature of the construct, as identified in more contemporary research (Coplan & Rubin, 2010). Therefore, newer instruments that offer more comprehensive assessments of shyness could be considered for future investigations.

Conclusions

Despite these limitations, our study makes several contributions to the existing literature. First, we differentiate between shyness and social anxiety, providing a clearer understanding of their associations with social emotional difficulties in kindergarteners. By uncovering significant correlations between these constructs and peer problems, as well as emotional symptoms, we emphasize the impact of shyness and social anxiety on children's socioemotional well-being. This knowledge is valuable for identifying at-risk children and implementing early interventions to promote positive social and emotional development.

Moreover, our study challenges assumptions about language difficulties among shy children. Interestingly, neither shyness nor social anxiety were associated with receptive language in the present study. This calls into question whether the language difficulties among shy children previously reported in other studies reflect actual skill deficiencies or their potential difficulty in performing in anxiety-provoking situations.

All in all, shy and socially anxious children may benefit from additional support from parents and teachers to foster the development of adaptive social functioning skills. Given the intricate interplay among the examined constructs, more research is needed to gain a deeper understanding of their relations and interactions.

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Declarations

Conflict of interest Authors declare no competing interests.

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