

## Research Article

# The Resilient Mind: Children's Theory of Mind as a Protective Factor Against Social Emotional Problems during the Pandemic

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## Abstract

By March 2020, many governments closed schools and implemented "social distancing" to reduce COVID-19 spread. The current research examined a) the impact of reduced social interactions on children's social-emotional health and b) whether children's 'theory of mind' (i.e., their ability to understand others' mental states) served as a protective factor against the potentially deleterious effects of reduced social interactions. Parents of 3–12-year-olds ( $n=130$ ) reported on their child's social-emotional health (Strengths & Difficulties Questionnaire; Social Skills Improvement System) and time spent in in-person interactions before and during the pandemic. They also completed a measure of their child's theory of mind, and reported their own stress and loneliness. A subset of parents completed the child measures pre-pandemic ( $n=48$ ), allowing for longitudinal analyses. Stepwise regressions showed that decreases in children's in-person peer interactions significantly predicted increased social-emotional difficulties, even after accounting for other factors. Children's theory of mind emerged as a significant predictor of fewer social-emotional difficulties, more prosocial behavior, and stronger social skills. Longitudinal data revealed that greater reductions in peer interaction predicted more negative changes in social-emotional functioning. However, children with more advanced theory of mind experienced fewer negative changes, suggesting their theory of mind buffered against the harmful effects of reduced interaction. These findings underscore the importance of peer interaction for children's well-being and highlight theory of mind as a potential protective factor. Interventions aimed at strengthening children's theory of mind may help minimize the deleterious effects of reduced social interaction.

## The Resilient Mind: Children's Theory of Mind as a Protective Factor Against Social Emotional Problems during the Pandemic

Humans have a primary need for social interaction and social connection [1-3]. Even moderate levels of social isolation can have detrimental effects on one's physical and social-emotional health. For instance, moderate levels of social isolation have been linked to elevated blood pressure and stress hormones [4], immune system dysregulation [5,6], cardiovascular disease [7] as well as clinical depression and suicide ideation (see [8,9] for reviews). Experimental studies with humans and other animals suggest that social isolation is a major risk factor for mortality and morbidity, with the health risks associated with isolation at least as great as cigarette smoking [10,11]. Prospective studies controlling for baseline health status reveal an increased risk of death among people with fewer and poorer social relationships (e.g., [10]). Indeed, a meta-analysis of 148 studies [12] revealed a 50% increased likelihood of survival for participants with stronger social relationships. The magnitude of this effect did not differ based on age, gender, cause of death, or previous health status. Interestingly, the magnitude of the relationship between social relationships and mortality was greatest in studies that assessed the

quality of the social connections, not only the quantity. Notably, even *perceived* social isolation (i.e., loneliness) has a similar effect on physical and mental health as actual social isolation (see [13] for a review).

Of particular interest to the current research are the lasting effects that reduced social interactions have on young children. Caspi et al. [7] followed over 1000 children at multiple timepoints from age 3 to age 26 assessing various indices of their physical health (e.g., weight, blood pressure, cholesterol) and level of social interaction revealing that those who were more socially isolated as children were at significant risk of poor adult health independent of other childhood risk factors for poor adult health (e.g., low SES, low IQ, obesity). Notably, this relationship between childhood social isolation and poor health 20 years later was not accounted for by exposure to stressful life events, smoking, alcohol abuse, or lack of exercise. This research also revealed that social isolation across multiple developmental time points had a cumulative negative effect on their health (see also [14]). Not surprisingly, the negative effects of social isolation in childhood are not limited to physical health. For instance, Marryat and colleagues [15] examined the social-emotional functioning of 10,000 preschoolers using the Strengths and Difficulties Questionnaire [16] which assesses

Peer Relationship Problems, Emotional Symptoms, Hyperactivity/inattention, Conduct Problems and Prosocial Behaviours. Their analyses revealed that various indices of social isolation predicted poorer overall social emotional functioning among preschoolers.

As it is well established that social interaction is especially critical for young children, several researchers expressed concern for children's well-being due to the reductions in social interaction that many youth experienced during COVID-19 (eg., [17,18]). The current work examined how reductions in the number of *in-person* social interactions that they experienced during the pandemic affected children's social-emotional well-being. Importantly, children's social understanding, particularly their ability to reason about the mental states of others (sometimes called 'theory of mind' or ToM), is another key predictor of children's social-emotional functioning and well-being (eg., for recent reviews see [19,20]). Therefore, we also examined whether those children with more *advanced* theory of mind would experience *fewer* social emotional problems. Individual differences in theory of mind are present early and continue into adulthood [21,22] with more developed theory of mind predicting several positive outcomes for children's development and well-being. For example, a meta-analysis of 20 studies on children ages 2-10 using measures of theory of mind and measures of peer popularity revealed that children with increased theory of mind tended to be more well-liked [23]. As another example, a meta-analysis of 76 studies examining theory of mind and prosocial behaviour (eg., helping, comforting, and sharing) in children 2 to 12 years of age found that children with higher theory of mind scores were more likely to act prosocially [20,24,25]. Similarly, more advanced theory of mind has been associated with increased cooperation [26], reduced peer conflict [27] and improved communication skills [27-30]. Peterson and colleagues [31] also found that typically developing children's theory of mind understanding independently predicted social skills above and beyond age, gender and verbal ability.

Conversely, deficits in theory of mind have been proposed as a characteristic feature of Autism Spectrum Disorder and are believed to play a central role in social-communication challenges [32,33]. Building on this early work, subsequent studies report that autistic children and adults demonstrate greater theory of mind difficulties relative to neurotypical peers (eg., see [34-36] for a recent meta-analysis). Similar differences have also been observed among children with attention-deficit/hyperactivity disorder, who demonstrate weaker performance on certain theory of mind measures [37,38]. Individuals with conduct problems have likewise been shown to exhibit reduced theory of mind performance (eg., [39-41]). Theory of mind understanding also predicts emotional symptoms (eg., increased sadness) in adults and in adolescents and youth. For example, a meta-analysis of 18 studies with adults revealed that difficulties with theory of mind can be a risk factor for depression with the level of theory of mind impairment relating to the severity of the depressive symptoms and corresponding psychosocial impairments [42]. Similarly, Caputi and Schoenborn [43] examined theory of mind and internalizing symptoms during middle childhood and early adolescence and found that children with higher scores on theory of mind tasks demonstrated lower depressive symptoms and lower symptoms related to panic disorder and separation anxiety.

Of particular relevance to the current research is a small body of evidence that theory of mind may serve as a *protective* factor against some types of stress or adversity. For example, Hughes and Ensor [44] found that the adverse effects of harsh parenting on behavioural problems (eg., hyperactivity, emotion regulation problems) were attenuated for two year olds with higher ToM scores. Moreover, after testing these same children two years later and controlling for their earlier behavioral problems, they found that theory of mind skills at age 2 predicted whether their behavioral problems persisted or diminished. Again, in a separate study, the negative effects that harsh parenting had on the child's behavior were reduced in those with greater theory of mind [45]. Similarly, Cadamuro et al. [46] tested the role of theory of mind as a protective factor against the negative effects of parents' stress on their child's stress during the aftermath of a natural disaster. Their results revealed that mothers' posttraumatic stress symptoms predicted their *children's* posttraumatic stress symptoms—but only among children with low theory of mind abilities. In other words, strong theory of mind skills appears to help minimize at least some factors that adversely affect children's social emotional well-being.

## The Current Research

In sum, the primary research questions addressed in this manuscript were: 1) What impact did reductions in in-person social interactions during the pandemic have on children's social-emotional well-being? And 2) Did children with more advanced theory of mind fare better than their peers with less advanced theory of mind? We hypothesized that reductions in in-person peer interactions that occurred during the COVID-19 pandemic would predict increases in social emotional difficulties (eg., hyperactivity, conduct problems, emotional symptoms). We also predicted that children with more advanced theory of mind would experience fewer negative changes in their social-emotional functioning during the pandemic compared to their peers with less advanced theory of mind.

To address our research questions we asked parents of 3-12-year-old children to complete an online survey assessing their children's social emotional functioning, theory of mind, and changes in their amount of social interactions during the pandemic (beginning in June 2020). Specifically, the survey included a measure of children's social-emotional difficulties (Strengths & Difficulties Questionnaire [16], a measure of social skills (Social Skills Improvement System; SSIS [47]), and a measure of their 'theory of mind' (Children's Social Understanding Scale; CSUS [48]). Parents also estimated the number of hours per day children engaged in interactions with peers and adults (in-person) before the pandemic versus currently. We also anticipated that parents' stress and loneliness would increase during the pandemic, and wanted to control for that in our regression models. To that end we included two measures assessing the parent's social-emotional health: a Perceived Stress Scale [49] and the UCLA Loneliness Scale [50]. Forty-seven of our participating families had visited our laboratory prior to the pandemic and completed the same child-specific measures. Therefore, in some of our analyses we can control for the children's pre-pandemic level of social emotional functioning and specifically examine *changes* in their behavior.

## Method

### Participants

#### Full Sample

Of the 138 parents recruited, 8 were excluded for failing to complete at least 80% of the measures, resulting in a final sample of 130 participants with children ages 3-12 years old ( $M_{Age}$  =87 months,  $SD_{Age}$  =30 months; 55% female children). Due to missing data on one or more variables included in the regression models, listwise deletion resulted in an analytic sample of 110 participants for those analyses. Parents participated online from anywhere in North America but were predominantly Canadian. The majority of the parent respondents were female (92%). The majority of the sample identified as European (38%) or Asian (36%). Approximately 80% of the sample reported completing at least some college education and a combined family income of \$100,000/year or greater. All participants gave informed consent and were told they could skip any questions they did not wish to answer. Parents were compensated for their participation by choosing either a \$5 gift card or a 1 in 25 chance of winning a \$50.00 gift card.

#### Longitudinal Subsample

A subset of these parents had also completed the child-specific measures in our lab prior to the pandemic, allowing us to examine changes in their child’s behavior and specifically examine whether advanced theory of mind minimized any negative changes in social emotional health. The final longitudinal subsample consisted of data from parents for 48 children ages 2-12 years old ( $M_{Age}$  =86 months,  $SD_{Age}$  =25 months; 60% female). Seventeen of these parents did not complete the SSIS measure but were included in the remaining analyses.

### Measures

Parents completed the following measures in the following order (see Table 1):

#### Children’s Social Emotional Difficulties

Children’s social emotional difficulties were assessed using the

Strengths and Difficulties Questionnaire (SDQ [16]), which is a widely used measure to examine individual differences in children’s social emotional competence (e.g., [15]). It consists of a 25-item scale focused on five different components of social-emotional health: emotional symptoms (e.g., often unhappy, depressed, or tearful), conduct problems (e.g., generally well behaved, usually does what adults request (reverse coded)), hyperactivity/impulsivity (e.g., constantly fidgeting or squirming), peer relationship problems (e.g., rather solitary, prefers to play alone), and prosocial behavior (e.g., considerate of other people’s feelings). Each subscale has 5 items and parents rated their child’s behavior over the previous 6 months on each item with answers ‘Not True’, ‘Somewhat True’, and ‘Certainly True’. The prosocial behaviors comprise the Strengths subscale. Higher scores on the prosocial subscale reflect greater levels of prosocial behavior. Cronbach’s  $\alpha$  in the current sample was .758 for the 5-item Prosocial scale reflecting good internal reliability. The other four 5-item subscales—emotional symptoms, conduct problems, hyperactivity/impulsivity, and peer relationship problems—comprise the Difficulties scale. Higher scores on the difficulties scale reflect greater levels of difficulties. Cronbach’s  $\alpha$  in the current sample was .843 for the 20-item Difficulties scale reflecting very good internal reliability.

#### Children’s Social Understanding Scale (Theory of Mind, or ToM)

The Children’s Social Understanding Scale (CSUS Short Form; [48]); is a parent-report measure of children’s understanding of mental states such as beliefs, desires, emotions, intentions, and knowledge, which is more generally referred to as theory of mind. The CSUS Short Form is a parent-report measure consisting of 18-items rated on a 4-point scale including ‘Definitely Untrue’ (1), ‘Somewhat Untrue’ (2), ‘Somewhat True’ (3), and ‘Definitely True’ (4). This measure has previously been shown to reliably predict individual differences in 3- to 12-year-olds social emotional competence [19]. Sample items include, “My child talks about differences in what people like or want (e.g., “you like coffee but I like juice”); “My child has trouble figuring out whether you are being serious or just joking” (reverse coded), and “My child talks about the difference between the way things look and how they really are (e.g., “It looks like a snake but it’s really a lizard)”.

Table 1: Description of Measures and Example Items.

Measure	Description	Example Items
Strengths and Difficulties Questionnaire (SDQ)	<ul style="list-style-type: none"> <li>Parent-report measure assessing children’s psychological and behavioural characteristics related to social emotional health</li> <li><b>25-items on a 3-point scale:</b> answer choices ranging from 0 (Not True) to 2 (Certainly True)</li> </ul>	<ul style="list-style-type: none"> <li>Often lies or cheats</li> <li>Considerate of other people’s feelings</li> </ul>
The Children’s Social Understanding Scale (CSUS)	<ul style="list-style-type: none"> <li>Parent-report measure assessing individual differences in children’s theory of mind.</li> <li><b>Shortened 18-item version on a 4-point scale:</b> answer choices range from 1 (Definitely Untrue) to 4 (Definitely True)</li> </ul>	<ul style="list-style-type: none"> <li>Talks about differences in what people like or want</li> </ul>
The Social Skills Improvement System Rating Scale (SSIS)	<ul style="list-style-type: none"> <li>Parent-report measure that assesses children’s social skills and problem behaviours</li> <li><b>Shortened 46-item version on a 4-point scale:</b> answer choices range from 0 (Never) to 3 (Almost Always)</li> </ul>	<ul style="list-style-type: none"> <li>Expresses feelings when wronged</li> </ul>
Social Interaction Measure (SIM)	<ul style="list-style-type: none"> <li>Parents estimated the number of hours per day their child spent in in-person social interactions with peers versus parents.</li> <li>Estimates were provided for during (i.e., between June and December 2020) and prior to the pandemic</li> </ul>	<ul style="list-style-type: none"> <li>Number of hours per day</li> </ul>
Perceived Stress Scale (PSS)	<ul style="list-style-type: none"> <li>Self-report measure assessing the extent to which situations in one’s life are perceived as stressful in the last month</li> <li><b>10-item on a 5-point scale:</b> answer choices range from 0 (Not at all) to 4 (Very often)</li> </ul>	<ul style="list-style-type: none"> <li>In the last month, how often have you felt nervous and “stressed”?</li> </ul>
The UCLA Loneliness Scale (UCLA Loneliness)	<ul style="list-style-type: none"> <li>Self-report measure assessing an individual’s subjective feelings of loneliness and feelings of social isolation</li> <li><b>20-items on a 4-point scale:</b> answer choices range from 1 (Rarely) to 4 (Often)</li> </ul>	<ul style="list-style-type: none"> <li>How often do you feel that you are no longer close to anyone?</li> </ul>

Higher scores reflect greater levels of theory of mind or mental state understanding. In our sample, the internal consistency was very good (Cronbach’s  $\alpha=.865$ ) for this 18-item measure.

**Children’s Social Skills**

The Social Skills Improvement System Rating Scale (SSIS-RS; [47]) is a parent report measure comprising a social skills scale (46 items) and a problem behavior scale (30 items). For brevity in measurement, we only included the 46-item social skills scale (as a complement to the more limited 5-item “Strengths” scale in the SDQ). We did not include the problem behavior scale as we believed children’s problem behaviors were being adequately captured in the 4 “Difficulties” subscales of the SDQ. Answer choices range from 0 (Never) to 3 (Almost Always) and comprise 7 facets of social skills namely, Communication (e.g., Takes turns in conversations), Cooperation, (e.g., follows your directions), Assertion (e.g. expresses feelings when wronged), Responsibility (e.g., is well behaved when unsupervised), Engagement (e.g., invites others to join in activities), and Self Control (e.g., stays calm when disagreeing with others). Higher scores reflect greater social skills. Cronbach’s  $\alpha$  in the current sample was .950, reflecting excellent internal reliability.

**Social Interaction Measure (SIM)**

Parents were asked to estimate the number of hours per day their child was spending in in-person social interactions with their peers versus with adults for two time points: 1) Prior to the pandemic and 2) Currently (i.e., data were collected during the pandemic between June and December 2020).

**Parental Stress**

Stress was measured using The Perceived Stress Scale (PSS-10; [49]). It is composed of 10 items and examines the degree to which an individual perceives various life situations to be stressful in the last month. Answer choices on the scale range from 0 (Not at all) to 4 (Very Often) and example items include questions such as “In the last month, how often have you been upset because of something that happened unexpectedly?” and “In the last month, how often have you felt that you were on top of things?”. Higher scores reflect greater levels of perceived stress. Cronbach’s  $\alpha$  in the current sample was .907 for this 10-item measure, reflecting excellent internal reliability.

**Parental Loneliness**

Parent’s subjective feelings of loneliness was assessed using The

UCLA Loneliness Scale-Version 3 [50]; a 20-item self-report measure with answer choices ranging from 1 (Rarely) to 4 (Often). Example items include questions such as “How often do you feel that you lack companionship?” and “How often do you feel left out?”. Higher scores reflect greater feelings of loneliness. Cronbach’s  $\alpha$  in the current sample was .936 for this 20-item measure, reflecting excellent internal reliability.

**Procedure**

Participants were recruited via social media ads and a University database of families interested in research. Data were collected between June and December 2020. The online survey took between 30-40 minutes to complete. Informed consent was obtained electronically prior to completion of the remaining survey which included demographic questions (e.g., age, gender, ethnicity, number of siblings, family income, education) followed by the aforementioned measures in the following order: SDQ, CSUS, SSIS, Social Interaction measure, PSS, UCLA Loneliness (See Table 1). Measures of the parents’ and children’s social substitution behaviors were also included in the survey as part of another research project. At the end of the survey all participants were provided with our contact information and a variety of wellness resources.

**Analytic Plan**

All data were entered into SPSS 26 software. Preliminary analyses included computing descriptive statistics for each variable (See Table 2) and paired samples t-tests to confirm whether there were significant reductions in the number of hours per day children were spending in in-person interactions during the pandemic. Two change scores for children’s social interactions (i.e., one with other children and one with adults) were computed by subtracting the number of hours per day children were spending in those interactions during the pandemic from the number of hours per day children were reportedly spending before the pandemic.

Three Stepwise regression analyses were performed to identify which variables most strongly predicted 1) children’s social skills (Total SSIS scores), 2) children’s social emotional strengths (SDQ-Prosocial) and 3) difficulties (SDQ-Difficulties Total). Stepwise regression was selected because it enabled us to determine which of the variables was the *most significant* predictor of children’s social emotional health and identify *how much additional variability* in children’s social emotional health each variable contributed [51]. Predictor variables included the

Table 2: Descriptive Statistics.

Variable	Mean	Std. Deviation	Min.	Max.	N
SDQ_Difficulties	9.46	5.99	0	40	110
SDQ_ProsocialSubscale	7.87	2.55	0	10	110
SSIS_Scores	99.25	16.82	0	138	110
Child’s Age in Years	7.49	2.55	3	12	
Total Perceived Stress	17.58	7.54	0	40	110
Total UCLA Loneliness	43.25	11.92	20	80	110
Change in in-person peer interactions	3.075	3.40			110
Change in in-person adult interactions	-.55	3.80			110

child’s age, the child’s gender, the child’s theory of mind, the parents’ loneliness and stress, and changes in the number of hours per day children were engaged in in-person interactions. The child’s theory of mind and changes in the child’s social interactions were the primary variables of interest. The child’s age and gender and the parent’s social emotional health indices (i.e., loneliness and stress) were included because these factors have been widely recognized to contribute to a child’s social emotional health (e.g., [52-54]).

Finally, we conducted analyses on our longitudinal sample. The parents of 48 children from our full sample had also completed the measures of children’s social emotional health (i.e. the SDQ, the SSIS) prior to the pandemic allowing us to control for pre-pandemic levels of their children’s difficulties. In this way we could expand upon the analyses above by specifically identifying which variables predicted the *changes* in the child’s social emotional health during the pandemic, albeit in a smaller sample. Preliminary analyses included computing change scores for each measure by taking the difference between their score *before* the pandemic and their score *during* the pandemic and conducting one-sample t-tests to identify whether there were significant changes in the children’s social emotional health from Time 1 to Time 2.

## Results and Discussion

### Assessing Changes in Social Interactions

As expected, paired samples t-test revealed a significant decrease in the number of hours children were spending in-person with other children per day during the pandemic (M=3.9, SD=4.2) compared to before the pandemic (M=6.7, SD=3.2),  $t(115)=9.522, p<.001$ . In contrast, there was a small, but non-significant, increase in the number of hours children were spending with adults during the pandemic (M=8.6, SD=5.2) compared to before the pandemic (M=7.9, SD=4.4),  $t(117)=-1.689, p=.094$ .

### Predicting Children’s Social-Emotional Difficulties

The Stepwise Regression results revealed that 5 factors accounted for 35% of the variability in children’s social emotional difficulties (see Tables 3 and 4 for complete regression statistics). As illustrated in Table 3, parent loneliness was the most significant predictor, accounting for 18% of the variability in children’s social emotional

difficulties. Notably, children’s theory of mind was the next most significant predictor. As hypothesized, children with higher theory of mind scores experienced fewer social emotional difficulties. With children’s theory of mind added to the model an additional 7.7% of the variance in children’s social emotional difficulties was explained. Gender accounted for an additional 5% of the variability in children’s social emotional difficulties, with male gender predicting greater social emotional difficulties than female gender. Parents’ stress accounted for an additional 4.6% of the variability, with greater parental stress predicting more social emotional difficulties in their child. Finally, the changes in the amount of time children were spending in person *with other children* during the pandemic compared to before the pandemic accounted for an additional 2.4% of the variability in their social emotional difficulties. That is, even after accounting for the four largest contributors to children’s social emotional difficulties, children who experienced greater reductions in their in-person peer interactions during the pandemic still had significantly greater social emotional difficulties than those who experienced fewer decreases or no changes in their peer interactions.

The stepwise regression analyses excluded the child’s age and the change in the child’s in-person interactions *with adults* meaning these variables did not account for a significant amount of the variability in children’s social-emotional difficulties *above and beyond* the other variables. The lack of an effect from changes in adult interactions does not necessarily reflect an increased importance of peer interactions over adult interactions on children’s social emotional health, but instead, likely reflects the fact that the number of hours children spent with other children significantly *decreased* over the pandemic whereas their time with adults did not decrease (in fact it marginally *increased*).

### Predicting Children’s Prosocial Behavior

The Stepwise Regression predicting children’s current level of prosocial behavior (as measured by the SDQ), revealed that 3 factors accounted for 35% of the variability in children’s prosocial behavior. See Tables 4a and 4b for full regression statistics. Children’s theory of mind was the most significant predictor of children’s prosocial behavior accounting for 23% of the variability. The child’s gender accounted for an additional 8% of the variability in children’s prosocial behavior, and the parent’s loneliness accounted for an additional 3.8%. The stepwise regression analyses excluded the child’s age and the change in the child’s in-person interactions, with both children and adults, as well as the parent’s level of stress. That is, none of these variables accounted for a significant amount of the variability in children’s prosocial behavior above and beyond the other variables.

### Predicting Children’s Social Skills

In the Stepwise Regression predicting children’s current level of social skills (as measured by the SSIS) 3 factors accounted for 49% of the variability in children’s social skills. Children’s theory of mind was the most significant predictor of children’s social skills, accounting for 38% of the variability. Parent’s stress accounted for an additional 9% of the variability in children’s social skills, while the child’s gender accounted for an additional 2.3%. The model excluded the child’s age, changes in the child’s in-person interactions, and parent’s level

Table 3a: Stepwise regression analysis concerning predictors of social difficulties.

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std. error of the estimate
1	.429 <sup>a</sup>	.184	.177	5.44
2	.512 <sup>b</sup>	.262	.248	5.20
3	.559 <sup>c</sup>	.312	.293	5.04
4	.599 <sup>d</sup>	.358	.334	4.89
5	.619 <sup>e</sup>	.383	.353	4.82

<sup>a</sup>Predictors: (Constant), Total UCLA Loneliness

<sup>b</sup>Predictors: (Constant), Total UCLA Loneliness, CSUS\_Score

<sup>c</sup>Predictors: (Constant), Total UCLA Loneliness, CSUS\_Score, Child’s Gender:

<sup>d</sup>Predictors: (Constant), Total UCLA Loneliness, CSUS\_Score, Child’s Gender, Total Perceived Stress

<sup>e</sup>Predictors: (Constant), Total UCLA Loneliness, CSUS\_Score, Child’s Gender, Total Perceived Stress, ChangeChild\_InPersonChildren

**Table 3b:** Stepwise regression analysis concerning predictors of social difficulties: B and beta correlation and significance level of variables.

Model	Predictors	B	Std. error	Standardized Coefficients <sup>a</sup>	t	p
1	(Constant)	.127	1.96		.065	.949
	Total UCLA Loneliness	.216	.044	.429	4.94	.000
2	(Constant)	18.51	5.80		3.19	.002
	Total UCLA Loneliness	.159	.045	.316	3.52	.001
	CSUS_Score	-.461	1.38	-.301	-3.35	.001
3	(Constant)	13.49	5.90		2.29	.024
	Total UCLA Loneliness	.156	.044	.309	3.55	.001
	CSUS_Score	-.422	1.34	-.276	-3.15	.002
	Child’s Gender	2.62	.937	.227	2.80	.006
4	(Constant)	12.92	5.73		2.25	.026
	Total UCLA Loneliness	.094	.048	.188	1.96	.052
	CSUS_Score	-4.24	1.30	-.277	-3.26	.002
	Child’s Gender	2.51	.910	.217	2.75	.007
	Total Perceived Stress	.196	.072	.247	2.74	.007
5	(Constant)	12.46	5.66		2.20	.03
	Total UCLA Loneliness	.086	.047	.171	1.82	.072
	CSUS_Score	-4.41	1.29	-.287	-3.43	.001
	Child’s Gender	2.68	.902	.232	2.98	.004
	Total Perceived Stress	.211	.071	.265	2.98	.004
	ChangeChild_InPersonChildren	.278	.138	.158	2.02	.046

<sup>a</sup>Dependent Variable: SDQDifficulties

**Table 4a:** Stepwise regression analysis concerning predictors of prosocial behaviours.

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std. error of the estimate
1	.478 <sup>a</sup>	.228	.221	1.58
2	.557 <sup>b</sup>	.310	.297	1.50
3	.590 <sup>c</sup>	.348	.329	1.46

<sup>a</sup>Predictors: (Constant), CSUS\_Score

<sup>b</sup>Predictors: (Constant), CSUS\_Score, Child’s Gender: - Selected Choice

<sup>c</sup>Predictors: (Constant), CSUS\_Score, Child’s Gender: - Selected Choice, Total UCLA Loneliness

**Table 4b:** Stepwise regression analysis results concerning predictors of social skills: B and beta correlation and significance level of variables

Model	Predictors	B	Std. error	Standardized Coefficients <sup>a</sup>	t	p
1	(Constant)	.328	1.34		.245	.807
	CSUS_Score	2.18	.386	.478	5.65	.000
2	(Constant)	2.33	1.39		1.67	.098
	CSUS_Score	2.02	.370	.443	5.48	.000
	Child’s Gender: - Selected Choice	-.99	.279	-.288	-3.56	.001
3	(Constant)	4.91	1.72		2.87	.005
	CSUS_Score	1.67	.389	.364	4.28	.000
	Child’s Gender	-.975	.271	-.283	-3.58	.001
	Total UCLA Loneliness	-.032	.013	-.210	-2.48	.015

<sup>a</sup>Dependent Variable: SDQ\_ProsocialSubscale

of loneliness, indicating that these variables did not account for a significant amount of the variability in children’s social skills above and beyond individual differences in theory of mind and the child’s gender. See Tables 5a and 5b for full regression statistics.

### Longitudinal Analyses: Changes in Children’s Social-Emotional Health

One-sample t-tests revealed that there were significant changes in children’s social emotional difficulties,  $t(46)=-2.78$ ,  $p=.008$  from

**Table 5a:** Stepwise regression analysis results concerning predictors of social skills.

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std. error of the estimate
1	.615 <sup>a</sup>	.378	.372	13.34
2	.684 <sup>b</sup>	.468	.458	12.38
3	.700 <sup>c</sup>	.491	.476	12.17

<sup>a</sup>Predictors: (Constant), CSUS\_Score

<sup>b</sup>Predictors: (Constant), CSUS\_Score, Total Perceived Stress

<sup>c</sup>Predictors: (Constant), CSUS\_Score, Total Perceived Stress, Child’s Gender

**Table 5b:** Stepwise regression analysis results concerning predictors of social skills: B and beta correlation and significance level of variables.

Model	Predictors	B	Std. error	Standardized Coefficients <sup>a</sup>	t	p
1	(Constant)	7.94	11.35		.700	.486
	CSUS_Score	26.44	3.27	.615	8.10	.000
2	(Constant)	28.42	11.59		2.45	.016
	CSUS_Score	23.98	3.09	.557	7.77	.000
	Total Perceived Stress	-.682	.160	-.306	-4.26	.000
3	(Constant)	37.79	12.19		3.10	.002
	CSUS_Score	23.26	3.05	.541	7.62	.000
	Total Perceived Stress	-.664	.158	-.298	-4.21	.000
	Child’s Gender	-.491	2.27	-.152	-2.17	.032

<sup>a</sup>Dependent Variable: SSIS\_Scores

**Table 6a:** Stepwise regression analysis results concerning predictors of change in total social difficulties.

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std. error of the estimate
1	.421 <sup>a</sup>	.177	.156	4.28
2	.575 <sup>c</sup>	.330	.294	3.91

<sup>a</sup>Predictors: (Constant), Change in in-person peer interactions

<sup>b</sup>Predictors: (Constant), Change in in-person peer interactions, CSUS\_Score

**Table 6b:** Stepwise regression analysis results concerning predictors of change in total social difficulties: B and beta correlation and significance level of variables.

Model	Predictors	B	Std. error	Standardized Coefficients <sup>a</sup>	t	p
1	(Constant)	.215	.916		.235	.816
	Change in in-person peer interactions	-.518	.181	-.421	-2.86	.007
2	(Constant)	-15.93	5.62		-2.84	.007
	Change in in-person peer interactions	-.589	.167	-.478	-3.52	.001
	CSUS_Score	4.72	1.62	.395	2.91	.006

<sup>a</sup>Dependent Variable: Change in total social difficulties

Time 1 to Time 2, but not in their prosocial behavior,  $t(46)=1.000$ ,  $p=.323$ , ns, nor in their Social Skills,  $t(30)=.015$ ,  $p=.989$  ns. Therefore, regression analyses predicting changes in this subsample were only conducted for children’s social emotional difficulties.

### Predicting Changes in Children’s Social-Emotional Difficulties During the Pandemic

The Stepwise Regression predicting *changes* in children’s social emotional difficulties revealed that the reductions in children’s in-person peer interactions was the most significant predictor, accounting for 18% of the variability in children’s social emotional difficulties. Children’s theory of mind was the next most significant predictor, accounting for an additional 15.3% of the variance in the changes in children’s social emotional difficulties. Neither age nor gender accounted for a significant

amount of variance in the changes children experienced in their social emotional difficulties during the pandemic ( $ps > .20$ , ns). That is, as hypothesized, reductions in peer interactions during the pandemic predicted greater social emotional difficulties. Importantly, children with more advanced theory of mind were less likely to experience these negative changes in their social emotional health than those with less advanced theory of mind. That is, advanced theory of mind, or social understanding, appears to serve as a protective factor against the deleterious social emotional health effects encountered during the pandemic. See Tables 6a and 6b for full regression statistics.

### General Discussion

Childhood represents a foundational period during which social interactions play a central role in shaping children’s social-emotional

health and development. Accordingly, it is vital to understand how even relatively short-term disruptions in these social interactions impact social-emotional health. This study examined the impact that COVID-19 related reductions in social interactions had on the social-emotional competence and health of children. We also examined whether children's level of 'theory of mind' (i.e., how well they understand and reason about others' mental states) provided protective benefits for their social emotional health.

As expected, we found that reductions in children's in-person peer interactions during the pandemic predicted increased social-emotional difficulties, such as increased conduct problems, greater inattention and hyperactivity, and increased emotional symptoms. The negative impact of reduced social interactions was evident even after accounting for four other key predictors of their social emotional health, including parental loneliness, theory of mind, gender, and parental stress. That is, children who experienced greater reductions in their in-person peer interactions during the pandemic had significantly greater social emotional difficulties than those who experienced fewer decreases, or no changes, in their in person peer interactions. Our findings add to an important body of literature showing that social isolation or infrequent social interactions can have deleterious effects on children's social-emotional skills and well-being (e.g., [7,14,15]) as well as corresponding effects on physical well-being [55-57]. Our results are consistent with a meta-analysis of children aged 5-13 that revealed that the COVID-19 lockdown measures were negatively associated with general mental health outcomes [58]. Notably, our findings highlight that deleterious effects from reduced social interactions can emerge within a few months—they do not require especially prolonged or extreme periods of social isolation.

Our second prediction was also supported: Children who were better at understanding others' thoughts and feelings not only exhibited more prosocial behavior, greater social skills, and fewer social-emotional difficulties (consistent with the aforementioned body of literature), they also experienced *fewer increases* in social emotional problems during the pandemic. Notably, these results highlight the benefits of theory of mind as a protective factor for children's well-being in times of adversity. These findings hold important implications for clinicians and researchers working with children who experience reductions in in-person social interactions, especially with their peers. This research suggests that interventions to improve children's social understanding can offer a buffer against the negative effects of reduced in-person social interactions. This is especially important as experts predict humans will face future health crises similar to COVID-19 [59,60]. As such, anything that can be done to better prepare children and bolster their social-emotional well-being and resilience during times of hardship deserves special attention.

The benefits of improved theory of mind in children likely extends beyond the child's social emotional well-being. The relationship between a parent's social-emotional health and that of their child is seemingly bidirectional. That is, in much the same way that a parent's health can affect their child, a child's health can affect their parents (e.g., [61]). For example, research examining parents' stress during the COVID-19 pandemic found that their child's current level of

social-emotional difficulties (e.g., hyperactivity, impulsivity, conduct problems) was a predictor of their parents' perceived stress, even after controlling for their child's pre-pandemic levels of difficulties [62]. Therefore, interventions aimed at fostering a child's social-emotional health will have mutual benefits for the parent and child, with greater social understanding and well-being in children predicting similar benefits in their parents as well as reduced conflict within the parent-child relationship [63].

It is important to clarify the strengths and limitations of this research alongside their implications. First, it is important to acknowledge that the current study relied on correlational data. Therefore, while reductions in in-person peer interactions *predicted* increases in social-emotional difficulties, it does not mean that the reductions in social interactions *caused* these difficulties. That is, other factors associated with those reductions in social interactions, such as being absent from school, or not being able to participate in extracurricular activities, could at least partially account for the relationship. It is important to note as well that we asked parents to report on the number of *hours* children were spending in peer interactions. It would be an interesting objective for future research to also examine the number of social interaction *partners* and the quality of those interactions.

Identifying the causal nature of the relationship between theory of mind and social emotional health is also not possible with these data. Although children with more advanced theory of mind experienced less decline in their social emotional health over time, it is possible that at least part of the relationship between children's theory of mind and better social emotional health outcomes in the current study can be accounted for by some 'third' variability associated with greater theory of mind or social emotional health, such as higher quality parenting. Importantly, a wealth of previous research suggests theory of mind *can* play a causal role in children's social-emotional health. For instance, research shows that interventions designed to improve children's theory of mind simultaneously enhance children's social skills and social emotional development (e.g., [29], see [19] for a review, see also [64]).

The current results may also be influenced by the use of parent-report data and on parents' memory of the changes in the number of hours per day their child spent interacting with others before the pandemic. On the one hand, parent-report data can be skewed, either positively or negatively, for a variety of reasons including the parents' mood and their opportunity to observe certain behavior. For example, parents tend to underestimate their child's internal and emotional states. If their child's symptoms are more internalized (e.g., anxiety or sadness) than externalized (e.g., conduct problems), they may not be as obvious to an outside observer [65-67]. Similarly, parent-reports may fail to capture a child's behaviour outside of the home (e.g., at school, in the community; [68]).

On the other hand, parent-reports can allow for more comprehensive assessments with greater ecological validity of some constructs (e.g., 'theory of mind') than lab-based measures (e.g., [48]). One of the key strengths of this study was its use of multifaceted assessments. For instance, rather than examining only a single aspect of children's social emotional health (e.g., anxiety) we examined a total

of 12 different aspects of their social emotional health (both strengths and difficulties) using multiple previously-validated measures. We also selected a multifaceted measure of theory of mind (i.e., the CSUS) rather than relying on a single facet or dimension of theory of mind. According to a recent review [69], most previous work with young children has focused on one aspect of theory of mind, with 75% of studies with young children only including the false belief task (i.e., a binary pass/fail test of the ability to understand that others can hold beliefs that differ from reality)—a task that has been widely criticized for its limitations (e.g., [70-72]). Thus earlier results linking social emotional health and 'theory of mind' may be specific to their understanding of false beliefs and fail to account for children's broader ability to understand and reason about other mental states such as their emotions, knowledge, intentions, and motivations [19,73]. Consequently, our measure of theory of mind and its predictive effects is relatively novel, capturing a more comprehensive and conceptually rich understanding of children's mental state reasoning.

Finally, we believe that one of the most important contributions of this work is the finding that theory of mind appears to offer protective benefits against at least some factors that precipitate declines in social emotional health—in this case, the deleterious effects of reduced social interactions. This finding expands upon the three studies with children, discussed above, showing that having a more advanced theory of mind acted as a protective factor against harsh parenting [44-45] and parental post-traumatic stress transmission [46]. Together, these results suggest that a strong theory of mind may have relatively broad-sweeping protective, or resilience, benefits against many different types of stress and adversity.

An interesting question for future research to explore is *precisely how* theory of mind acts as a protective factor? The exact mechanism(s) by which better mental state reasoning buffers against adversity is somewhat unclear. However, the body of research linking theory of mind and different facets of social emotional competence highlights important elements. Of note, individuals with higher theory of mind abilities are better at predicting, interpreting, and influencing others' behavior, which has a myriad of cascading benefits including stronger interpersonal relationships, and greater social emotional competence [20,23-31]. Moreover, it has been suggested, but not well tested, that those with greater theory of mind or 'mentalization' abilities may be better at seeking social support when needed, resulting in better stress management and greater resilience (e.g., [74]).

Anecdotal evidence offers some insight into why children with more advanced theory of mind may have fared better during the pandemic. One parent described asking her six-year-old daughter what she was drawing; the child replied that she was making a picture of their family to place in her grandmother's window so her grandmother would not feel so alone during the social distancing. This example highlights two possible mechanisms through which theory of mind may have promoted resilience. First, children with stronger theory of mind may be more 'other-oriented' than 'self-oriented', which could support well-being. This idea aligns with research showing that excessive self-focused rumination can be detrimental to one's mental health (for a review, see [75], and how spending money on others can make you happier than spending it on yourself [76]. Second, children

with more advanced theory of mind may engage more readily in what we have termed "social substitution" behaviors (e.g., imagining conversations with others, talking to their pets or toys, or thinking about playing with their friends) that could partially compensate for reduced in-person interactions. This is consistent with findings that children with more advanced theory of mind tend to engage in more imaginative play [77].

Importantly, these potential resilience mechanisms are not mutually exclusive and may jointly contribute to more positive socioemotional outcomes during periods of stress or social isolation. Future research should aim to identify the specific pathways through which theory of mind promotes resilience, as well as the scope and timing of its protective effects. Even without clarity on the specific underlying mechanisms, interventions designed to foster theory of mind are likely to be beneficial, particularly if targeted at developmentally sensitive age groups or at the onset of stressors.

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## References

1. Bartz JA, Tchalova K, Fenerci C (2016) Reminders of social connection can attenuate anthropomorphism: A replication and extension of Epley, Akalis, Waytz, and Cacioppo (2008) *Psychological Science* 27: 1644-1650. [[crossref](#)]
2. Leary MR, Baumeister RF (1995) The need to belong. *Psychological bulletin* 117: 497-529. [[crossref](#)]
3. Epley N, Waytz A, Akalis S, Cacioppo JT (2008) When we need a human: Motivational determinants of anthropomorphism. *Social Cognition* 26: 143-155.
4. Hawkey LC, Masi CM, Berry JD, Cacioppo, JT (2006) Loneliness is a unique predictor of age-related differences in systolic blood pressure. *Psychology and Aging* 21: 152-164. [[crossref](#)]
5. Cacioppo JT, Hawkey LC, Berntson GG (2003) The Anatomy of Loneliness. *Current Directions in Psychological Science* 12: 71-74.
6. Cacioppo JT, Cacioppo S, Capitano JP, Cole SW (2015) The neuroendocrinology of social isolation. *Annual Review of Psychology* 3: 733-767. [[crossref](#)]
7. Caspi A, Harrington H, Moffitt TE, Milne BJ, Poulton R (2006) Socially isolated children 20 years later: Risk of cardiovascular disease. *Archives of Pediatrics & Adolescent Medicine* 160: 805-811. [[crossref](#)]
8. Hawkey LC, Cacioppo JT (2013) Social connectedness and health. In C. Hazan & M. I. Campa (Eds.) *Human bonding: The science of affectional ties* (pp. 343-364) New York, NY: The Guilford Press.
9. Heinrich LM, Gullone E (2006) The clinical significance of loneliness: A literature review. *Clinical Psychology Review* 26: 695-718. [[crossref](#)]
10. House JS, Landis KR, Umberson D (1988) Social Relationships and Health. *Science* 241: 540-545. [[crossref](#)]
11. Umberson D, Montez JK (2010) Social relationships and health: A flashpoint for health policy. *Journal of Health and Social Behavior* 51: S54-S66. [[crossref](#)]
12. Holt-Lunstad J, Smith TB, Layton JB (2010) Social relationships and mortality risk: A meta-analytic review. *PLoS Medicine* 7: e1000316. [[crossref](#)]
13. Hawkey LC, Cacioppo JT (2010) Loneliness matters: A theoretical and empirical review of consequences and mechanisms. *Annals of Behavioral Medicine* 40: 218-227. [[crossref](#)]
14. Asher SR, Paquette JA (2003) Loneliness and peer relations in childhood. *Current Directions in Psychological Science* 12: 75-78. [[crossref](#)]

15. Marryat L, Thompson L, Minnis H, Wilson P (2014) Associations between social isolation, pro-social behaviour, and emotional development in preschool aged children: A population based survey of kindergarten staff. *BioMed Central Psychology* 2: 44. [[crossref](#)]
16. Goodman R (1997) The Strengths and Difficulties Questionnaire: A research note. *Journal of Child Psychology and Psychiatry* 38: 581-586. [[crossref](#)]
17. Cameron L, Tenenbaum HR (2021) Lessons from developmental science to mitigate the effects of the COVID-19 restrictions on social development. *Group Processes and Intergroup Relations* 24: 231-236.
18. Orben A, Tomova L, Blakemore SJ (2020) The effects of social deprivation on adolescent development and mental health. *Lancet Child and Adolescent Health* 4: 634-640. [[crossref](#)]
19. Haddock TB, Birch SAJ (2024) The relationship between children's theory of mind and social-emotional health. *Psychology Journal Research Open* 6: 1-15.
20. Qiu X, Gao M, Zhu H, Li W, Jiang R (2024) Theory of mind, empathy, and prosocial behavior in children and adolescents: A meta-analysis. *Current Psychology* 43: 19690-19707.
21. Cutting AL, Dunn J (1999) Theory of mind, emotion understanding, language, and family background: Individual differences and interrelations. *Child Development* 70: 853-865. [[crossref](#)]
22. Repacholi B, Slaughter V (Eds.) (2004) Individual differences in theory of mind: Implications for typical and atypical development. New York, NY: Routledge.
23. Slaughter V, Imuta K, Peterson C, Henry JD (2015) Meta-analysis of theory of mind and peer popularity in the preschool and early school years. *Child Development* 86: 1159-1174.
24. Imuta K, Henry JD, Slaughter V, Selcuk B, Ruffman T (2016) Theory of mind and prosocial behavior in childhood: a meta-analytic review. *Developmental Psychology* 52: 1192-1205. [[crossref](#)]
25. Ornaghi V, Pepe A, Grazzani I (2016) False-belief understanding and language ability mediate the relationship between emotion comprehension and prosocial orientation in preschoolers. *Frontiers in Psychology* 7: 1-12. [[crossref](#)]
26. Etel E, Slaughter V (2019) Theory of mind and peer cooperation in two play contexts. *Journal of Applied Developmental Psychology* 60: 87-95.
27. Dunn J, Cutting A (1999) Understanding others, and individual differences in friendship interactions in young children. *Social Development* 8: 201-219.
28. De Rosnay M, Fink E, Begeer S, Slaughter V, Peterson C (2014) Talking theory of mind talk: Young school-aged children's everyday conversation and understanding of mind and emotion. *Journal of Child Language* 41: 1179-1193. [[crossref](#)]
29. Gao Q, Chen P, Huang Q, Wang Z (2024) Advanced theory of mind and children's prosocial lie-telling in middle childhood: A training study. *Journal of Experimental Child Psychology* 246: 106012. [[crossref](#)]
30. Slomkowski C, Dunn J (1996) Young children's understanding of other people's beliefs and feelings and their connected communication with friends. *Developmental Psychology* 32: 442-447. [[crossref](#)]
31. Peterson C, Slaughter V, Moore C, Wellman HM (2016) Peer social skills and theory of mind in children with autism, deafness, or typical development. *Developmental Psychology* 52: 46-57. [[crossref](#)]
32. Baron-Cohen S (1995) *Mindblindness: An essay on autism and theory of mind*. Cambridge, MA: The MIT Press.
33. Baron-Cohen S, Leslie AM, Frith U (1985) Does the autistic child have a "theory of mind"? *Cognition* 21: 37-46. [[crossref](#)]
34. Berenguer C, Roselló B, Colomer C, Baixauli I, Miranda A (2018) Children with autism and attention deficit hyperactivity disorder: Relationships between symptoms and executive function, theory of mind, and behavioral problems. *Research in Developmental Disabilities* 83: 260-269. [[crossref](#)]
35. Velikonja T, Fett AK, Velthorst E (2019) Patterns of nonsocial and social cognitive functioning in adults with autism spectrum disorder: A systematic review and meta-analysis. *Journal of the American Medical Association, Psychiatry* 76: 135-151. [[crossref](#)]
36. Gao S, Wang X, Su Y (2023) Examining whether adults with autism spectrum disorder encounter multiple problems in theory of mind: A study based on meta-analysis. *Psychonomic Bulletin & Review* 30: 1740-1758. [[crossref](#)]
37. Maoz H, Gvirts HZ, Sheffer M, Bloch Y (2017) Theory of mind and empathy in children with ADHD. *Journal of Attention Disorders* 23: 1331-1338. [[crossref](#)]
38. Wells AE, Hunnikin LM, van Goose SHM (2020) Children with behavioural problems misinterpret the emotions and intentions of others. *Journal of Abnormal Child Psychology* 48: 213-221.
39. Happé F, Frith, U (1996) Theory of mind and social impairment in children with conduct disorder. *British Journal of Developmental Psychology* 14: 385-398.
40. Holl AK, Vetter NC, Elsner B (2021) Disentangling the relations of theory of mind, executive function and conduct problems. *Journal of Applied Developmental Psychology* 72.
41. Sharp C (2008) Theory of mind and conduct problems in children: Deficits in reading the "emotions of the eyes." *Cognition and Emotion* 22: 1149-1158.
42. Bora E, Berk M (2016) Theory of mind in major depressive disorder: A meta-analysis. *Journal of Affective Disorders* 191: 49-55. [[crossref](#)]
43. Caputi M, Schoenborn H (2018) Theory of mind and internalizing symptoms during middle childhood and early adolescence: The mediating role of coping strategies. *Cogent Psychology* 5: 1-15.
44. Hughes C, Ensor R (2006) Behavioural problems in two-year-olds: Links with individual differences in theory of mind, executive function and negative parenting. *Journal of Child Psychology and Psychiatry* 47: 488-497. [[crossref](#)]
45. Hughes C, Ensor R (2007) Positive and protective: Effects of early theory of mind on problem behaviors in at-risk preschoolers. *Journal of Child Psychology and Psychiatry* 48: 1025-1032. [[crossref](#)]
46. Cadamuro A, Versari A, Vezzali L, Trifiletti E (2016) Preventing the detrimental effect of post-traumatic stress in young children: The role of theory of mind in the aftermath of a natural disaster. *European Journal of Developmental Psychology* 13: 52-66.
47. Gresham FM, Elliott SN (2008) *Social skills improvement system: Rating scales manual*. Bloomington, MN: NCS Pearson.
48. Tahiroglu D, Moses LJ, Carlson SM, Mahy CE, Olofson EL, et al. (2014) The Children's Social Understanding Scale: Construction and validation of a parent-report measure for assessing individual differences in children's theories of mind. *Developmental Psychology* 50: 2485-2497. [[crossref](#)]
49. Cohen S, Williamson G (1988) Perceived stress in a probability sample of the United States. In S. Spacapan & S. Oskamp (Eds.), *The Social Psychology of Health*. Newbury Park, CA: Sage.
50. Russell DW (1996) UCLA Loneliness Scale (Version 3): Reliability, validity, and factor structure. *Journal of Personality Assessment* 66: 20-40.
51. Büyüköztürk Ş (2010) *Handbook of data analysis for social sciences: Statistics, research design SPSS applications and comments* (11th ed.). Ankara, Turkey: Pegem Academy.
52. Panula V, Junttila N, Aromaa M, Rautava P, Räihä H (2020) Parental psychosocial well-being as a predictor of the social competence of a child. *Journal of Child and Family Studies* 29: 3004-3019.
53. Salk RH, Hyde JS, Abramson LY (2017) Gender differences in depression in representative national samples: Meta-analyses of diagnoses and symptoms. *Psychological Bulletin* 143: 783. [[crossref](#)]
54. Ribas LH, Montezano BB, Nieves M, Kampmann LB, Jansen K (2024) The role of parental stress on emotional and behavioral problems in offspring: A systematic review with meta-analysis. *Jornal de pediatria* 100: 565-585. [[crossref](#)]
55. Herrera MS, Elgueta R, Fernández MB, Giacoman C, Leal D., et al. (2021) A longitudinal study monitoring the quality of life in a national cohort of older adults in Chile before and during the COVID-19 outbreak. *BioMed Central Geriatrics* 21: 143.
56. Kadowaki L, Wister A (2023) Older adults and social isolation and loneliness during the COVID-19 pandemic: An integrated review of patterns, effects, and interventions. *Canadian Journal on Aging / La Revue Canadienne Du Vieillessement* 42: 199-216. [[crossref](#)]
57. Kotwal AA, Holt-Lunstad J, Newmark RL, Cenzler I, Smith AK, et al. (2021) Social Isolation and loneliness among San Francisco Bay Area older adults during the COVID-19 shelter-in-place orders. *Journal of the American Geriatrics Society* 69: 20-29. [[crossref](#)]
58. Bussi eres EL, Malboeuf-Hurtubise C, Meilleur A, Mastine T, H erault E et al. (2021) Consequences of the COVID-19 pandemic on children's mental health: A meta-analysis. *Frontiers in Psychiatry* 12.
59. Karami H, Soleimani M, Nayerani Jazi N, Navi K, Sajadi R, et al. (2024) The next viral pandemic: A call for global preparedness. *Journal of Medicine, Surgery, and Public Health* 4: 100150

60. Mallapaty S (2024) The pathogens that could spark the next pandemic. *Nature* 632: 488-488. [[crossref](#)]
61. Pérez-Edgar K, LoBue V, Buss KA (2021) From parents to children and back again: Bidirectional processes in the transmission and development of depression and anxiety. *Depression and Anxiety* 38: 1198-1200. [[crossref](#)]
62. Stewardson C, Birch S (2021, April) *Predicting parents' stress during the pandemic: Loneliness, children's social skills, and financial concerns*. Poster presented at the 2021 Society for Research on Child Development Virtual Biennial Meeting.
63. Chen Y, Haines J, Charlton BM, VanderWeele TJ (2019) Positive parenting improves multiple aspects of health and well-being in young adulthood. *Nature Human Behaviour* 3: 684-691. [[crossref](#)]
64. Haddock T, Lau P, Ghrear S, Birch S (2017) What happens at home: How family discourse fosters social perspective-taking in children with autism spectrum disorder and typically-developing children. *Acta Psychopathologica* 3: 1-8.
65. Behrens B, Swetlitz C, Pine DS, Pagliaccio D (2019) The Screen for Child Anxiety Related Emotional Disorders (SCARED): Informant discrepancy, measurement invariance, and test-retest reliability. *Child Psychiatry and Human Development* 50: 473-482. [[crossref](#)]
66. Hourigan SE, Goodman KL, Southam-Gerow MA (2011) Discrepancies in parents' and children's reports of child emotion regulation. *Journal of Experimental Child Psychology* 110: 198-212. [[crossref](#)]
67. Olino TM, Finsaas M, Dougherty LR, Klein DN (2018) Is parent-child disagreement on child anxiety explained by differences in measurement properties? An examination of measurement invariance across informants and time. *Frontiers in Psychology* 9. [[crossref](#)]
68. Lee K, Dutta A, Lee J, Pincus DB (2024) Child assessment with corroborative parent report. In L. Reuman & J. Thompson-Hollands (Eds.), *Enhancing CBT through family and peer engagement* (pp. 29-49) Cham, Switzerland: Springer Nature.
69. Beaudoin C, Leblanc É, Gagner C, Beauchamp MH (2020) Systematic review and inventory of theory of mind measures for young children. *Frontiers in Psychology* 10. [[crossref](#)]
70. Birch SAJ (2005) When knowledge is a curse: Children's and adults' mental state reasoning. *Current Directions in Psychological Science* 14: 25-29. [[crossref](#)]
71. Bloom P, German TP (2000) Two reasons to abandon the false belief task as a test of theory of mind. *Cognition* 77: B25-B31. [[crossref](#)]
72. Ghrear S, Haddock T, Birch SAJ (2021) Are the classic false belief tasks cursed? Young children are just as likely as older children to pass a false belief task when they are not required to overcome the curse of knowledge. *Plos One* 16. [[crossref](#)]
73. Birch S, Li V, Haddock T, Ghrear S, Brosseau-Liard P, et al. (2016) Perspectives on Perspective Taking: How children think about the minds of others. In *Advances in Child Development and Behavior* 52. [[crossref](#)]
74. Fonagy P, Gergely G, Jurist EL, Target M (2002) *Affect regulation, mentalization and the development of the self*. New York, NY: Other Press LLC.
75. Nolen-Hoeksema S, Wisco BE, Lyubomirsky S (2008) Rethinking rumination. *Perspectives on psychological science* 3: 400-424. [[crossref](#)]
76. Dunn EW, Aknin LB, Norton MI (2014) Prosocial spending and happiness: Using money to benefit others pays off. *Current directions in psychological science* 23: 41-47.
77. Taylor M, Carlson SM (1997) The relation between individual differences in fantasy and theory of mind. *Child Development* 68: 436-455. [[crossref](#)]

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