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Topics

Maternal Anxiety and Overprotection Effects Anxiety in Japanese Children with Developmental Disorders and Typical Development

Keiko Nogami^{1, 2)}, Takahiro Yamane¹⁾

Abstract Background: Anxiety symptoms are common in children with developmental disorders(CDD), such as autism spectrum disorder (ASD) and attention deficit hyperactivity disorder (ADHD). Studies have indicated that maternal anxiety and overprotective parenting are associated with the anxiety of children with typical development (CTD); the same factors might influence CDD's anxiety.

Methods: The hypothetical model of the influence of maternal factors, adding subscales of Sense of Coherence (SOC), on anxiety symptoms in CDD and CTD was examined. Mothers of CDD ($n = 76$) and CTD ($n = 292$) aged 6 to 15 were participants in the survey in Japan.

Results: Multi-group path analysis indicated negative paths from SOC subscales to maternal anxiety and positive paths from maternal anxiety and overprotection to child anxiety in both groups. However, there were differences in the associations among maternal anxiety, overprotection, and SOC subscales between CDD and CTD mothers.

Limitations: Limitations of this study are the assessment methods and the disproportionate group size.

Conclusions: Our results indicated the similarities and differences within the models of maternal factors-based anxiety mechanisms in CTD and CDD.

Key words: anxiety, parenting, children with developmental disorders, autistic spectrum disorder, attention deficit hyperactivity disorder

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Introduction

Studies have reported that anxiety symptoms are common in children with autism spectrum disorder (ASD); globally, 11%–84% experienced high anxiety levels (White et al., 2009). Moreover, 30%–40% of children with attention-deficit/hyperactivity disorder (ADHD) were likely to meet the criteria for an anxiety disorder (Tannock, 2009), and children with learning disabilities (LD) had higher anxiety than those without LD (Nelson & Harwood, 2011). In a Japanese community sample, many children with developmental disorders (CDD) had higher anxiety symptoms as perceived

by their mothers, than children with typical development (CTD) (Ishimoto et al., 2019). Furthermore, the symptoms were higher in older and higher IQ children with ASD (Ishimoto et al., 2019). In addition, comorbid anxiety in CDD, such as ASD, ADHD, and LD increased school fears, social difficulties, and highly stressful life events (Bowen et al., 2008; Nelson & Harwood, 2011; Sze & Wood, 2007).

Reasons for anxiety in children have been explored, and parent-child relationships were identified as a critical factor for both CDD (Adachi et al., 2017; Pffiffer & McBurnett, 2006) and CTD (Rapee et al., 2009). Notably, parenting attitudes were related to anxiety symptoms in children (e.g., Adachi et al., 2017; Rapee et al., 2009). Overprotection, overinvolvement, or intrusive interaction styles, resulted in

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anxiety-prone relationships between children and their parents across cultures both in CDD and CTD (Adachi et al., 2017; Meyer et al., 2021; Rapee et al., 2009; Wood & McLeod, 2008). Furthermore, overprotection reinforced children's vulnerability to anxiety as it reduced their opportunities to face and overcome fearful situations, and ultimately, increased their threat-related avoidance behavior (Wood & McLeod, 2008). As mothers influenced children's anxiety more directly than fathers (Piffner & McBurnett, 2006; Rapee et al., 2009), this study focused on maternal characteristics.

In addition to overprotection, maternal anxiety was reportedly an influential factor of anxiety in CDD and CTD. CTD with anxiety disorders were more likely to have mothers with an anxiety disorder than CTD without anxiety (Creswell & Cartwright-Hatton, 2007). Studies on CDD also indicated a positive correlation between maternal anxiety and high anxiety symptoms in children with ADHD (Piffner & McBurnett, 2006) and ASD (Park et al., 2013). These studies indicated that paternal anxiety was not significantly associated with children's anxiety (Park et al., 2013; Piffner & McBurnett, 2006), which suggested the impact of environmental factors rather than genetic factors (Park et al., 2013). Furthermore, among CTD, maternal anxiety was correlated with overprotection, with a small-to-medium effect size (Jones et al., 2021). Anxious mothers may often detect threats in their children's environments, which could lead to engagement in further overprotective parenting (Jones et al., 2021). However, among CDD, maternal anxiety and overprotection had no significant association (Piffner & McBurnett, 2006). Hence, reasons for maternal overprotection may differ between CDD and CTD; the relationships between these factors should be examined in further detail.

Regarding maternal anxiety, some issues should be considered when measuring children's anxiety. In CTD, children's anxiety symptoms are evaluated more seriously if the mothers also have an anxiety disorder (Creswell & Cartwright-Hatton, 2007). Hence, other

methods might be adequate to measure children's anxiety. However, it is difficult for children with ASD to understand and express their feelings (Scahill, 2012), and CDD's self-measurement of anxiety symptoms is not easy. Furthermore, ratings by a third-party (e.g., teachers) or those less involved in the children's daily life cannot accurately measure children's internalized problems, such as anxiety (Llanes et al., 2020), compared to externalized problems. Therefore, in a community sample, maternal measurement reliability was expected to assess and indicate the child's anxiety symptoms.

Moreover, previous studies indicated that severe symptoms in CDD increased maternal mental health problems (Walsh, et al., 2013; Yamane, 2021). Despite various stressors, maternal anxiety could be influenced by how mothers perceived and managed the stressors, which included their children's problems. Therefore, to explore the mechanisms of child anxiety caused by maternal anxiety and overprotection, additional variables that assess mothers' perception of their stressors are necessary.

Sense of Coherence (SOC), postulated by Antonovsky (1987/2001), may help understand the maternal perceptions of stressors. SOC is a global orientation toward different stressors in human life, and consists of comprehensibility, manageability, and meaningfulness. Comprehensibility is the perception that a person's internal and external living environments are structured, predictable, and explicable. Manageability is the perception that a person can adequately meet the demands of life by controlling the resources available to them. Finally, meaningfulness is the perception that life makes sense, despite problems, and demands in the environment are welcomed as challenges rather than burdens (Antonovsky, 1987/2001). Although SOC is considered a global orientation towards various stressors, mothers generally maintain close interpersonal relationships with their children. Hence, mothers' stressors are considered to include child-rearing issues. In addition, studies re-

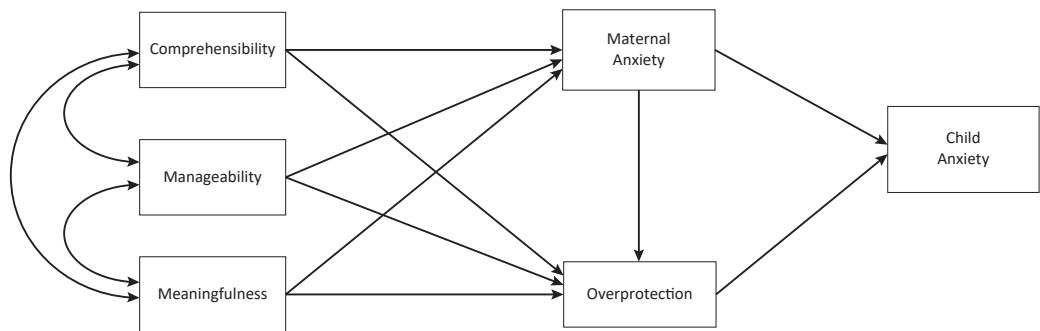


Figure 1 Hypothetical Model of Child Anxiety

ported that SOC was significantly correlated with parental anxiety and emotional over-involvement among CTD (Olsson et al., 2006). Mothers with strong SOC perceived lower stress than mothers with weak SOC, despite their children’s behavioral problems (Solem et al., 2011). Among Japanese mothers of CTD, higher SOC influenced lower overprotective parenting (Yamazaki et al., 2019). Moreover, among mothers of CDD, meaningfulness was correlated with sense making about having a child with developmental disorders, which affected maternal stress response processes (Yamane, 2015). Although SOC’s association with parenting attitudes was unknown in mothers of CDD, previous findings suggested that it may be associated with their maternal anxiety and parenting attitudes (e.g., Nishichi et al., 2016; Yamazaki et al., 2019). Hence, benefits arose in considering the associations among maternal SOC, anxiety, and parenting attitude as factors related to children’s anxiety symptoms.

Thus, anxiety symptoms in CDD were considered to be influenced by maternal anxiety, overprotective parenting, and maternal SOC, similar to those in CTD. However, many studies on comorbid anxiety in CDD focused on child-related factors, such as age, gender, and diagnosis (e.g., Ishimoto et al., 2019), and rarely examined parenting attitude, maternal anxiety, and SOC. Currently, although maternal SOC plays a significant role in children’s anxiety, its dimensions have not been examined in the associations between mater-

nal anxiety and overprotection of CDD. Consequently, there is limited research on how maternal factors influence CDD’s high anxiety and the differences between CDD and CTD, which has resulted in a limited understanding of CDD’s anxiety mechanisms. A better understanding of the maternal factors that cause anxiety in CDD would help develop assessments and treatment methods for reducing these symptoms.

This study aimed to examine a model of maternal anxiety, overprotection, and SOC that influenced CDD’s anxiety symptoms with the following research question: What are the differences in child anxiety mechanisms between CDD and CTD? Based on previous findings, this study’s hypotheses were three-fold (**Figure 1**): (1) the multi-group model in which maternal anxiety and overprotection would influence anxiety in both CDD and CTD, (2) the association between maternal anxiety and overprotection would differ between CDD and CTD, and (3) SOC subscales would influence maternal anxiety and overprotection differently between mothers of CTD and CDD.

Regarding the types of included disorder in CDD, this study focused on ASD, ADHD, LD, and Developmental Coordination Disorder (DCD) (e.g., Dewey, 2018), based on the high comorbidity rate. Moreover, intellectual disabilities were eliminated from this sample as IQ influenced anxiety levels in CDD (Ishimoto et al., 2019). Furthermore, as we considered that children’s age and sex and the COVID-19

pandemic influenced the child's and mother's anxiety, the current study set these factors as control variables.

Methods

1. Participants

From October 2020 to May 2021, 76 mothers of CDD (*Mean* age = 41.54, *SD* = 5.12) and 292 mothers of CTD (*Mean* age = 40.36, *SD* = 5.48) (children's ages = 6–15 years) participated in this research either online or in-person. Mothers of CDD were recruited through local child development-related services and parent support groups. Mothers of CTD were recruited through a Japanese crowdsourcing service that confirmed the participant's profile information. The CTD questionnaire included items to confirm that the child did not have a diagnosis of any developmental disorders.

2. Questionnaires used in the current study to measure

1) Children's anxiety

We administered the Japanese version (Ishikawa et al., 2014) of the Spence Children's Anxiety Scale (SCAS-P; Nauta et al., 2004). This parent-report scale, measuring anxiety symptoms in children aged 6–18 years, consisted of 38 items and six subscales corresponding to the DSM-IV anxiety disorders' subcategories: generalized anxiety, separation anxiety, panic disorder/agoraphobia, social phobia, personal injury fears, and obsessive-compulsive disorder. Items were scored on a 4-point Likert scale ranging from 0 (never) to 3 (always), and higher scores indicated a higher degree of children's anxiety. The SCAS-P demonstrated internal consistency for each subscale ($\alpha = .58-.75$) and total score ($\alpha = .88$) (Ishikawa et al., 2014). This study utilized the total score to assess children's global anxiety symptoms (SCAS-P total). The SCAS-P total's internal consistency was high ($\alpha = .90$) for both groups.

2) Maternal SOC

The Japanese version of the Sense of Coherence

Questionnaire (Antonovsky, 1987/2001) was utilized. This scale comprised three subscales: comprehensibility, manageability, and meaningfulness of a person's life events (Antonovsky, 1987/2001). Responses ranged from 1 (very often) to 7 (very seldom or never), and higher scores indicated a greater SOC and better life orientation. The Japanese version demonstrated high internal consistency ($\alpha = .91-.93$) in Takayama et al. (1999). This study utilized all the subscale scores, which demonstrated acceptable internal reliability: comprehensibility (CTD $\alpha = .83$; CDD $\alpha = .86$), manageability (CTD $\alpha = .83$; CDD $\alpha = .86$), and meaningfulness (CTD $\alpha = .85$; CDD $\alpha = .82$).

3) Maternal anxiety

The short version of the Depression Anxiety and Stress Scale (DASS) (DASS 21; Lovibond & Lovibond, 1995) was administered to assess maternal anxiety. This self-reported measure assessed negative emotional states experienced during the past week. It comprised three subscales: depression, anxiety, and stress. The internal consistency was satisfactory ($\alpha = .73-.81$) for each subscale (Lovibond & Lovibond, 1995). Responses were scored on a 4-point scale ranging from 0 (did not apply to me at all) to 3 (applied to me very much or most of the time), and higher scores indicated increased symptoms. This study utilized the anxiety subscale of the Japanese DASS-21, available on the official website (<http://www2.psy.unsw.edu.au/dass/Japanese/Japanese.htm>). Since the factor structure of anxiety scale was not confirmed in Japanese mothers, its structure validity was confirmed by confirmatory factor analysis with the CTD sample. The model fit was acceptable (CFI = .881, RMSEA = .064, RMSEA 90%CI [.056, .073], SRMR = .071). Furthermore, adequate internal reliability was also confirmed (CTD $\alpha = .82$; CDD $\alpha = .80$).

4) Overprotective parenting

The Positive and Negative Parenting Scale (PNPS) originally developed by Ito et al. (2014) and revised

by the PNPS development team (2018) was used to assess parenting behaviors (involvement and monitoring, positive responsivity, respect for will, overprotection, inconsistency, and harsh discipline). The PNPS was a 24-item self-reported measure, and among these parenting behaviors, overprotection was defined as excessive interference with children based on parents' insecurities or high standards of demand (the PNPS development team, 2018). Responses were scored on a 4-point scale ranging from 1 (None/Almost none) to 4 (Very often), and higher scores indicated a higher frequency of using each parenting behavior. The PNPS demonstrated high internal consistency ($\alpha = .84$). However, overprotection did not reach a satisfactory level (four items $\alpha = .57$) in Ito et al.'s study (2014). Nevertheless, Ito et al. (2014) suggested that overprotection based on parental anxiety differed from harsh discipline based on parental anger. Hence, we used the 4-item overprotective parenting (overprotection) scale of the PNPS to examine our hypothesis. The internal consistencies of overprotection were $\alpha = .57$ (CDD) and $\alpha = .63$ (CTD).

5) Anxiety caused by the COVID-19 pandemic (Original by the author)

This study designed two items to assess mothers' and children's anxiety caused by the COVID-19 pandemic with the question; "you are (your child is) feeling anxiety and stress due to the spread of the COVID-19." Responses were scored on a 4-point scale ranging from 1 (not at all) to 4 (very likely), and higher scores indicated higher anxiety levels.

6) Demographics

Maternal age and work, child's age and sex, types of diagnosed disorders, and number of children in the household were obtained from a demographic questionnaire.

3. Analysis

Maternal work, child's sex, and number of children in the household for CDD and CTD were compared

by chi-squared tests, and the structure validity of the DASS anxiety scale was confirmed by a confirmatory factor analysis. Independent-sample t-tests were conducted with the child's and mother's age, scores for child anxiety, maternal symptoms, and anxiety caused by COVID-19 as the dependent variables. Moreover, a partial correlation analysis was conducted to examine the associations between children's anxiety and maternal factors, after controlling for the child's age, sex, and COVID-19 anxiety. Finally, a multi-group path analysis was conducted to examine the hypothetical model of the impact of overprotection and maternal anxiety on children's anxiety by comparing CDD and CTD. Model fit was interpreted as acceptable if RMSEA = .10 or less, CFI = .95 or more, and SRMR = .08 or less (Browne & Cudeck, 1992; Hu & Bentler, 1999).

This study utilized SPSS version 27.0 for fundamental statistical analysis, primary independent samples t-tests, and partial correlation analysis. M-plus version 8.5 was utilized for confirmatory factor analysis and multi-group path analysis.

4. Ethical considerations

Participation was voluntary. Parents were informed that they could withdraw anytime and for any reason. This study was approved by the Research Ethics Review Committee of Kobe University.

Results

1. Participants' characteristics

The CDD group significantly consisted of more boys ($p < .001$) and had more anxiety symptoms ($p < .001$, $d = .56$) than the CTD group. Mothers of CDD had significantly more anxiety symptoms and overprotective parenting ($ps < .01$, $d = .42-.47$), and lower comprehensibility and manageability ($ps < .05$, $d = .33-.39$) than mothers of CTD. Details of the participants' characteristics are shown in **Table 1**.

Table 1 Demographic and Characteristics of Children With and Without Developmental Disorders

Variables	Children with Developmental Disorders			Children with Typically Development			Comparison	
	<i>n</i>	%	<i>M (SD)</i>	<i>n</i>	%	<i>M (SD)</i>	$\chi^2 / t (df)$	<i>d</i>
Child characteristics and symptoms								
Gender								
Boy	61	80.26%		148	50.68%		21.50 (1) ***	
Girl	15	19.74%		144	49.32%			
Age								
Mean Age	76		10.46 (2.69)	292		9.56 (2.58)	2.68 (366) **	.35
Children 6-10 years old	40	52.63%		186	63.70%		3.12 (1)	
Children 11-15 years old	36	47.37%		106	36.30%			
Diagnosis								
ASD	51	67.11%		-	-			
ADHD	44	57.89%		-	-			
ASD + ADHD	22	28.95%		-	-			
Other (LD, DCD)	7	9.21%						
SCAS-P total score	76		25.26 (14.41)	292		18.40 (11.65)	3.84 (101.93) ***	.56
Anxiety of COVID-19 pandemic	76		2.47 (.90)	292		2.42 (.79)	.53 (366)	.07
Maternal characteristics								
Mean Age	76		41.54 (5.12)	292		40.36 (5.48)	1.70 (366)	.22
Number of children								
one	23	30.26%		107	36.64%		2.57 (5)	
two	43	56.58%		139	47.60%			
three	9	11.84%		39	13.36%			
four or more	1	1.32%		7	2.40%			
Maternal Work								
Full time	20	26.32%		47	16.10%		5.43 (3)	
Self employed	7	9.21%		29	9.93%			
Part time	25	32.89%		91	31.16%			
No work or housewife	24	31.58%		125	42.81%			
Maternal symptoms								
Anxiety	76		6.76 (7.50)	292		3.89 (5.63)	3.12 (98.07) ***	.47
Comprehensibility	76		38.09 (11.25)	292		41.87 (9.22)	2.70 (102.72) **	.39
Manageability	76		40.12 (11.11)	292		43.34 (9.41)	2.56 (366) *	.33
Meaningfulness	76		36.43 (8.46)	292		37.07 (8.01)	.61 (366)	.08
Overprotection	76		8.05 (1.99)	292		7.22 (1.96)	3.29 (366) **	.42
Anxiety of COVID-19 pandemic	76		2.79 (0.85)	292		2.91 (0.77)	1.13 (109.12)	.15

Note. ASD + ADHD = comorbidity of ASD and ADHD; LD = specific learning disorder; DCD = developmental coordination disorder. SCAS-P total score = total score of the Spence Children's Anxiety Scale parent version.

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

Table 2 Partial Correlation Between Child Anxiety and Maternal Variables

	Child Anxiety		Maternal Variables		
	SCAS-P total	Overprotection	Maternal Anxiety	Comprehensibility	Manageability
Children with Developmental Disorders (CDD; $n = 76$)					
Overprotection	.10				
Maternal Anxiety	.46 **	.24 *			
Comprehensibility	-.45 **	-.15	-.58 **		
Manageability	-.34 **	-.20	-.54 **	.81 **	
Meaningfulness	-.22	-.28 *	-.36 **	.60 **	.76 **
Children with Typical Development (CTD; $n = 292$)					
Overprotection	.31 **				
Maternal Anxiety	.31 **	.34 **			
Comprehensibility	-.26 **	-.20 **	-.43 **		
Manageability	-.25 **	-.24 **	-.49 **	.73 **	
Meaningfulness	-.16 **	-.18 **	-.38 **	.48 **	.73 **

Note. Control variables are the child's sex and age and child's and mother's anxiety of the COVID-19 pandemic. SCAS-P total score = total score of the Spence Children's Anxiety Scale parent version.

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

2. Partial correlation between children's anxiety symptoms and maternal factors

A partial correlation analysis was conducted between the groups with mothers' and children's COVID-19 anxiety, and child's age and sex as control variables (**Table 2**). The results indicated that CDD's anxiety symptoms assessed by the total SCAS-P score were significantly correlated with maternal anxiety ($r = .46, p < .01$), comprehensibility and manageability ($r = -.34$ – $-.45, ps < .01$). Overprotection was significantly correlated with maternal anxiety ($r = .24, p < .05$) and meaningfulness ($r = -.28, p < .05$). Moreover, maternal anxiety was significantly correlated with SOC ($r = -.36$ – $-.58, ps < .01$). Contrastingly, the total SCAS-P score in the CTD group was significantly correlated with overprotection ($r = .31, p < .01$), maternal anxiety ($r = .31, p < .01$), and SOC ($r = -.16$ – $-.26, ps < .01$). Overprotection was significantly correlated with maternal anxiety ($r = .34, p < .01$) and SOC ($r = -.18$ – $-.24, ps < .01$). Furthermore, maternal anxiety was also correlated with SOC ($r = -.38$ – $-.49, ps < .01$).

3. Multi-group path analysis

The configural invariance (unconstrained) and par-

tial metric invariance models were conducted. The unconstrained model yielded an adequate fit ($\chi^2 = 94.52, df = 54, p = .001, CFI = .96, RMSEA = .06, RMSEA 90\% CI [.04, .09], SRMR = .06$). To examine this study's hypothesis, while paths from maternal anxiety and overprotection to the total SCAS-P score were constrained, we unconstrained paths from SOC to maternal anxiety and overprotection, and a path from maternal anxiety to overprotection. Model fit indices of the partially constrained model yielded an acceptable fit ($\chi^2 = 99.54, df = 56, p < .001, CFI = .95, RMSEA = .07, RMSEA 90\% CI [.04, .09], SRMR = .07$). Finally, the partially constrained model, which yielded an acceptable fit was selected (**Figure 2**).

In the CDD group, significant negative paths were observed from comprehensibility to maternal anxiety, and meaningfulness to overprotection ($\beta = -.31$ – $-.41, ps < .05$). Moreover, there were positive paths from maternal anxiety and overprotection to children's anxiety ($\beta = .15$ – $.27, ps < .001$). In contrast, in the CTD group, there were negative paths from comprehensibility and manageability to maternal anxiety ($\beta = -.17$ – $-.34, ps < .05$), maternal anxiety to overprotection ($\beta =$

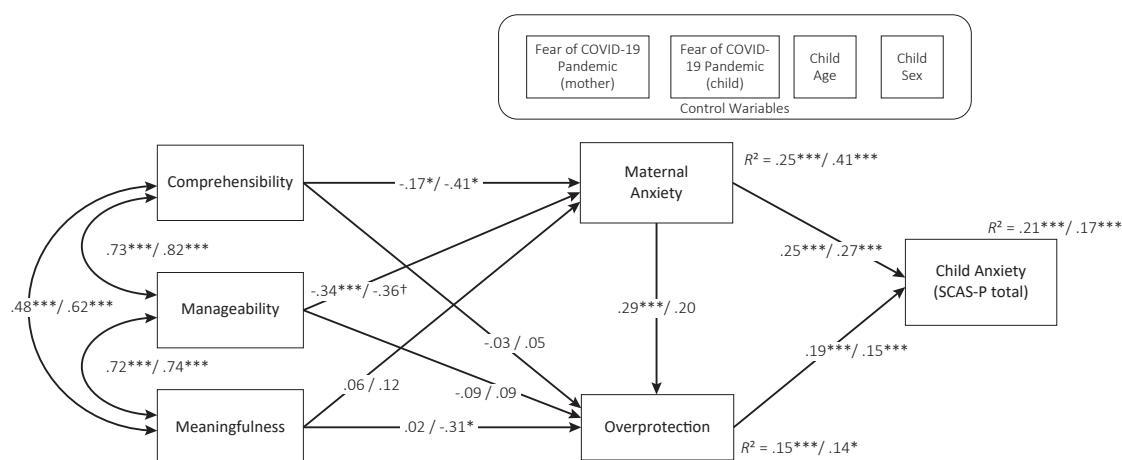


Figure 2 Results from the Multi-Group Path Analysis of Anxiety in CTD and CDD due to Maternal Factors

Note. This analysis predicts children's anxiety symptoms from maternal anxiety, overprotective parenting, and the three dimensions of Sense of Coherence (SOC). Numerical data is shown by standardized path coefficient, children with typical development (CTD) on the left, and children with developmental disorders (CDD) on the right. Estimator = Maximum likelihood analysis; $\chi^2 = 99.54$, $df = 56$, $p < .001$, RMSEA = .07, CFI = .95, SRMR = .07. Control variables are the child's and mother's anxiety of the COVID-19 pandemic and the child's age and sex.

† $p < .10$ * $p < .05$ ** $p < .01$ *** $p < .001$.

.29, $p < .001$), and maternal anxiety and overprotection to children's anxiety ($\beta = .19-.25$, $ps < .001$).

Discussion

This study aimed to examine a model of maternal anxiety, overprotection, and SOC that influenced CDD's anxiety symptoms compared to CTD. Consistent with previous studies (Adachi et al., 2017; Meyer et al., 2021; Park et al., 2013; Rapee et al., 2009), the multi-group path analysis demonstrated that maternal anxiety and overprotection positively influenced anxiety symptoms in both CDD and CTD. However, maternal anxiety mediated by overprotection influenced children's anxiety symptoms only in CTD, which was also consistent with previous results (Pfiffner & McBurnett, 2006; Rapee et al., 2009). Furthermore, SOC influenced maternal anxiety and overprotection differently. Therefore, the results of this study indicated that although child anxiety was influenced by maternal anxiety and overprotection in both groups, there were differences in anxiety mechanisms

between CDD and CTD in the associations among maternal anxiety, overprotection, and SOC. These results support the study's hypothesis.

1. Mechanism of Anxiety in CDD

In mothers of CDD, the impact of the comprehensibility on maternal anxiety was more robust than in CTD. Extending Solem et al.'s results (2011), issues caused by the child's diagnosis of developmental disorders may be an intense external stressor for mothers. If mothers of CDD perceived the child's symptoms as inexplicable and unpredictable, they could have increased maternal anxiety. Park et al. (2013) also suggested that anxious mothers with CDD had difficulties helping their children cope with social problems or joining social groups. Thus, maternal difficulties related to helping their children may be influenced by lower comprehensibility, which could lead to missed opportunities to cope with the child's anxiety symptoms. Consequently, CDD may have more anxiety symptoms.

Regarding meaningfulness's influence on overprotection, it was helpful to consider that sense making of raising a child with developmental disorders was correlated with meaningfulness (Yamane, 2015). While sense making was associated with active coping, seeking meaning was a difficulty in finding meaning in having a child with a developmental disorder, which was associated with avoidant coping in mothers of CDD (Yamane, 2015). Hence, in this study, the lower meaningfulness in mothers of CDD, the more they may try to avoid their child's problems. Moreover, Walsh et al. (2013) indicated a correlation between problem behaviors and overprotection in children with ASD. Furthermore, Meyer et al. (2021) suggested that parents of children with ADHD used overprotection to mitigate their child's problems. Although difficulties and problems may differ by type of developmental disorders, CDD require more daily care and support than CTD. Therefore, mothers of CDD may become protective and supportive. However, if the maternal sense of meaningfulness is low and their child's problems are perceived as high, mothers may try to avoid their child's problems through excessive proactive parenting. Therefore, the lower the sense of meaningfulness in mothers of CDD, the more excessive their proactive parenting towards problem behaviors, which was considered as overprotection and influenced the child's anxiety.

2. Mechanism of Anxiety in CTD

This study found that among mothers of CTD, lower manageability influenced maternal anxiety more strongly than comprehensibility. Further, maternal anxiety influenced child anxiety directly or mediated overprotection. If mothers of CTD had lower manageability, they perceived themselves to be inadequate in meeting the demands of life by controlling their resources. Hence, they may have a similar perception of the parenting environment. Insufficient social support for parenting may lead to lower SOC and maternal

anxiety (Nishichi et al., 2016). Furthermore, it may increase the latter, which was related to overprotection. Without adequate social support in parenting, maternal anxiety may induce expressing their anxiety near their children (Rapee et al., 2009) and overprotection caused by detecting threats in their children's environment (Jones et al., 2021). Although many mothers of CTD do not have child-related problems as much as mothers of CDD, stressors in the parenting environment may play a pivotal role in increasing their anxiety and overprotection among mothers of CTD. Therefore, while the mechanism of anxiety among mothers of CDD was considered to be associated with a child's symptoms and behavioral problems, the mechanism among those of CTD may be associated with the parenting environment.

3. Limitations

This study has some limitations. First, the mothers completed all the assessments. Although maternal measurement of CDD's anxiety was considered reliable, parental ratings were unreliable if mothers of CTD had anxiety symptoms (Creswell & Cartwright-Hatton, 2007). Reporters' bias might have affected the assessment; therefore, paternal measurement was necessary to assess child anxiety. Second, the group size of CDD was smaller and not proportionate to CTD, which resulted in the integration of ASD, ADHD, and LD in the same group of CDD. It may be necessary to conduct similar research with a larger sample size to compare the result with the current study and examine the differences among the types of disorders among CDD. Third, this study could not include the questionnaire about IQ. Although this study did not include children diagnosed with an intellectual disability, the homogeneity of IQ between CTD and CDD was not confirmed. Future studies are required to confirm IQ among CDD. Despite these limitations, these findings contribute to the literature on the mechanism of anxiety symptoms in CDD, including background factors,

such as SOC. Moreover, our findings are helpful for practitioners seeking to develop interventions for anxiety symptoms in CDD.

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