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The role of emotion regulation between cognitive distortion and stress in parenting children with developmental disorders

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ABSTRACT
Background: Parenting stress is reported among mothers of children with developmental disorders, with cognitive-behavioral theory emphasizing the role of cognition in shaping emotional and behavioral responses.
Purpose: This study examined relationships among cognitive distortion, emotion regulation, and parenting stress, with emotion regulation tested as a mediator.
Methods: A total of 91 mothers completed the Parenting Stress Scale, Emotion Regulation Scale, and Parenting Cognitive Distortion Scale. Quantitative data were analyzed using PROCESS and Multi-Group Analysis (MGA), complemented by qualitative interviews with five participants to enrich contextual understanding.
Findings: Results indicated that emotion regulation did not mediate the relationship between cognitive distortion and parenting stress in the overall sample. However, MGA showed that cognitive distortion was the strongest and most consistent predictor of parenting stress across groups ($p < .001$; $R^2 = .535–.647$). The pathway from cognitive distortion to emotion regulation was significant only among mothers of children with ASD, where emotion regulation acted as a mediator ($\beta = .242$; $p = .030$). Qualitative findings revealed role strain due to over-responsibility, chronic emotional burden, low external support, and limited spousal involvement, with emotion-focused coping dominant.
Implication: These findings highlight importance addressing cognitive distortion and value MGA identifying group-specific mechanisms.

KEYWORDS
Emotion regulation; cognitive distortion; parenting stress; developmental disorders.

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Introduction

Parenting is a dynamic process of action and interaction between parents and children, where both parties influence each other. In this intricate relationship, the basic role of parents is to provide responsible parenting—accompanying children in their growth, offering consistent support, teaching appropriate social behaviors, and fostering meaningful social relationships (Bigner & Gerhardt, 2018). The situation is different when families care for children with developmental disorders because children with developmental disorders have problems functioning in the personal, social and academic areas (Wilmshurst, 2017). Types of developmental disorders are intellectual disorders (Intellectual Developmental Disorder), communication disorders, Autism Spectrum Disorders, hyperactivity (Attention Deficit Hyperactivity Disorder), specific learning disorders, motor disorders and other neurodevelopmental disorders (Gauy et al., 2018). These challenges affect children across various life domains and persist through all developmental stages, requiring consistent parental adjustment. At each stage of a child's development, new challenges can emerge (Sofronoff et al.,

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2018). For example, during infancy, parents may feel overwhelmed or in denial upon receiving a diagnosis. The emotional toll of this moment cannot be understated—it often triggers grief, guilt, and anxiety about the child's future. As the child grows, additional stressors arise. At the early childhood stage, many parents face difficult decisions about choosing the right school or therapy center. Questions like "Will this institution understand my child's needs?" or "Will my child be accepted by their peers?" are common and emotionally taxing. In adolescence, concerns often shift to peer relationships and long-term independence. Parents begin to worry whether their child will be socially integrated, form friendships, or even live independently.

In addition to these internal family stressors, external stressors also play a role. Families often encounter judgment or misunderstanding from neighbors or extended relatives. The social stigma surrounding developmental disorders can lead to isolation or strained community relationships. Educational institutions may also fail to accommodate or understand a child's needs, further amplifying parental stress. On top of emotional stress, many families face financial strain. Therapy sessions, special schooling, assistive technologies, and medical consultations can be very expensive. According to Horowitz (2018), his combination of emotional and financial burden contributes significantly to parenting stress, particularly for those caring for children with disabilities.

Numerous studies have supported the claim that parents of children with developmental disorders experience higher levels of stress compared to parents of typically developing children (Craig et al., 2016; Basri & Hashim, 2019; Marquis et al., 2020; Larkin et al., 2021). Moreover, these studies consistently highlight that mothers report greater stress than fathers (Soltanifar et al., 2015; Hartley et al., 2016; Demšar & Bakracevic, 2023). One likely reason is that mothers often assume the role of the primary caregiver, which increases their interaction with the child and decreases the time they can allocate to self-care. When mothers are consistently engaged in caregiving without adequate opportunities for emotional or physical recovery, they become more vulnerable to burnout.

Mothers often report feeling exhausted and emotionally drained, especially when the child's behavior does not align with developmental expectations. Coping mechanisms may also be less effective under such conditions. Seymour et al. (2013) found that ineffective coping in mothers under stress often exacerbates negative emotions, making it even more difficult to maintain healthy parenting practices. Abidin's model (as cited in Deater-Deckard, 2004) breaks down parenting stress into three interrelated components: the Parent (P), which includes internal factors like anxiety or depression; the Child (C), which involves stress arising from the child's behavioral issues; and the Parent-Child Relationship (R), referring to difficulties or conflicts in the relationship. Understanding these categories helps researchers and practitioners identify where interventions are most needed.

One major underlying cause of stress is cognitive distortion, which refers to persistent and inaccurate thinking patterns that distort reality. According to Beck (2021), individuals experiencing cognitive distortions often engage in automatic thoughts such as "all-or-nothing thinking," "catastrophizing," or "emotional reasoning." For example, a parent might think, "I'm a complete failure because my child is still non-verbal," or "My child will never be happy, so what's the point of trying?". These patterns trigger emotional dysregulation—defined as the inability to manage emotional responses effectively (Gross, 2014). A study by Değer et al. (2022) found a relationship between automatic thoughts and stress, mediated by emotion regulation. Their findings highlight the critical role of emotion regulation as a psychological bridge between negative automatic thoughts and levels of depression, anxiety, and stress. Not all negative thoughts directly lead to severe psychological disorders. This is where the role of emotion

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regulation becomes crucial. The emotion regulation strategies employed by individuals influence the extent to which automatic negative thoughts affect mental health. Emotion regulation acts as a psychological protective mechanism—a filter that determines whether automatic negative thoughts escalate into serious psychological symptoms. When individuals possess adaptive emotion regulation strategies, they are better equipped to maintain mental stability despite frequently experiencing negative thoughts. In contrast, dysfunctional emotion regulation makes it more likely for automatic thoughts to develop into tangible psychological distress, including depression, anxiety, and stress.

This aligns with Lazarus' Reappraisal Theory (Taylor, 2018), which posits that emotions and stress are not determined by the events themselves, but by an individual's cognitive appraisal of those events. In this context, emotion regulation—particularly through reappraisal strategies—can alter the initial interpretation or appraisal of a situation, thereby reducing its negative emotional impact. According to Bornstein (2024), factors that contribute to emotional regulation in parenting can be viewed from three angles (parents, children, and situations). Parental factors include age, gender, number of children, mother's understanding of both their children's and their own emotions, as well as their past parenting experiences and personality. Child factors, namely child emotional regulation, child temperament and type of child developmental disorder. Situational factors, namely husband-wife relationships in marriage, social support, socioeconomic status and environmental acceptance.

In fact, Hu et al. (2019) found that parents who struggle with emotional regulation are significantly more prone to parenting stress. A separate study by Kulu & Ozsoy (2020) observed that mothers of children with ASD exhibited more frequent automatic negative thoughts, such as feelings of personal failure, loneliness, confusion, and despair—compared to mothers of typically developing children. Mhaidat et al. (2024) also reported higher levels of depression and irrational beliefs in these mothers, which included thoughts like, "Why did this happen to me?" or "I am the reason for this." Such thoughts deepen feelings of sadness and guilt, further exacerbating emotional exhaustion. This high level of stress often translates into high emotional reactivity. Mothers may express anger, frustration, or even helplessness when dealing with behaviors such as excessive crying, noncompliance, or lack of communication. Bates et al. (2019) argue that these emotional reactions can contribute to negative parenting practices, which may, in turn, affect the child's psychological development.

The parent becomes trapped in a cycle in which stress contributes to ineffective parenting, subsequently worsening the child's behavior and further increasing parental stress. The results of this study are in line with the findings of Bates et al. (2019), which suggest that psychopathology in children is associated with negative parenting practices. These practices may arise when parents experience stress and maladaptive thought patterns. Parents of children with developmental disorders are at a higher level of difficulty in parenting. Thus the relationship between cognitive distortion, emotional regulation and parenting stress can be described as follows:

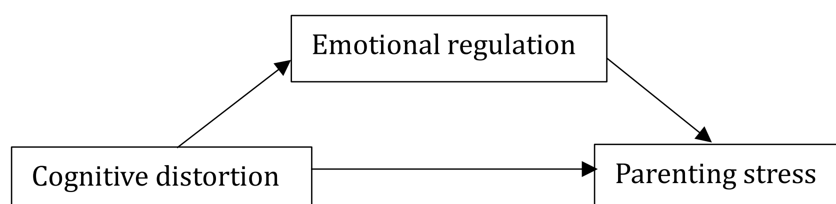

Figure 1. The relationship between cognitive distortions, emotion regulation, and parenting stress

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Mothers of children with developmental disabilities often face elevated stress and emotional strain due to the complex and ongoing demands of caregiving, which can adversely affect the quality of their parenting. Unlike parents of typically developing children, these mothers encounter unique challenges, including social stigma, behavioral issues, and heavier caregiving responsibilities—factors that tend to hinder rather than enhance positive parenting. Two psychological elements—cognitive distortions and emotional regulation—are believed to play a key role in shaping parenting stress, yet they have not been thoroughly investigated. This study aims to fill that gap by exploring how these two factors relate to parenting stress in mothers of children with developmental disabilities. By examining these relationships, the research may provide valuable insights to promote more effective parenting practices within this vulnerable population.

The research hypothesis posits that emotion regulation mediates the relationship between cognitive distortion and parenting stress among mothers of children with developmental disorders. Cognitive distortion is positively correlated with parenting stress in this population. In addition, cognitive distortion is negatively correlated with emotion regulation, while emotion regulation is negatively correlated with parenting stress.

Method

This study used a mixed-methods approach combining quantitative and qualitative data. The quantitative phase involved 91 mothers of children with developmental disabilities recruited from two Section C Special Schools and two Community Learning Centers using incidental sampling. Standardized instruments were used to examine relationships among the study variables, and the distribution of disability categories is presented in Table 1. This was followed by interviews with five purposively selected participants to explain the quantitative findings. The integration of both phases enhanced the overall understanding of the phenomenon.

Table 1

Number of Mothers in Each Child Developmental Disorder Group

Group	Number of Mothers
Attention Deficit Hyperactivity Disorder (ADHD)	30
Autism Spectrum Disorder (ASD)	19
Intellectual Disability (ID)	16
Down Syndrome (DS)	4
Speech Delay (SD)	22
Total	91

Note. Data show the distribution of mothers by the child’s primary diagnosis; each mother is classified into one group only.

The data collection tools are the Parenting Stress Scale, Emotional Regulation Scale, and Cognitive Distortion Scale. All of these measuring instruments are filled in by mothers who care for children with developmental disorders. This study was approved by the Research Ethics Committee of the Faculty of Psychology, Soegijapranata Catholic University (Approval No. 032/B.7.5/FP.KEP/I/2025). Prior to participation, all participants were provided with an informed consent form and voluntarily agreed to complete the questionnaire.

The maternal parenting stress data used the Parenting Stress Scale (Daulay et al., 2020). This scale consists of 25 items and reliability (Cronbach's Alpha) = .821. There are 3 components in this scale, namely parental distress, difficult child, and parent-child dysfunctional interaction.

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There are five alternative answers, namely very appropriate, appropriate, abstain, inappropriate, very inappropriate

The Emotional Regulation Scale used data which is compiled based on the emotional regulation strategy according to Gross (2014). This scale consists of 14 items and reliability coefficient (Cronbach's Alpha) of .821. There are 2 strategies in this scale, namely reappraisal and suppression. There are four alternative answers, namely very appropriate, appropriate, inappropriate, and very inappropriate.

Parenting Cognitive Distortion Scale refers to Beck (2021) concept of types of cognitive distortions. This scale has 23 items and reliability coefficient (Cronbach's Alpha) of .893. There are 12 types of cognitive distortions in this scale, namely all or nothing thinking, catastrophizing, disqualifying or discounting the positive, emotional reasoning, labeling, magnification/minimization, mental filter, mind reading, overgeneralization, personalization, "should" and "must" statements, and tunnel vision. There are four alternative answers, namely very appropriate, appropriate, inappropriate, and very inappropriate.

Normality tests were conducted prior to data analysis. To examine the mediating role of emotion regulation between cognitive distortion and parenting stress, data analysis was performed using the SPSS PROCESS Macro version 4, developed by Andrew F. Hayes. The cognitive distortion and parenting stress variables met the normality assumption ($p > .05$), while the emotion regulation variable had a p-value less than .05. However, the mediation analysis using PROCESS Macro with bootstrapping of 5,000 samples does not require the normality assumption of variable distributions.

The multicollinearity test results revealed that the tolerance values for Cognitive Distortion (DK) and Emotion Regulation (RE) were both .999, with corresponding Variance Inflation Factor (VIF) values of 1.001. These findings indicate that there are no multicollinearity issues among the independent variables in the regression model.

To complement the quantitative findings, qualitative data were collected through interviews with five mothers. Participants were recruited based on their willingness to participate, following announcements made by the heads of institutions supporting the education of children with special needs. The interviews focused on three key aspects of parenting stress: (1) the maternal role, encompassing mothers' experiences in fulfilling caregiving responsibilities; (2) child-related limitations, reflecting challenges in managing their children's developmental constraints; and (3) mother–child interaction, describing the quality and extent of daily interactions. The qualitative data were analyzed using thematic analysis. Interview data were reviewed to identify key points, which were then grouped into themes related to parenting stress. These themes were refined and supported by selected excerpts from participants' narratives.

Result

A mediation analysis was conducted using the PROCESS Macro (Model 4) developed by Hayes (2022) to examine whether emotion regulation (RE) mediates the relationship between cognitive distortion (DK) and parenting stress (SP). The analysis employed a bootstrapping procedure with 5,000 resamples and a 95% confidence interval. The indirect effect of DK on SP through RE was not significant (effect = .0063, 95% CI [–.0442; .0635]), as the confidence interval included zero. This result suggests that emotion regulation does not significantly mediate the relationship between cognitive distortion and parenting stress.

The detailed results of the mediation analysis are presented in Table 2, while the visual model of the mediation paths is shown in Figure 2. Path a, which represents the relationship between DK and RE, was not significant ($p > .05$), with a coefficient of – .0136. Path b, representing

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the relationship between RE and SP, was significant ($p < .05$), with a coefficient of – .4618. The direct effect (path c′) from DK to SP was highly significant ($p < .01$), with a coefficient of .8557. The total effect (path c) from DK to SP, including the mediator, was also significant ($p < .05$), with a coefficient of .8620.

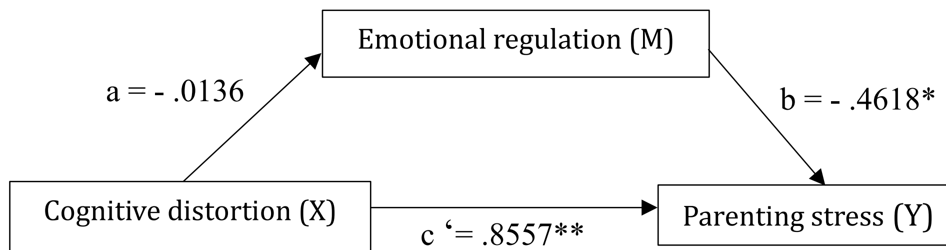

Figure 2. Results of the mediation test using SPSS via PROCESS model 4

Table 2.
Summary of Regression Coefficients and Effect Sizes for the Mediation Model

Path	*B*	Standardized *β*	*SE*	*p-value*
DK → RE (a path)	–.014	–.027	.053	.797
RE → SP (b path)	– .462	–.184	.186	.015*
DK → SP (direct effect, c')	.856	.689	.092	< .001***
DK → SP (total effect, c)	.862	.694	.095	< .001***
Indirect effect (DK → RE → SP)	.006	.005	.026	—

Note. DK = Cognitive Distortion; RE = Emotional Regulation; SP = Parenting Stress. B = unstandardized regression coefficient; *β* = standardized regression coefficient; SE = standard error. *$p < .05$. **$p < .01$. *** $p < .001$

To further support these findings, this study employed a Multi-Group Analysis (MGA). Given that only four mothers had children diagnosed with Down Syndrome (DS), this group was merged with the Intellectual Disability (ID) group for statistical analysis. This classification aligns with the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), which identifies Down Syndrome (Trisomy 21) as a biological etiology of Intellectual Disability. Consequently, the total number of mothers classified as raising children with ID was 20. The distribution of children across developmental disorder groups is presented in Table 1. The results of the MGA are presented in Tables 3 and 4.

Table 3.
Summary of SmartPLS Results – Multi Group Analysis (MGA)

Path	**Group**	**Path Coefficient**	***p-value***
Cognitive distortion → Emotion regulation	ADHD	.185	.230
	ASD	-.506	.012*
	ID + DS	.118	.628
	SD	-.226	.267
Emotion regulation → Parenting stress	ADHD	-.156	.203
	ASD	-.478	.008**
	ID + DS	-.550	.001**
	SD	.126	.445

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Table 3.

Summary of SmartPLS Results – Multi Group Analysis (MGA)

Path	Group	Path Coefficient	*p-value*
Cognitive distortion → Parenting stress (direct effect)	ADHD	.744	<.001***
	ASD	.431	.005**
	ID + DS	.656	<.001***
	SD	.797	<.001***
Cognitive distortion → Emotion regulation → Parenting stress (mediation effect)	ADHD	-.029	.439
	ASD	.242	.030*
	ID + DS	-.065	.640
	SD	-.028	.624

Note. ADHD = Attention Deficit Hyperactivity Disorder; ASD = Autism Spectrum Disorder; ID = Intellectual Disability; SD = Speech Delay. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$

Table 4.

R^2 (R-Square) Values of Endogenous Variables by Group

Group	Endogenous Variable	*R^2 (R-Square)*
ADHD	Emotion Regulation	.034
	Parenting Stress	.535
ASD	Emotion Regulation	.256
	Parenting Stress	.624
ID + DS	Emotion Regulation	.014
	Parenting Stress	.647
SD	Emotion Regulation	.051
	Parenting Stress	.605

Note. ADHD = Attention Deficit Hyperactivity Disorder; ASD = Autism Spectrum Disorder; ID = Intellectual Disability; DS = Down Syndrome; SD = Speech Delay. R^2 indicates the proportion of variance explained by the predictors in the structural model.

Qualitative data from five participants supported the MGA findings by illustrating group-specific patterns in the relationships among cognitive distortion, emotion regulation, and parenting stress. Each case demonstrated how maternal cognition, emotion regulation, and stress dynamically interacted in daily life. Demographic data of participants are presented in Table 5.

Table 5.

Demographic Characteristics of Mothers and Children

No.	Mother (Initials)	Mother's Age (Years)	Mother's Occupation	Child's Developmental Condition	Child's Sex	Child's Age (Years)
1	M1	46	Homemaker	Intellectual Disability	Male	10
2	M2	30	Homemaker and Small-Scale Food Entrepreneur	Autism Spectrum Disorder (ASD)	Male	6
3	M3	36	Homemaker	Attention-Deficit / Hyperactivity Disorder (ADHD)	Male	4
4	M4	43	Homemaker	Speech Delay	Male	5
5	M5	29	Homemaker	Speech Delay	Female	4

Note. M1 = Mother 1 (Participant 1), M2 = Mother 2 (Participant 2), M3 = Mother 3 (Participant 3), M4 = Mother 4 (Participant 4), and M5 = Mother 5 (Participant 5).

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The interview data along with the corresponding themes are summarized in Table 6.

Table 6.
Summary of Interview Data and Themes

Participant	Interview Data	Theme
M1 (ID)	The mother felt fully responsible for her child's learning process and experienced guilt when she was unable to accompany the child during study time. Even when she was ill, she still demanded herself to continue assisting her child with learning. She also believed that the class teacher did not understand appropriate teaching methods for children with special needs. When she felt frustrated because her child had difficulty understanding the material, she chose to distance herself temporarily—such as going to the kitchen for a drink of water or going to the bedroom—to calm herself down. Over time, she frequently experienced psychological exhaustion and eventually gave up when her child continued to struggle with the lessons. The situation was further compounded by the father's limited involvement in supporting the child's learning process.	• Parental over-responsibility • Maternal emotional burden • Low perceived external support • Emotion-focused coping • Spousal support
M2 (ASD)	The mother reported feeling anxious and uncomfortable about taking her child outside the home due to concerns about how others might judge her child's behavior. When she felt overwhelmed, she managed her emotions by withdrawing to her bedroom and practicing deep-breathing techniques, while her husband took over caregiving responsibilities, which she described as very helpful. The mother also reported experiencing feelings of embarrassment and anxiety when her child screamed in public and attracted attention. She noted that outside familiar settings, such as school, therapy environments, and the neighborhood, people often gave her child strange or disapproving looks.	• Maternal emotional burden • Low perceived external support • Emotion-focused coping
M3 (ADHD)	Based on the interview, the mother reported that she frequently allowed her child to watch television (YouTube) for extended periods as a way to keep him calm. She also rarely took her child outside because she felt physically and emotionally exhausted from the need to closely supervise his behavior during outdoor activities. When outside, the child often ran around aimlessly, and the mother felt fatigued from having to constantly chase and monitor him. When her child had tantrums, the mother attempted to regulate her own emotions by practicing deep-breathing techniques; however, she sometimes felt panicked when the child was unable	• Maternal emotional burden • Emotion-focused coping • Avoidance coping • Spousal support

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Table 6.
Summary of Interview Data and Themes

Participant	Interview Data	Theme
	to calm down quickly. The mother also reported experiencing feelings of anxiety and shame when her child had tantrums during therapy sessions. In these situations, she had to manage the child's behavior independently because her husband was working out of town.	
M4 (SD – Therapy)	The mother perceived that her child's progress in therapy was limited, which she attributed to what she considered suboptimal therapeutic services. She reported that because her child was not yet able to communicate, she rarely encouraged communication, as she believed such efforts would be ineffective. Financial constraints were also identified as a barrier to changing therapy providers. To manage her emotional state, the mother reported regularly practicing brief meditation after morning prayers and intentionally refraining from emotional reactions when her child became fussy.	• Maternal emotional burden • Low perceived external support • Emotion-focused coping
M5 (SD – Home Learning)	The mother reported that she frequently compared her child's academic abilities with those of his peers. She observed that other children were already able to read, while her child had not yet achieved this. As a result, she perceived her child as having limited abilities and being less capable than his peers. To address this perceived gap, the mother believed her child needed to study longer and set a target of two hours of study time each day. When the child stopped studying after about an hour and refused to continue, the mother reported feeling angry and tried to force her child to continue. However, when the child continued to refuse, the mother chose to leave the room. She stated that she often experienced feelings of irritation and frustration when her child refused to study for extended periods. This challenge was compounded by the fact that she had to manage the situation independently while her husband was working out of town.	• Parental over-responsibility • Emotion-focused coping • Avoidance coping • Spousal support

Note. M1–M5 represent participating mothers. ID = Intellectual Disability; ASD = Autism Spectrum Disorder; ADHD = Attention-Deficit/Hyperactivity Disorder; SD = Speech Delay.

Discussion

This study hypothesizes that emotional regulation acts as a mediator in the relationship between cognitive distortion and parenting stress among mothers of children with developmental disorders. It proposes that cognitive distortion is positively associated with parenting stress, while cognitive distortion is negatively related to emotional regulation. Additionally, emotional regulation is negatively correlated with parenting stress. This hypothesis is grounded in the findings of Değer et al. (2022), who reported that emotional regulation mediates the link between

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automatic thoughts and parenting stress. Beck (2021) further supports this by suggesting that automatic thoughts can lead to cognitive distortions, which in turn may contribute to stress.

The findings from this study suggest that emotion regulation does not function as a mediating variable in the relationship between cognitive distortions and parenting stress. Cognitive distortions were found to have a strong and statistically significant positive correlation with parenting stress, indicating that higher levels of cognitive distortions are associated with greater parenting stress. In contrast, emotion regulation showed a significant negative correlation with parenting stress. This suggests that individuals who are better at regulating their emotions tend to experience lower levels of parenting stress. However, the relationship between cognitive distortions and emotion regulation was found to be negative but not statistically significant, suggesting that while there may be a trend that individuals with higher levels of cognitive distortions have poorer emotion regulation, this relationship cannot be confidently confirmed based on the data.

The results differ from the findings of Iftikhar et al. (2024), who reported a significant positive correlation between cognitive distortions and emotion dysregulation, suggesting that distorted thinking patterns are strongly associated with difficulties in regulating emotions. However, there are similarities between the two studies: Both confirm that cognitive distortions are positively related to stress, and that emotion dysregulation is also positively related to stress. Thus, although the mediating role of emotion regulation may not be established in the current study, the direct relationships between cognitive distortions and parenting stress, as well as between emotion regulation and stress, are consistent with the existing literature.

This study revealed that emotional regulation does not serve as a mediating factor between cognitive distortion and parenting stress. In simpler terms, the pathway from cognitive distortion (i.e., distorted or biased thinking patterns) to parenting stress is direct—it does not pass through emotional regulation (the ability to manage and respond to one's emotional experiences in adaptive ways). This implies that when individuals experience cognitive distortions, such as catastrophizing, overgeneralizing, or black-and-white thinking, they are likely to experience heightened parenting-related stress regardless of their emotion regulation abilities.

Consequently, emotional dysregulation (difficulty managing emotional responses) is not a necessary condition for cognitive distortions to lead to parenting stress. Instead, both cognitive distortion and emotional dysregulation exert independent effects on parenting stress. That is, a parent may experience stress due to maladaptive thinking or difficulties in emotion regulation, or both; however, one does not necessarily lead to the other. This finding emphasizes the importance of addressing both cognitive and emotional processes when designing interventions aimed at reducing parenting stress. Simply improving emotional regulation might not be sufficient if cognitive distortions remain unchallenged.

The correlation coefficient of - .027 indicates a very weak negative relationship between cognitive distortions and emotion regulation. However, because the p-value is greater than .05, this correlation is not statistically significant. This means that the observed relationship could easily be due to chance, and therefore cannot be confidently stated that there is a real relationship between the two variables in the population. In practical terms, the findings indicate that cognitive distortions do not consistently relate to changes in emotion regulation within this dataset. As a result, experiencing cognitive distortions does not necessarily cause difficulties in regulating emotions, suggesting that other factors may have a more substantial influence on emotion regulation.

According to Beck's (1979) cognitive theory, cognitive distortions—systematic errors in thinking—play a central role in shaping emotional experiences. When individuals engage in

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distorted thinking patterns, such as catastrophizing or overgeneralization, they are more likely to experience negative emotions like anger, anxiety, or irritability. However, a critical issue arises when individuals fail to recognize that these negative emotional responses are rooted in faulty cognition. Without this awareness, they are less likely to engage in cognitive restructuring—that is, the process of re-evaluating and modifying distorted thoughts.

Gross (2014) expands on this through his model of emotion regulation, which identifies cognitive reappraisal (or re-evaluation) as a key strategy in managing emotions. Reappraisal involves altering the way one thinks about a potentially emotion-eliciting situation in order to change its emotional impact. However, as Jazaieri et al. (2020) note, even when individuals experience negative emotions due to distorted thinking, they do not always engage in emotion regulation strategies like reappraisal. This indicates that experiencing negative emotions does not automatically trigger regulatory efforts.

The work of Beck and Jazaieri, as discussed in Jazaieri et al. (2020) together suggests that there are underlying factors—such as emotional awareness, cognitive flexibility, or situational intensity—that determine whether a person will choose to regulate their emotions. Furthermore, if the source of distress persists or intensifies, individuals may become more motivated to regulate their emotions in order to reduce psychological discomfort. In summary, while cognitive distortions significantly influence emotional states, the act of regulating these emotions—particularly through reappraisal—is not automatic. Instead, it is influenced by various individual and contextual factors that determine whether regulation will occur.

Bornstein (2024) provides a detailed explanation of the factors that influence emotional regulation, particularly when this ability is examined in the context of parenting. Emotional regulation is shaped by three primary domains: parental, child-related, and situational factors. Parental factors encompass a range of characteristics such as age, gender, number of children, the mother's awareness of both her own emotions and those of her child, past parenting experiences, and overall personality traits. Child-related factors include the child's own capacity for emotional regulation, temperament, and the presence of any developmental disorders. Situational factors include the quality of the marital relationship, availability of social support, socioeconomic status, and the level of acceptance from the surrounding environment.

Enav et al. (2024) specifically investigated the roles of child temperament and social support in emotional regulation. Their findings highlighted a noteworthy distinction between parents of children with Autism Spectrum Disorder (ASD) and those with typically developing children. For parents of children with ASD, the presence of a supportive partner during parent-child interactions significantly enhanced the caregiver's emotional regulation. In contrast, for parents of neurotypical children, partner presence did not show the same effect. This disparity is attributed to the higher levels of stress experienced by parents of children with ASD, making partner support a crucial buffer that helps manage emotional demands. The MGA results (Table 3) revealed that the relationships among cognitive distortion, emotion regulation, and parenting stress differed across the groups of mothers with children having various developmental disorders. These differences indicate that the nature of the child's condition influences how mothers interpret their parenting experiences and manage their emotions when facing daily challenges.

Cognitive distortion was found to have a positive and significant effect on parenting stress across all groups (ADHD, ASD, ID, and Speech Delay). This finding suggests that maladaptive thought patterns—such as overgeneralization, mind reading, or personalization—lead mothers to interpret their parenting experiences more negatively, resulting in higher emotional strain. This aligns with Beck's (1979) cognitive theory, which posits that distorted cognitions cause

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individuals to misinterpret experiences, thereby amplifying stress and negative affect. The highest path coefficients were observed in the Speech Delay (β = .797) and ADHD (β = .744) groups, indicating that maternal parenting stress in these two groups was more strongly influenced by cognitive perception than by emotional regulation. This may be explained by the high frequency of challenging behaviors in children with ADHD (e.g., inattention, impulsivity, hyperactivity), which elicit negative automatic thoughts in mothers (Theule et al., 2010). In contrast, mothers of children with ASD or ID may have already adapted to their child's stable behavioral patterns and developed long-term caregiving strategies, reducing the relative impact of cognitive distortion on stress.

Emotion regulation functioned as a protective factor, particularly in the ASD and ID groups. In these groups, mothers' abilities to recognize, understand, and manage negative emotions significantly reduced parenting stress. This finding supports Gross's (2014) emotion regulation model, which posits that effective regulation helps control the intensity and duration of negative emotions triggered by stress. It is also consistent with Bögels et al. (2010) and Duncan et al. (2009), who demonstrated that enhancing emotional awareness and self-regulation through Mindful Parenting training can reduce parenting stress in parents of children with developmental disorders. In the ADHD and Speech Delay groups, however, the relationship between emotion regulation and parenting stress was not significant. This indicates that in these groups, maternal stress is more influenced by the child's behavioral load and cognitive interpretations of situations rather than by emotional competence. This pattern aligns with Podolski and Nigg's (2001) findings that mothers of children with ADHD experience stress primarily due to behavioral challenges rather than intrapsychic factors such as emotional regulation.

The mediation analysis further showed that emotion regulation significantly mediated the relationship between cognitive distortion and parenting stress only in the ASD group (β = .242; p = .030). This was supported by the direct path from cognitive distortion to emotion regulation, which was also significant only in the ASD group (β = -.506; p = .012). In other words, high cognitive distortion increased parenting stress through reduced emotional regulation. Mothers with negative thoughts, such as "My child will never be independent" or "I'm a failure as a mother" tend to feel frustrated and emotionally overwhelmed when dealing with their child's behaviors. Conversely, cognitive reappraisal (e.g., "My child is different, but I can adapt my ways to support them") effectively reduced emotional distress. These results strengthen the emotion–cognition integration model (Gross, 2014), which posits that cognitive distortions influence emotional responses that, in turn, determine stress levels. Similarly, Ekas et al. (2016) found that among mothers of children with ASD, negative emotions (anger, sadness, guilt) mediated the relationship between maladaptive cognitions and parenting stress.

As shown in Table 4, the highest R^2 value for emotion regulation was found in the ASD group (.256), followed by Speech Delay (.051), ADHD (.034), and ID (.014). This indicates that mothers of children with ASD were the most vulnerable to emotion regulation difficulties due to strong psychological pressure and cognitive distortion. The R^2 values for parenting stress were relatively high and stable across all groups (.535–.647), suggesting that cognitive distortion and emotion regulation consistently explained the majority of parenting stress, even though the intensity and form of stress differed by group.

Parental over-responsibility

The theme of over-responsibility and role burden in caregiving was particularly salient in participants M1 and M5, especially in relation to their children's academic assistance. Both mothers demonstrated a tendency to construe their children's academic success as a personal

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obligation that they must fully assume. This perception extended beyond active involvement and developed into an excessive sense of responsibility, characterized by the belief that the child's success or failure is largely determined by the quality of maternal guidance. In M1, this sense of responsibility was reflected in her persistent efforts to supervise her child's learning, even when experiencing physical discomfort or fatigue. When she was unable to provide optimal support, she reported experiencing intense guilt. This guilt suggests the internalization of high parenting standards, whereby maternal self-worth became closely tied to the child's academic achievement. Over time, escalating self-demands contributed to cumulative psychological exhaustion.

A similar pattern was evident in M5, who established a structured study target of two hours per day to compensate for her child's perceived academic lag compared to peers. Social comparison reinforced the belief that her child "must" meet certain performance standards. When the child struggled to meet these expectations, the mother responded by exerting additional pressure to continue studying. In this context, academic performance pressure was not only experienced by the child but also became a significant emotional burden for the mother. This phenomenon can be conceptualized as parental over-responsibility, in which the boundary between providing support and assuming the child's developmental tasks becomes blurred. Rather than functioning as a facilitator, the mother positions herself as the primary determinant of academic outcomes. Consequently, when the child encounters difficulties or fails to demonstrate expected progress, the mother experiences these outcomes as personal failure. This pattern directly contributes to frustration, emotional fatigue, and, in some cases, a tendency toward withdrawal or resignation.

Overall, over-responsibility in caregiving does not merely intensify parental involvement; it also amplifies psychological vulnerability. When responsibility is perceived as absolute and undivided—neither shared with the child nor with a partner—the mother becomes increasingly susceptible to psychological distress and long-term burnout.

Maternal emotional burden

The theme of emotional exhaustion and psychological distress emerged consistently across all participants, although its manifestations and contextual triggers varied. This pattern reflects the presence of recurrent and prolonged emotional strain throughout the caregiving process of raising children with special needs. In M1, exhaustion was primarily manifested as psychological exhaustion—an enduring state of mental fatigue resulting from sustained and intensive academic supervision. This fatigue was not solely attributable to physical demands but was largely driven by internal pressure to continuously fulfill her perceived academic responsibilities toward the child. Over time, the accumulation of such pressure contributed to feelings of resignation, particularly when the child continued to experience learning difficulties despite persistent efforts.

Among M2 and M3, distress was more prominently expressed as anxiety and embarrassment, particularly in public situations or during episodes of the child's dysregulated behavior. Social reactions, including perceived negative judgments and public scrutiny, intensified feelings of discomfort and heightened emotional strain. In this context, exhaustion did not stem exclusively from interactions with the child but was amplified by concerns regarding social evaluation and stigma. Similarly, M5 exhibited irritability and frustration when her child failed to meet predetermined academic expectations. When sustained efforts did not yield observable progress, recurring emotional tension emerged. For M3, exhaustion also encompassed both physical and emotional dimensions, particularly due to continuous behavioral supervision, especially in outdoor or public settings where the child required heightened monitoring. This

condition illustrates emotional fatigue arising from constant vigilance and the persistent need to remain alert.

Overall, the emotional exhaustion experienced by the mothers appeared to derive from several interrelated factors. First, continuous behavioral monitoring demanded substantial physical and psychological energy. Second, social pressure—especially in public contexts—exacerbated anxiety and emotional discomfort. Third, unmet expectations regarding the child's developmental progress generated frustration and disappointment. Fourth, limited spousal support among some participants intensified the burden, as caregiving responsibilities were not equitably shared. Taken together, a unifying thread across participants' experiences is the presence of maternal emotional burden—an emotionally laden dimension of motherhood in the context of raising a child with special needs. This burden is inherently multidimensional, encompassing psychological, social, and relational components, and carries the potential to evolve into chronic exhaustion if not mitigated by adequate support systems and adaptive coping strategies.

Low perceived external support

The theme of negative perceptions toward external support emerged among several participants, indicating that systems beyond the immediate family were not consistently viewed as reliable or adequate sources of assistance. Importantly, these perceptions were shaped not merely by the objective quality of services, but by how mothers interpreted and internalized their interactions with schools, therapists, and the broader social environment. In M1, there was a belief that teachers lacked sufficient understanding of appropriate instructional strategies for children with special needs. This perception generated doubts regarding the effectiveness of school-based learning and indirectly intensified the mother's sense of responsibility in providing academic support at home. When the school was not perceived as a competent partner, the mother felt compelled to assume a more dominant role in ensuring that her child comprehended the material.

A similar perception was observed in M4 within the therapeutic context. The mother evaluated the services as suboptimal and reported limited observable developmental progress. Financial constraints that restricted the possibility of changing providers further reinforced feelings of helplessness. This mismatch between expectations for improvement and perceived outcomes created ongoing emotional tension. For M2, perceived lack of support stemmed primarily from the social environment. Public reactions—such as staring or negative responses when the child displayed certain behaviors—elicited anxiety and embarrassment. Rather than serving as a supportive social space, the community environment was experienced as a source of psychological pressure.

Collectively, these experiences reflect a condition of low perceived external support, defined as diminished confidence in the availability and quality of assistance from external systems, including educational institutions, professional services, and the broader community. When mothers feel that they are not receiving sufficient understanding, acceptance, or practical assistance, a sense of isolation in caregiving responsibilities emerges. This perception intensifies emotional burden, as responsibility becomes increasingly centralized within the mother without the presence of a genuinely supportive partnership system. Over time, such conditions may elevate the risk of chronic stress and further deepen existing psychological exhaustion.

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Emotion-focused coping

The theme of emotion regulation through withdrawal and spiritual coping revealed a relatively consistent pattern across nearly all participants. In responding to caregiving stress, the mothers tended to prioritize calming themselves before re-engaging with emotionally demanding situations. These strategies functioned as protective mechanisms when emotional intensity—such as anger, anxiety, or frustration—became overwhelming.

Among M1, M2, and M5, emotional regulation frequently involved temporary withdrawal, such as retreating to a bedroom, kitchen, or leaving the immediate space when conflict with the child escalated. This brief distancing served as an emotional pause, allowing the mother to prevent impulsive reactions. In the short term, this strategy reduced tension and minimized the risk of direct conflict escalation with the child.

For M2 and M3, deep-breathing techniques were employed to manage anxiety and panic, particularly when confronting difficult-to-regulate child behaviors. The use of these techniques indicates an awareness of the importance of physiological stabilization as a component of emotional control. Meanwhile, M4 engaged in meditation following morning prayers and consciously restrained emotional reactions when the child became irritable. In this case, coping was embedded within a spiritual and reflective framework, with spirituality serving as a source of calmness, meaning-making, and acceptance of circumstances that were perceived as difficult to change.

Conceptually, these strategies fall within the category of emotion-focused coping, defined as efforts to regulate emotional responses to stress rather than directly modifying the stressor itself. The mothers' efforts were largely directed toward self-soothing, reducing anxiety, or suppressing negative reactions, rather than implementing structural changes such as adopting new behavioral management strategies, redistributing caregiving roles, or advocating for systemic support.

Although these approaches are adaptive in the short term—helping preserve emotional stability and prevent harmful responses—reliance predominantly on emotion-focused coping may limit opportunities for long-term change. Without complementary problem-focused coping strategies, stressors such as academic demands, challenging child behaviors, or limited external support are likely to persist, thereby reactivating emotional strain. Thus, these findings suggest that while the mothers demonstrate substantial self-regulatory capacity, they may benefit from additional support aimed at developing more comprehensive, solution-oriented coping strategies.

Avoidance coping

The theme of avoidance and passive management was particularly evident in participants M3 and M5, especially in situations where they experienced significant physical and emotional exhaustion. In such conditions, the strategies employed were no longer limited to temporary self-soothing but shifted toward avoiding situations perceived as stress-inducing. For M3, one prominent strategy involved allowing the child to watch YouTube for extended periods in order to maintain calmness. Additionally, she rarely took the child the home, citing fatigue associated with continuously monitoring and managing difficult behaviors. This pattern reflects an effort to minimize exposure to situations likely to trigger exhaustion or conflict. Similarly, in M5, when academic conflicts intensified and the child refused to continue studying, the mother chose to leave the room. This action functioned as an immediate means of reducing emotional tension.

These behaviors are characteristic of avoidance coping, defined as the tendency to evade stressors rather than confronting them directly. In the short term, such strategies may provide emotional relief, reduce the intensity of conflict, and create space for psychological recovery.

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Avoidance can also serve as a protective mechanism when emotional regulation capacity has reached its limit. However, over the long term, this pattern may contribute to the maintenance—or even reinforcement—of existing difficulties. For example, excessive reliance on digital media as a calming tool may limit the child's opportunities to develop active self-regulation skills. Avoiding outdoor activities may restrict the child's exposure to contexts that foster social competence and behavioral regulation. Likewise, withdrawing from academic conflict without constructive resolution may perpetuate patterns of resistance toward learning tasks.

Thus, avoidance and passive management can be understood as temporarily adaptive responses to overwhelming stress, yet insufficient as long-term solutions. These patterns suggest that maternal exhaustion has reached a level at which active coping strategies feel too demanding to implement. Consequently, interventions aimed at strengthening problem-focused coping strategies and enhancing social support systems are essential to help mothers move beyond cycles of avoidance that may inadvertently sustain caregiving stress.

Spousal support

The theme of spousal support as a protective factor emerged as a key differentiating element among participants. In M2, the presence of a husband who was willing to assume caregiving responsibilities when the mother felt overwhelmed constituted a significant source of support. When the child displayed challenging behaviors in public settings or when the mother began to experience anxiety and emotional instability, the husband temporarily stepped in to take over. The mother explicitly described this support as highly beneficial. This finding suggests that partner involvement not only alleviates physical caregiving demands but also provides emotional security, reinforcing the perception that caregiving responsibilities are shared rather than borne alone.

In contrast, among M1, M3, and M5, spousal involvement was relatively limited. Occupational demands (e.g., working outside the city) or minimal active participation in child-related tasks resulted in mothers managing nearly the entire spectrum of caregiving dynamics independently. Under such circumstances, mothers lacked adequate opportunities for respite when exhaustion escalated. The absence of balanced role distribution increased the likelihood of stress accumulation, as no immediate mechanism for burden-sharing existed within the family system.

These findings indicate that spousal support functions as a protective factor in the context of raising a child with special needs. Partner involvement can serve as a stress buffer, facilitate emotional regulation, and provide practical assistance in managing challenging behaviors. Conversely, limited spousal support may operate as a risk factor, heightening vulnerability to psychological exhaustion, frustration, and potential burnout.

Thus, the quality and degree of partner involvement in caregiving extend beyond relational dynamics and have direct implications for maternal psychological well-being. Consistent and collaborative support has the potential to reduce the intensity of emotional burden, whereas its absence may reinforce experiences of isolation and overresponsibility within the caregiving role.

Integrated Thematic Synthesis

Based on the analysis of the six themes, it can be concluded that the mothers' experiences in raising children with special needs are characterized by a complex and multilayered emotional burden shaped by both internal and external factors. Internally, a pattern of parental over-responsibility emerged, particularly within the academic domain, leading mothers to construe

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their children's achievements as a personal obligation. This pattern intensified self-imposed pressure, guilt, and vulnerability to psychological exhaustion. Emotionally, all participants demonstrated forms of maternal emotional burden, manifested in mental fatigue, anxiety, frustration, and embarrassment. These emotional strains were not isolated phenomena but were closely linked to continuous behavioral supervision, developmental expectations, and the dynamic challenges associated with the child's behavior.

From an external perspective, low perceived external support was evident across educational settings, therapeutic services, and the broader social environment. When systems beyond the family were not experienced as reliable or understanding sources of assistance, mothers tended to feel isolated and to assume caregiving responsibilities more heavily. This condition was further exacerbated in cases where spousal support was limited, resulting in an unequal distribution of caregiving roles and an intensified accumulation of stress.

In coping with these pressures, mothers predominantly employed emotion-focused coping strategies, including withdrawal, relaxation techniques, and spiritual coping. In several instances, avoidance and passive management strategies also emerged, offering short-term stress relief but potentially sustaining problems over the long term. Overall, these coping patterns indicate that maternal psychological resources were largely directed toward maintaining emotional stability rather than implementing structural changes to address the underlying sources of stress.

Implication dan Limitation

This study has several limitations, particularly the relatively unequal number of respondents across the developmental disorder groups (ADHD, ASD, ID/Down Syndrome, and SD), which may have affected the strength of group comparisons. Nevertheless, the novelty of this research lies in its cross-disorder comparison of the relationships among cognitive distortion, emotion regulation, and parenting stress across multiple developmental conditions using a Multi-Group Analysis (MGA) approach within the PLS-SEM framework.

Based on these findings, psychological interventions should be tailored to the child's specific developmental condition. Mothers of children with ASD would benefit from programs that focus on enhancing emotion regulation and cognitive restructuring, such as mindful parenting training or cognitive reappraisal therapy. Mothers of children with ADHD may benefit from cognitive reframing combined with behavioral parenting skills training to help them interpret their child's behavior more realistically and manage stress more effectively. Meanwhile, mothers of children with ID may require interventions that strengthen social support, spirituality, and self-acceptance, as their stress appears to be more cognitively oriented than emotionally driven. Mothers of children with Speech Delay should be supported through psychoeducational programs aimed at reducing anxiety and fostering more realistic expectations regarding their child's developmental progress.

Conclusion

The findings of this study indicate that maternal cognitive distortion is the most consistent predictor of parenting stress across all groups of mothers raising children with developmental disorders. The relationship between cognitive distortion and parenting stress was statistically significant in all groups ($p < .001$), with a strong coefficient of determination (R^2 = .535–.647). This suggests that approximately 53.5%–64.7% of the variance in parenting stress can be explained by the proposed model. These results highlight that maladaptive thinking patterns

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represent the primary source of psychological burden among mothers of children with special needs.

However, emotion regulation played a significant role only among mothers of children with Autism Spectrum Disorder (ASD). In this group, cognitive distortion negatively affected emotion regulation (β = –.506; p = .012), indicating that higher levels of distorted thinking were associated with poorer emotional management. Furthermore, emotion regulation functioned as a mediator between cognitive distortion and parenting stress (β = .242; p = .030). These findings suggest that mothers of children with ASD face more complex cognitive-emotional challenges compared to mothers in other groups.

In contrast, among mothers of children with Attention-Deficit/Hyperactivity Disorder (ADHD), Intellectual Disability (ID, including Down syndrome), and Speech Delay (SD), emotion regulation did not serve as a significant mediating variable. This indicates that, in these groups, parenting stress is more directly influenced by cognitive distortion rather than indirectly through emotional regulation processes.

Overall, the qualitative findings converge on one central theme: mothers of children with special needs experience significant role strain. This strain arises from a combination of over-responsibility, chronic emotional burden, perceived low external support, and limited spousal involvement. The dominant coping strategies reported were emotion-focused, suggesting that mothers primarily attempt to manage their internal emotional responses rather than alter external stressors.

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