

Nurussakinah Daulay <nurussakinah@uinsu.ac.id>

# 203256985 (International Journal of Developmental Disabilities) A revise decision has been made on your submission

2 pesan

International Journal of Developmental Disabilities <em@editorialmanager.com>

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Balas Ke: International Journal of Developmental Disabilities <yjdd-peerreview@journals.tandf.co.uk>

Kepada: nurussakinah daulay <nurussakinah@uinsu.ac.id>

Ref.: JDD675 203256985

Maladaptive Behavior of Children and Parenting Stress in Indonesian Mothers of Children with Neurodevelopmental Disorders International Journal of Developmental Disabilities

Dear nurussakinah daulay,

We have now received reviewers' comments on the above submission. I am pleased to tell you that the reviews were positive however there are some points raised by the referee(s) that require attention before the paper can be considered for publication. These points are detailed in the comments below.

We look forward to receiving a revised version of your paper, prepared in the light of these comments, by 27 Sep 2020.

To submit a revision, go to https://rp.tandfonline.com/submission/flow?submissionId=203256985&step=1. If you decide to revise the work, please submit a list of changes or a rebuttal against each point which is being raised when you submit the revised manuscript.

If you have any questions or technical issues, please contact the journal's editorial office at yjdd-peerreview@journals.tandf.co.uk.

When resubmitting, please indicate clearly your response to the reviewers' comments. These should appear in a document uploaded separately with the revised manuscript. Ideally, your response to reviewers comments document would include a copy of your original manuscript with track changes displaying the changes you have made.

Please ensure that you supply a final text file of your revised manuscript and a high resolution image file of each figure. Failure to do this may result in a delay in the typesetting of your paper. Please note that it is not permitted to submit a PDF file of the revised manuscript at this stage.

Please also note that incomplete and duplicate references must be corrected in the final text before it will be considered for publication.

Thank you once again for kindly submitting your work to our Journal.

With best wishes,

Brian Salmons, PhD Editor International Journal of Developmental Disabilities

Comments from the Editors and Reviewers:

have to be included.

Reviewer #1: This study has valuable focus in exploring the effect of developmental disability on parental stress. However, there are numbers of limitations of the paper that need to focus on, including the theoretical framework, structure, and methods used in the study. These concerns are detailed below.

Introduction: This study requires a clear the theoretical framework, structure, and methods used in the study. This study needs to elaborate the originality of the study given bunch of studies exploring the associations of disabilities and parental stress are available in the literature. Why this study is different from others?

Methods: Procedure how this data gathered is also required. Data analysis to measure moderator of the study needs to be clearer. Reliability and validity of the instruments

Discussion and Conclusion: What is the study implications?

Reviewer #2: The main conclusion of the authors is the level of parenting stress in mothers who have children with autism spectrum disorder is higher than those having children with other types of neurodevelopmental disorder. This conclusion is according with the literature. As the authors said, in 2013 Hayes and Watson carried out a meta-analysis study that showed that parents who have children with autism spectrum disorder experience parenting stress higher than those who have children with other types of disorder and those who have children with normal development.

For us, the main limitation is the type of measure that has been used to estimate maternal stress. The PSI (Abidin, 1995) is a widely used test to estimate stress in mothers and fathers of children with neurodevelopmental disorders. However, in relation to its use in samples of mothers and/or fathers of children with ASD, two of its three subscales have been shown to be at risk of overestimating stress scores. These two subscales include within their items, some with characteristics of ASD that would be erroneously attributed as indicators of parental stress. For example, within Dysfunctional Interactions sub-scale, we find items as "my son/daughter smiles at me much less than I expected"; "my son/daughter takes a long time and has a hard time getting used to new things"...; about Difficult Child sub-scale, "my son/daughter reacts very strongly when something he/she doesn't like happens" ... These items can be describing signs of autism, not necessarily parental stress.

According to Zaidman-Zait et al. (2010), items in the Parental Distress sub-scale are useful to assess the severity of distress among parents of individuals with ASD; however, items in the parent-child dysfunctional interactions and difficult child subscales should be taken with caution. Following Zaidman-Zait et al. (2010) recommendation, we suggest that the authors include in the paper not only the analysis using the PSI-Total, but also Parental Distress sub-scale as measure of Parental Stress. We consider this is important in order to conclude that the level of parenting stress in mothers who have children with autism spectrum disorder is higher than those having children with other types of neurodevelopmental disorder.

In relation to the discussion, authors reflect about atypical sensory functioning of people with ASD and connect these difficulties with behavioural problems. But they omitted works about parental stress in people with ASD that are connecting this sensory atypical functioning directly with parental stress. Works that are showing that sensory characteristics are explaining more percentage of variance in the parental stress than behavioural problems (Ben-Sasson, Soto, Martínez-Pedraza & Carter, 2013; Nieto, López & Gandía, 2017). We think discussion could be enriched including theses references.

Reviewer #3: The title must be clear, interesting, problematic and describe the contents of the article. The contents of the article must be written critically and objectively based on facts and data. Avoid jumping ideas between one aline to the next paragraph. The methodology and analysis used in this study should be seen when writing this discussion.

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Nurussakinah Daulay <nurussakinah@uinsu.ac.id> 14 Oktober 2020 07.35 Kepada: Narasimhan Vaidyanathan <yjdd-peerreview@journals.tandf.co.uk>

[Kutipan teks disembunyikan]

To:

Editor in Chief

The International Journal of Developmental Disabilities

Dear Editor and Reviewers....

Saya menghaturkan terima kasih sedalam-dalamnya atas keseriusan dan kebaikan editor dan reviewer telah memberikan comments dan suggestions kepada tulisan ini agar menjadi lebih baik.

Naskah ini berjudul "The Moderating Effect of Types of Child's Neurodevelopmental Disorder on the Relationship between Indonesian Mothers' Perception of Child's Maladaptive Behaviour and Maternal Parenting Stress", dan penulisnya adalah Nurussakinah Daulay.

Saya telah melengkapi comments dan suggestions dengan lebih hati-hati dan lebih serius sesuai saran reviewer. Penjelasannya sebagai berikut:

## 1. According to the advice of the first reviewer.

This study has valuable focus in exploring the effect of developmental disability on parental stress. However, there are numbers of limitations of the paper that need to focus on, including the theoretical framework, structure, and methods used in the study. These concerns are detailed below.

Introduction: This study requires a clear the theoretical framework, structure, and methods used in the study. This study needs to elaborate the originality of the study given bunch of studies exploring the associations of disabilities and parental stress are available in the literature. Why this study is different from others? Methods: Procedure how this data gathered is also required. Data analysis to measure moderator of the study needs to be clearer. Reliability and validity of the instruments have to be included.

Discussion and Conclusion: What is the study implications?

#### Introduction:

Saya menghaturkan terima kasih atas saran dari reviewer pertama untuk lebih memperjelas theoretical framework pada bab introduction, serta keoriginalitas dari penelitian ini. Penelitian ini berupaya mengkaji pengaruh persepsi ibu akan perilaku maladaptive anak NDD terhadap kemunculan stres pengasuhan. Penelitian sebelumnya tentang parenting stress yang dipengaruhi oleh persepsi orang tua akan perilaku maladaptif anak telah banyak dikaji, dan juga penelitian-penelitiannya telah mengkaji type of NDD hanya sebagai faktor demografi dalam memengaruhi parenting stres. namun bagaimana jika tenyata type of NDD berperan sebagai moderator antara hubungan persepsi orang tua terhadap perilaku maladaptive anak dan parenting stress? Belum didapatinya penelitian yang telah membuktikan salah satu faktor yang memengaruhi parenting stress adalah type of NDD sekaligus berfungsi sebagai sebagai varabel moderator, melalui a sub-group regression analysis to test the role of the moderating variable. Oleh karenanya, penelitian ini menjadi berbeda dibandingkan penelitian sebelumnya sebab type of NDD memiliki pengaruh terhadap kemunculan

parenting stress sekaligus mampu berperan sebagai variabel moderator. In the introduction chapter, especially in the fifth paragraph, I have explained several previous studies that have proven the effect of mother perceptions of children's maladaptive behavior on parenting stress from various types of child's neurodevelopmental disorders, and type of NDD acts as a moderator.

## Methods:

Pada bab methods, saya telah menambahkan sesuai dengan saran reviewer, seperti:

- a. Prosedur pengambilan data, saya telah melengkapinya dengan menjelaskan cara pengambilan data dengan bekerjasama dengan beberapa sekolah, aktivitas peneliti dengan menambahkan kegiatan parenting pada setiap sekolah, dan pemberian angket kepada setiap partisipan penelitian. I had revised the sub-chapter procedures in paragraphs one and two.
- b. Data analysis to measure moderator can be found in the data analysis sub-chapter on the third line, then in the result chapter in sub-chapter 3.4. *Types of Child's Neurodevelopmental Disorders Moderate the Relationship between the Mother's Perception of Child's Maladaptive Behaviors and Parenting Stress*
- c. Reliability and validity of the instruments. I have revised this section by adding the validity and reliability of the construct to each measuring instrument (PSI and MBI-VABS) and can be found in the Measures chapter.

## Discussion and Conclusion:

Saya telah melengkapi sesuai saran reviewer, The second paragraph of the conclusions, implications, and limitations chapter explains the implication of this study.

## 2. According to the advice of the second reviewer.

The main conclusion of the authors is the level of parenting stress in mothers who have children with autism spectrum disorder is higher than those having children with other types of neurodevelopmental disorder. This conclusion is according with the literature. As the authors said, in 2013 Hayes and Watson carried out a meta-analysis study that showed that parents who have children with autism spectrum disorder experience parenting stress higher than those who have children with other types of disorder and those who have children with normal development.

For us, the main limitation is the type of measure that has been used to estimate maternal stress. The PSI (Abidin, 1995) is a widely used test to estimate stress in mothers and fathers of children with neurodevelopmental disorders. However, in relation to its use in samples of mothers and/or fathers of children with ASD, two of its three subscales have been shown to be at risk of overestimating stress scores. These two subscales include within their items, some with characteristics of ASD that would be erroneously attributed as indicators of parental stress. For example, within Dysfunctional Interactions sub-scale, we find items as "my son/daughter smiles at me much less than I expected"; "my son/daughter takes a long time and has a hard time getting used to new things"...; about Difficult Child sub-scale, "my son/daughter reacts very strongly when something he/she doesn't like happens" ... These items can be describing signs autism. necessarily parental of not stress. According to Zaidman-Zait et al. (2010), items in the Parental Distress sub-scale are useful to assess the severity of distress among parents of individuals with ASD; however, items in the parent-child dysfunctional interactions and difficult child subscales should be taken with caution. Following Zaidman-Zait et al. (2010)

recommendation, we suggest that the authors include in the paper not only the analysis using the PSI-Total, but also Parental Distress sub-scale as measure of Parental Stress. We consider this is important in order to conclude that the level of parenting stress in mothers who have children with autism spectrum disorder is higher than those having children with other types of neurodevelopmental disorder.

In relation to the discussion, authors reflect about atypical sensory functioning of people with ASD and connect these difficulties with behavioural problems. But they omitted works about parental stress in people with ASD that are connecting this sensory atypical functioning directly with parental stress. Works that are showing that sensory characteristics are explaining more percentage of variance in the parental stress than behavioural problems (Ben-Sasson, Soto, Martínez-Pedraza & Carter, 2013; Nieto, López & Gandía, 2017). We think discussion could be enriched including theses references.

Saya menghaturkan terima kasih atas saran dari reviewer yang sangat berarti. Saya setuju atas saran reviewer untuk menganalisis terhadap sub scale parental distress sebagai salah satu faktor yang memengaruhi kemunculan parenting stress, saya telah menambahkannya di bagian results.

## Results:

a. Parental Distress sub-scale as measure of Parental Stress. This study categorized parenting stress not only based on the total Parenting Stress Index (PSI) score but also based on the parental distress subscales scores which can be found in the result chapter and section 3.1. parenting stress categorization.

Sesuai saran reviewer, saya juga telah melengkapi bab diskusi bahwa pengaruh ketidak berfungsian sensory pada anak-anak ASD menyebabkan semakin parah perilaku maladaptive yang ditampilkan anak-anak ASD dibandingkan anak NDD lainnya (ADHD, ID)

#### Discussions:

a. Sensory characteristics are explaining more percentage of variance in the Parental Stress than behavioral problems. I have added some research results that sensory characteristics explain more percentage of variance in parental stress than behavioral problems in the third paragraph.

#### 3. According to the advice of the third reviewer,

The title must be clear, interesting, problematic and describe the contents of the article. The contents of the article must be written critically and objectively based on facts and data. Avoid jumping ideas between one aline to the next paragraph. The methodology and analysis used in this study should be seen when writing this discussion.

- a. The Tittle. I have edited the title to clarify what types of developmental disorders in children moderating the relationship between perceptions of the child's maladaptive behavior and maternal parenting stress.
- b. The contents of the article must be written critically and objectively based on facts and data. I have edited the introduction chapter, so the purpose of this research and the problem gaps are more explicit, especially in the introduction section.

- c. Avoid jumping ideas between one line to the next paragraph. I have edited it so that the sentence between one paragraph and another paragraph is better, which can be found in the introduction chapter.
- d. The methodology and analysis used in this study should be seen when writing this discussion. I have added it to the discussion chapter based on methodology, analysis, and results.

I am grateful for the suggestions of reviewers and editors to be able to consider this paper. I sincerely hope that the results of this study can be considered, so that people around the world can know and have information about the mother condition and the new information about the type of child's neurodevelopmental disorders as a moderator variable.

Thank you Sincerely, Dr. Nurussakinah Daulay, M.Psi



Nurussakinah Daulay <nurussakinah@uinsu.ac.id>

# 203256985 (International Journal of Developmental Disabilities) A revise decision has been made on your submission

1 pesan

International Journal of Developmental Disabilities <em@editorialmanager.com>

19 November 2020 10.37

Balas Ke: International Journal of Developmental Disabilities <yjdd-peerreview@journals.tandf.co.uk>

Kepada: nurussakinah daulay <nurussakinah@uinsu.ac.id>

Ref.: JDD675R1 203256985

The Moderating Effect of Types of Child's Neurodevelopmental Disorder on the Relationship between Indonesian Mothers' Perception of Child's Maladaptive Behaviour and

**Maternal Parenting Stress** 

International Journal of Developmental Disabilities

Dear nurussakinah daulay,

We have now received reviewers' comments on the above submission. I am pleased to tell you that the reviews were positive however there are some points raised by the referee(s) that require attention before the paper can be considered for publication. These points are detailed in the comments below. Please note this will be the last chance to submit a revised manuscript so please follow as much as possible of the suggestions made by the reviewer.

We look forward to receiving a revised version of your paper, prepared in the light of these comments, by 15 Dec 2020.

To submit a revision, go to https://rp.tandfonline.com/submission/flow?submissionId=203256985&step=1. If you decide to revise the work, please submit a list of changes or a rebuttal against each point which is being raised when you submit the revised manuscript.

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When resubmitting, please indicate clearly your response to the reviewers' comments. These should appear in a document uploaded separately with the revised manuscript. Ideally, your response to reviewers comments document would include a copy of your original manuscript with track changes displaying the changes you have made.

Please ensure that you supply a final text file of your revised manuscript and a high resolution image file of each figure. Failure to do this may result in a delay in the typesetting of your paper. Please note that it is not permitted to submit a PDF file of the revised manuscript at this stage.

Please also note that incomplete and duplicate references must be corrected in the final text before it will be considered for publication.

Thank you once again for kindly submitting your work to our Journal.

With best wishes,

Brian Salmons, PhD Editor International Journal of Developmental Disabilities

#### Comments from the Editors and Reviewers:

Reviewer #2: Authors have followed partially the recommendations we suggested in our previous review. They have carried out specific analysis with the Parental Stress subscale of the PSI-Abidin, 1995- following Zaidman-Zait et al. 2010. And they have tried to enrich the discussion section with several works that we suggested. But we afraid authors may have misunderstood these papers. Or, at least, for us it is not clear in the manuscript why they do these connections. Studies we suggested do not wok with atypical sensory perceptions in mothers of children with ASD connecting these perceptions with maternal stress. They show that maternal stress in mothers of children with ASD, is explained also by atypical sensory responses in their son/daughter with ASD; even explaining a higher percentage of variance than behavioural problems do. When we suggested these works, we were trying that the current manuscript could contribute in a more significative way to advance from others studies results. Since Hayes & Watson (2013) meta-analysis, it is known that parents of children with ASD children experience higher level of parenting stress than parents of children with other developmental disorders as well as parents of children with typical development (author should change "normal development" for "typical development"). But we are still trying to understand why this is happening. It would be very important, in case to include these studies, develop the discussion according to their real hypothesis and results. There is also a mistake in the year of one of these works. It is right in the References section (Nieto, López & Gandía, 2017) but in the pag. 15 appears Nieto et al. 2010. It should be changed to 2017.

We continue to think that it is important to enrich the discussion. It may not be in the direction we suggested, but it is necessary to show the relevance of these results in relation to the current literature. Of the 82 referenced works by the authors, only 7 have been published in the last four years (2017-2018-2019-2020). Parental stress in ASD is a topic on which many articles are published each year.

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To:

Editor in Chief

The International Journal of Developmental Disabilities

Dear Editor and Reviewers....

I sincerely thank the editor and the reviewers for their seriousness and kindness in providing comments and suggestions for this paper to make it better.

The manuscript in question is entitled "The Moderating Effect of Types of Child's Neurodevelopmental Disorder on the Relationship between Indonesian Mothers' Perception of Child's Maladaptive Behaviour and Maternal Parenting Stress" (JDD675 203256985), and The Author is Nurussakinah Daulay.

I have revised the manuscript more carefully and seriously based on reviewers' comments and suggestions, which include the following:

- 1. According to the advice of the second reviewer.
- a. Authors have followed partially the recommendations we suggested in our previous review. They have carried out specific analysis with the Parental Stress sub-scale of the PSI-Abidin, 1995- following Zaidman-Zait et al. 2010. And they have tried to enrich the discussion section with several works that we suggested. But we afraid authors may have misunderstood these papers. Or, at least, for us it is not clear in the manuscript why they do these connections. Studies we suggested do not wok with atypical sensory perceptions in mothers of children with ASD connecting these perceptions with maternal stress. They show that maternal stress in mothers of children with ASD, is explained also by atypical sensory responses in their son/daughter with ASD; even explaining a higher percentage of variance than behavioural problems do. When we suggested these works, we were trying that the current manuscript could contribute in a more significative way to advance from others studies results. Since Hayes & Watson (2013) meta-analysis, it is known that parents of children with ASD children experience higher level of parenting stress than parents of children with other developmental disorders as well as parents of children with typical development (author should change "normal development" for "typical development"). But we are still trying to understand why this is happening. It would be very important, in case to include these studies, develop the discussion according to their real hypothesis and results

Thanks to the reviewers. To answer this first comment, the researchers have added that one of the factors that influence maternal parenting stress is the maladaptive behavior of NDD children and this is reflected in the response to the items on the PSI-SF. I have carried out specific analysis with the parental distress sub-scale, difficult child sub-scale, and parental — child dysfunctional interaction subscale of the PSI-Abidin, 1995- following Zaidman-Zait et al. 2010. In the Parental Distress Subscale, the items that indicate the mother is experiencing a stressful condition with a high score are item 2 ("Gave up my life for children's needs"); item 4 ("Unable to do new and different things"); and item 8 ("Having a child caused problems with my

spouse"). The Difficult Child Subscale reveals how mothers experience stress caused by children's behavior. High scores on this subscale were found in statements such as: "Child cries or fusses more often than other children" (item 25); "Child does things that bother me a great deal" (item 28); "Child's sleeping or eating schedule hard to establish" (item 31). The more negative the mother perceives the child's maladaptive behavior, the more stressed the mother becomes. Next, the Parent-Child Dysfunctional Interaction Subscale assesses whether the mother perceives her interaction with the child is positive (i.e., reinforcing) or negative (i.e., unsatisfying). This study found that mothers perceived their interactions with their children to be negative, as revealed by item 15 (Child smiles at me less than expected); item 18 (Child doesn't learn as quickly as other children); and item 20 (Child isn't able to do as much as expected). This explanation can be found in the third paragraph of the discussion section on page 11.

The explanation of the relationship of the research variables is the types of child's NDD correlate with the severity of the symptoms they experience. This means that the more severe the child's symptoms, the more severe the child's maladaptive behaviour, and vice versa. It means that an ASD child who displays maladaptive behaviours more often than adaptive behaviours would be more likely to give rise of negative perception on the part of parents which in turn make them more susceptible to parenting stress. In this present study, the severity of child's symptoms was indicated by the higher parenting stress experienced by mothers of children with ASD children compared to mothers of children with other types of NDD (ID and ADHD). This explanation can be found in the fourth and fifth paragraphs of the discussion section on page 11.

b. There is also a mistake in the year of one of these works. It is right in the References section (Nieto, López & Gandía, 2017) but in the pag. 15 appears Nieto et al. 2010. It should be changed to 2017.

Thanks to the reviewers, I have improved this section, and it can be found in the introduction of page 2 in the fifth paragraph.

c. It may not be in the direction we suggested, but it is necessary to show the relevance of these results in relation to the current literature. Of the 82 referenced works by the authors, only 7 have been published in the last four years (2017-2018-2019-2020). Parental stress in ASD is a topic on which many articles are published each year.

Thanks to the reviewer. In this section, I have updated the references. The total number of references used in the study is 67, consisting of 48 references from 2015-2020 and 12 references from 2010-2014.

I am grateful for the comments and suggestions from the reviewers and editors to make this manuscript better. I really hope that this manuscript can be reconsidered to be published in this journal considering that this research provides new information and benefits in the scope of parenting in mothers of children with NDD. The results of this study also provide new information about the factors that influence the emergence of parenting stress, namely the mother's perception of maladaptive behaviour in children with NDD, and the type

of NDD as a moderating variable for the relationship between the mother's perception of child's maladaptive behaviour and parenting stress.

Thank you Sincerely, Dr. Nurussakinah Daulay, M.Psi The moderating effect of types of child's neurodevelopmental disorder on the relationship between Indonesian mothers' perception of child's maladaptive behaviour and maternal parenting stress

Nurussakinah DaulayThe moderating effect of types of child's neurodevelopmental disorder

International Journal of Developmental Disabilities



## Nurussakinah Daulay<sup>1</sup>

1. Department of Counseling, Universitas Islam Negeri, Medan, Sumatera Utara, Indonesia

Correspondence to: Nurussakinah Daulay, Department of Counseling, Universitas Islam Negeri, Medan, Sumatera Utara 20371, Indonesia. Email: nurussakinah@uinsu.ac.id

#### **ABSTRACT**

This study aimed to examine the effect of mother's perception of child's maladaptive behaviour and types of child's neurodevelopment disorder on maternal parenting stress, and examine the role of types of child's neurodevelopmental disorder in moderating the relationship between mother' perception of child's maladaptive behaviours and maternal parenting stress. The mother' perception of child's maladaptive behaviours tested included internalizing and externalizing maladaptive behaviours, while the types of child's neurodevelopmental disorder included intellectual disability (ID), attention-deficit/hyperactivity disorder (ADHD), and autism spectrum disorder (ASD). A total of 163 mothers of children with different types of neurodevelopmental disorders were included in this study. The data were analysed with regression analysis, t-test, and ANOVA. The results showed that 1) there is an influence of the mother's perception of child's maladaptive behaviours and types of neurodevelopmental disorders on parenting stress; 2) types of child neurodevelopmental disorders moderate the relationship between the mother's perception of child's maladaptive behaviour and maternal parenting stress; 3) mothers of children with ASD experience higher levels parenting stress than mothers of children with ADHD and ID.

**Keywords:** mothers' perception of child's maladaptive behaviours ; children with neurodevelopmental disorders ; parenting stress ; intellectual disability ; autism spectrum disorder ; attention deficit/hyperactivity disorder

#### Funding for indexing purposes

The author received no external funding for this research.

## 1. Introduction

Neurodevelopmental disorders (NDD) are a group of conditions with onset in the developmental period and are characterized by developmental deficits that produce impairments of personal, social, academic, or occupational functioning (American Psychiatric Association 2013). This present study examined children with three different types of neurodevelopmental disorders including children with intellectual disability (ID), children with autism spectrum disorders (ASD), and children with attention-deficit/hyperactivity disorder (ADHD). These different types of disorders shed light on neurodevelopment from different perspectives. Children with ASD are characterized by deficits in social interaction and communication, and the presence of restricted and repetitive behaviours. Children with ID (intellectual developmental disorder) are characterized by deficits in general mental abilities such as reasoning, problem-solving, planning, abstract thinking, judgment, academic learning, and experiential learning. Children with ADHD

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are characterized by impaired levels of inattention, disorganization, and/or hyperactivity-impulsivity (American Psychiatric Association 2013).

These limitations appear before the child turns 18 years old and position NDD children as individuals who are less independent, less able to adapt to the environment, and show decreased adaptive behaviours (Kalaivnai and Kalimo 2018). Sparrow *et al.* (2005) defined child's maladaptive behaviours as behaviours that are undesirable which include internalizing and externalizing behaviours and other types of behaviours that may interfere with their adaptive functioning in their daily life. Child's internalizing behaviours were described as including dependence, aloofness, eating and sleep difficulties, anxiety, feelings of rejection, mood swings, poor eye contact, lack of social interactions, and low energy in life. Child's externalizing behaviours were characterized by child's impulsivity, temper tantrums, disobedience, teasing, insensitivity to others, physical aggression, stubbornness, inappropriate language usage in public, and urging others inappropriately. Besides these traits, some other behaviours such as sucking fingers, bedwetting, overactivity, fingernail biting, tics, teeth grinding, short attention span, restlessness, running away, and ignoring people are also included in their definition.

Some studies related to maladaptive behaviours of children with NDD found that, for examples, 1) children with ID face lifelong challenges in areas such as self-care and learning and socializing abilities (Sun 2020); low independency (Van der Meulen *et al.* 2018); difficulties in different domains of learning, including academic, social, and practical knowledge (Bertelli *et al.* 2016), limitations in adaptive behaviours (Nankervis *et al.* 2020); 2) children with ASD display tantrums, aggressive behaviours, and inability to control emotions (Oubrahim and Combalbert 2019), and restricted and repetitive behaviours (Patriquin *et al.* 2020); 3) children with ADHD show hyperactivity and concentration difficulty (Lee *et al.* 2020) and behaviour problems (Climie and Mitchell 2017) that result in decreased well-being (Peasgood *et al.* 2020); has a lot of challenges (Climie and Henley 2018); increased anxiety and depression (Brammer *et al.* 2018), feelings of hopelessness (Alamdarloo and Majidi 2020); and increased parenting stress on the part of parents (Korpa *et al.* 2017).

Mothers who have a child with NDD may, of course, experience other types of stressors, just as all mothers do. Other life stressors include financial problems (Romney et al. 2021) related to the cost of therapy and treatment of children (Rogge and Janssen 2019); unemployment (McCall and Starr 2018); perceived social support (Johnson 2019); and ineffective parental coping strategies (Pepperell et al. 2018). The discrepancy between the expected role of the mother as a parent and the child's characteristics can lead to parenting stress. Parenting stress can be defined succinctly as a set of processes that lead to aversive psychological and physiological reactions arising from attempts to adapt to the demands of parenthood. This often is experienced as negative feelings and beliefs toward and about the self and the child (Deater-Deckard 2004). Those parents who show high levels of parental stress usually perceive their children as difficult and show patterns of ineffective disciplining and dysfunctional parenting, frequently leading to greater difficulties in the child (Abidin 1992). Parenting stress and children's behaviour problems have been shown to have a bidirectional relationship (Neece et al. 2012) in that the child's problematic behaviours lead to parenting stress, which, in turn, affects parenting behaviours, which then increase the child's problem behaviours (Davis and Neece 2017).

Potentially relevant child characteristics that may serve as stressors in this domain include level of dependency in self-help tasks, cognitive and/or developmental level, frequency, and severity of the maladaptive behaviour, diagnosis or type of developmental disorder, age, and gender (Kısa *et al.* 2019). Nieto *et al.* (2017) which also proved that sensory characteristics are explaining greater percentage of variance in the parental stress. Parent's mental health problems, poor overall family quality of life, and financial hardship are related to the presence of psychiatric diagnoses and maladaptive behaviours in a large sample of youth with severe special needs. Various types of NDD, such as ASD, ID, and ADHD can play a role in parenting stress (Zaidman-Zait *et al.* 2017). Some earlier studies have demonstrated that parents of children with ASD experience higher levels of parenting stress than parents of children with ID or ADHD (Depape and Lindsay 2015, Lee and Chiang 2018, Samadi *et al.* 2014). The various studies mentioned above confirm that maladaptive behaviours in children with NDD plays a role in parenting stress but the absence of research that examines the influence of the types of children's NDD on parenting stress and the role of types of NDD as a moderating variable of the relationship between child maladaptive behaviours and parenting stress makes this present study different from previous studies in that it aimed to determine the relationship between the mother's perception of child's maladaptive behaviours and maternal parenting stress as moderated by types of child neurodevelopmental disorder, and the role of the moderating variable in strengthening or weakening the relationship between

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mothers's perception of child's maladaptive behaviour and maternal parenting stress. The research hypotheses were as follows: 1) mothers's perception of child's maladative behavior is a predictor of maternal parenting stress. Following Sparrow *et al.*'s (2005) theory that child maladaptive behaviour consists of two dimensions, internalizing maladaptive behaviour and externalizing maladaptive behaviour, this hypothesis was thus broken down into two: 1.a.) mother's perception of child's internalizing maladaptive behaviour correlates positively with parenting stress and 1.b.) mother's perception of child's externalizing maladaptive behaviour correlates positively with parenting stress; 2) types of child's neurodevelopmental disorder affect maternal parenting stress, and moderate the relationship between the mother's perception of child's maladaptive behaviours and maternal parenting stress; 3) mothers of children with ASD experience higher parenting stress than mothers of children with the other two types of NDD (ID and ADHD).

## 2. Methods

## 2.1. Participants

The participants of the study were 163 mothers of children with NDD at 2 public and 1 private special schools in Medan, Indonesia, including 89 mothers of children with ID, 52 mothers of children with ASD, and 22 mothers of children with ADHD. The participants were selected with a purposive sampling technique based on a set of criteria, including being the biological mother of a child with NDD; raises the child by herself instead of placing them in a boarding school for children with special needs, and has an education level of junior high school at a minimum.

#### 2.2. Procedures

This study began with literature study and followed with a preliminary study in which the researcher carried out interviews with mothers of children with NDD to know what the mothers feel and experience in caring for a child with NDD. The interviews were carried out with ten mothers (including 4 mothers of children with ID, 4 mothers of children with ASD, and 2 mothers of children with) in 2 public and 1 private special schools in Medan, Indonesia. The interviews concerned the mothers' condition, including sources of stress they felt, factors that cause them stressed, what they did to deal with the sources of stress. The preliminary study results confirmed that the mother's perception of child's maladaptive behaviours plays a role in maternal stress. This can be seen from the results of interviews with mothers with NDD children which found that mothers of children with ASD admitted that their children are often tensed and hyperactive, beat others, and sometimes hurt themselves (biting their hands, for example), while the four mothers of children with ID revealed that their children have problems with grasping school lessons and the mothers have difficulty to help their children understand, and the children are also less able to meet their personal needs (such as eating, bathing). Hyperactive behaviour and inability to focus on one thing were revealed from interviews with both mothers of children with ADHD. All these preliminary findings indicate that the mothers' perception of child's maladaptive behaviours results in mothers having difficulty in caring for their children which, in turn, leading to parenting stress. Further investigation of the relationship between the mother's perception of child's maladaptive behaviours and parenting stress as moderated by the child's type of NDD was thus justified to carry out.

The data collection began with the researcher asking permission to conduct research from the selected schools. To provide an overview of the benefits of this research, the researcher also held a two-hour parenting seminar for mothers at each of the 3 selected special schools. This seminar was also intended to provide mothers with information about parenting children with special needs in addition to their involvement as research respondents. The seminar activity began with the researcher building rapport with the mothers and explaining the aims and objectives of the research, then asking their willingness to participate in this research. All seminar participants indicated their willingness to be involved voluntarily in this study by signing an informed consent form. Furthermore, the researcher gave them two scales, namely the child maladaptive behaviour scale (Sparrow *et al.* 2005) and the parenting stress scale (Abidin 1995), and a form of mother's and child' demographic data to complete. During the process of completing the scales, the researcher accompanied the respondent to help explain items they found unclear. The scales completion process lasted approximately 30 min continued with the delivery of seminar material by the researcher (Table 1). [AQI]

Table 1. Sample demographics.

Characteristics	Categories	No.(%) of participants	Mean	SD
Age of mother, yr	18 – 40 (early adulthood)	112 (68.71)	38.12	12.578
	41- 60 (middle adulthood)	51 (31.28)	34.76	12.352
Mother's education	Primary or less	3 (1.84)	40.86	12.014
	High school	28 (17.17)	35.47	11.088
	Diploma	9 (5.52)	49.83	8.702
	University (bachelor or higher)	123 (75.46)	30.78	12.082
Types of child's neurodevelopmental disorders	Intellectual disability	89 (54.60)	33.93	10.778
	ADHD	22 (13.49)	33.02	10.586
	Autism spectrum disorder	52 (31.90)	49.22	7.495
Age of child, yrs.	2-6	45 (27.60)	34.61	11.781
	7 – 13	96 (58.89)	37.61	12.041
	14 – 18	22 (13.49)	36.27	13.796
Child's gender	Male	88 (53.98)	38.63	12.22
	Female	75 (46.01)	32.23	12.31
	Total	100%		

#### 2.3. Measures

The study data were collected with two scales, namely the child maladaptive behaviours scale and the parenting stress scale, whereas the types of child's neurodevelopmental disorders (NDD) served as a moderating variable. Moderating variables are variables that influence the direction or strength of the relationship of variables of interest (Mash and Wolfe 2010). The variable of types of child's NDD serves as a moderating variable because it was viewed as the determinant of the magnitude of the relationship between the mother's perception of child's maladaptive behaviour and parenting stress.

#### 2.3.1. The Parenting Stress Scale (PSI)

Parenting stress was measured by the Parenting Stress Index (PSI) scale that consists of three subscales (Abidin 1995), namely parental distress (PD), difficult children (DC), and parent-child dysfunctional interaction (PCDI). The PD subscale is intended to measure the distress a parent feels due to personal factors related to parenting, such as lack of social support or parental depression. The PCDI subscale is intended to assess whether the parent perceives their interactions with the child as either positive (i.e. rewarding) or negative (i.e. unsatisfying). The DC subscale is intended to measure behavioural characteristics of the child that make him or her easy or difficult to manage, due to either temperament and/or noncompliant, defiant, or demanding behaviour. This scale consists of 36 items each of which has five alternative options to choose, ranging from 5 (very suitable) to 1 (very unsuitable). The total PSI-SF score is seen as an indicator of the parent's overall experience of parenting stress. The Cronbach's alpha of the Parenting Stress Index was 0.823.

#### 2.3.2. The Maladaptive Behaviour Index-Vineland Adaptive Behaviour Scales (MBI-VABS)

The Maladaptive Behaviour Index-Vineland Adaptive Behaviour Scale (MBI-VABS, Sparrow *et al.* 2005) is a structured interview administered to a caregiver to assess the child's internalizing and externalizing domains of the maladaptive behaviour to measure the maladaptive behaviours of children with developmental disorders. A total of 21 questions with a 3-point scale, ranging from 0 (never) to 2 (usually) were used for this present study. Higher scores on this scale indicate that the subjects perceive more maladaptive behavioirs in their children. Overall, the internal-consistency reliabilities of the internalizing and externalizing subscales met the requirement value of above 0.80 because their alpha coefficients ranged from 0.85 to 0.91. For the sample of this study, the reliability (Cronbach's alpha) of the Maladaptive Behaviour Index-Vineland Adaptive Behaviour Scale was 0.863.

#### 2.4. Data analysis

The data analysis techniques used included a regression analysis to examine the effect of the mother's perception of child's maladaptive behaviours and types of child's neurodevelopmental disorders on parenting stress, a sub-group regression analysis to test the role of the moderating variable, and t-test and ANOVA for testing differences (ANOVA).

#### 3. Results

## 3.1. The mother's perception of child's maladaptive behaviours and maternal parenting stress

Based on the theory of Sparrow *et al.* (2005), child's maladaptive behaviour consists of two behavioural dimensions, namely internalizing maladaptive behaviour and externalizing maladaptive behaviour. In this study, these two dimensions were measured separately based on the mother's perception of internalizing maladaptive behaviours and externalizing maladaptive behaviours in their children. The results showed that the dimension of mother's perception of child's internalizing maladaptive behaviours correlate positively with parenting stress (r = 0.385, n = 163, p < 0.01), while the dimension of mother' perception of child's externalizing maladaptive behaviour correlate positively with parenting stress (r = 0.293, n = 163, p < 0.01) (Table 2).

Table 2. Regression analysis of perceived internalizing and externalizing maladaptive behaviours on parenting stress.

Dimensions	Unstandardized		Standardized Beta	t	p
	B Std.Error				
Internalizing	1,15	0,18	0,385	6,17	<0,01
Externalizing	1,11	0,23	0,293	4,70	<0,01

Both behavioural dimensions of maladaptive behaviours as perceived by the mothers also correlated positively with each of parenting stress aspects (see Table 3).

Table 3. Pearson's product-moment correlation between the mother's perception of child's maladaptive behaviour dimensions and parenting stress indicators.

Maladaptive Behaviour Dimensions	Parenting Stress Indicators					
	Parental Distress	Difficult Child	Dysfunctional Interaction			
Internalizing	0,383**	0,584**	0,429**			
Externalizing	0,328**	0,593**	0,387**			

p < 0.01.

Based on these results, the hypothesis that the mother's perception of child's internalizing maladaptive behaviour correlates positively with parenting stress was confirmed, and so was the hypothesis that the mother's perception of child's externalizing maladaptive behaviour correlates positively with parenting stress.

## 3.2. Types of child's NDD and parenting stress

The three types of child's neurodevelopmental disorders, namely ASD, ADHD, and ID are the predictors of parenting stress (Table 4). There were differences in maternal parenting stress between the three types of child's NDD (F(2,160) = 37.193, p = 0.00). The magnitude of the adjusted R squared value of 0.466 means that 46.6% of the variability in the parenting stress can be explained by the variability of the types of child's NDD. Thus the hypothesis that the types of child's NDD affect parenting stress was confirmed.

Table 4. The ANOVA results to determine the differences between types of child's neurodevelopmental disorders in parenting stress.

Source	Type III Sum of Squares		Mean Square	F	Sig.
Corrected Model	9549,426 <sup>a</sup>	3	3183,142	37,193	0,00
Intercept	421637,529	1	421637,529	3921,452	0,00
Types of child's NDD	9549,426	3	3183,142	37,193	0,00
Error	12458,286	159	78,354		
Total	443645,000	163			
Corrected Total	22007,471	162			

<sup>&</sup>lt;sup>a</sup>R Squared = 0.472 (Adjusted R Squared = 0.466).

The magnitude of differences in the parenting stress between types of child's neurodevelopmental disorders can be seen in the Tukey Post Hoc analysis output (see Table 5). The mean difference in the parenting stress between mothers of children with ID and mothers of children with ADHD was 0.9061 (p < 0.00), between mothers of children with ID and mothers of children with ASD was 16.1970 (p < 0.00); and between mothers of children with ADHD and mothers of children with ASD was 19.6473 (p < 0.00).

Table 5. Post hoc analysis results.

	Type of child dis-	Type of child dis-	Mean difference (I-J)	Std.Error		95% confid	ent interval
	order (I)	order (J)			Sig.	Lower Bound	Upper Bound
Tukey HSD	ADHD	ID	0,9061	1,83131	0,960	-3,8301	5,6423
		ASD	-19,6473*	1,64739	0,000	-19,5515	-11,0304
	ID	ADHD	-0,9061	1,83131	0,960	-5,6423	3,8301
		ASD	-16,1970*	1,97736	0,000	-21,3110	-11,0831
	ASD	ID	16,1970*	1,97736	0,000	11,0831	21,3110
		ADHD	19,6473*	1,94182	0,000	14,6523	24,6694

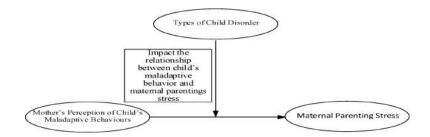
Note. ID = Intellectual Disability; ASD = Autism Spectrum Disorder; ADHD = Attention deficit/hyperactivity disorder.

Overall, the differences in the parenting stress between types of child's neurodevelopmental disorder indicated that the mean score of parenting stress of mothers of children with ASD is higher than that of mothers of children with the other two types of NDD. This confirmed the hypothesis that mothers of children with ASD experience higher parenting stress than mothers of children with the other two types of NDD (ID and ADHD).

# 3.3. Types of child's neurodevelopmental disorders moderate the relationship between the mother's perception of child's maladaptive behaviours and parenting stress

The results of the analysis of the influence of child' maladaptive behaviour and types of child's neurodevelopmental disorders on parenting stress then raised a question of whether the types of child's NDD can strengthen or weaken the relationship between the mother's perception of child's maladaptive behaviour and parenting stress. To answer this, the moderating variable was tested to determine the role of each type of child's NDD in moderating the relationship between mother's perception of child's maladaptive behaviours and parenting stress. A moderating variable is a variable that explains the additional variance in a criterion of interest beyond that of the selected predictor variable due to its nonlinear (i.e. interactive) association with the predictor variable (Shultz *et al.* 2014) (Figure 1).

Figure 1. Types of Child's Neurodevelopmental Disorders Moderates the Relationship between Mother's Perception of Child's Maladaptive Behaviours and Maternal Parenting Stress.



The moderating variable testing was carried out by means of sub-group analysis where the sample was broken down into several sub-groups on the basis of the third variable, namely the variable that was hypothesized to be the moderator. Sub-group analysis is an analysis of the relationship between a predictor variable and a criterion variable which is carried out separately for different sub-groups to determine whether or not the moderating variable differentially influence the predictor-criterion relationship across subgroups (Shultz *et al.* 2014). The results of the regression analysis are shown in Table 6.

Table 6. Summary of the analysis of types of child's neurodevelopmental disorder as moderating variable.

Model 1		Model 2		Model 3	
R Square	F	R Square	F	R Square	F
0,123	6,191*	0,260	33,386**	0,414	33,150**

Note.

= p < 0.05;

\*\*= p < 0.01.

The moderating variable testing results shown in Table 7 were derived from the sub-groups regression analysis of the types of child's NDD that was carried out in stages, including: (1) the variable of mother' perception of child's maladaptive behaviours in mothers of children with ID that resulted in Model 1; (2) in mothers of children with ADHD that resulted in Model 2; and (3) in mothers of children with ASD that resulted in Model 3.

Table 7. Summary of results of sub-group analysis.

N	Models (	Unstandardiz	ed Coefficients	Standardized Coefficients	t	Sig.
		В	Std.Error	Beta		
1	(Constant)	23,128	2,095	0,510	11,040	0,000
	Maladaptive_ID	0,864	0,150		5,778	0,000
2	(Constant)	26,507	3,007	0,351	8,816	0,000
	Maladaptive_ADHD	0,768	0,309		2,488	0,017
3	(Constant)	41,293	3,550	0,281	11,631	0,000
	Maladaptive_ASD	0,409	0,177		2,309	0,024

Table 6 shows the comparison of the coefficients of determination  $(R^2)$  of each model according to which a model with higher  $R^2$  value is considered to have a better predictive value. Judging from Tables 6 and 7, the predictive value of type of child's NDD of ADD was higher  $(n = 52, R^2 = 0.414, p < 0.05)$  than that of ADHD  $(n = 22, R^2 = 0.260, p < 0.05)$  and ID  $(n = 89, R^2 = 0.123, p < 0.05)$ . The regression equation value between sub-groups of types of child's NDD was significant and proved that the variable of types of child's neurodevelopmental disorder did serve as a moderating variable.

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## 3.4. Parenting stress in mothers of children with neurodevelopmental disorders

The data collected from this study showed that mothers of children with ASD experienced higher parenting stress (n = 52, M = 21.45, SD = 10.94) than mothers of children with the other two types of neurodevelopmental disorders (ID, n = 89, M = 18.24, SD = 6.82); (ADHD, n = 22, M = 19.37, SD = 8.76), and this difference proved to be significant (F(2,160) = 37.193, p = 0.00). Based on the level of parenting stress the mothers experienced, the hypothesis that mothers of children with ASD experience higher parenting stress than mothers of children with ID and ADHD was supported (Table 8).

Table 8. Mother's perception of child's maladaptive behaviours and parenting stress in mothers of children with different types of neurodevelopmental disorders.

Types of child's neurodevelopmental disorder	n	Perceived maladaptive behaviour		Parenting stress	
		Mean	SD	Mean	SD
ID	89	12.12	5.12	18.24	6.82
ADHD	22	12.49	6.35	19.37	8.76
ASD	52	19.39	5.15	21.45	10.94

As for the mother's perception of child's maladaptive behaviours, it was found that child's maladaptive behaviour was perceived higher by mothers of children with ASD (n = 52, M = 19.39, SD = 5,15) than that of children with ID (n = 89, M = 12,12, SD = 5,12) or ADHD (n = 22, M = 12,49, SD = 6,35).

## 4. Discussion

A child with a neurodevelopmental disorder which include dysfunctions in their cognitive, emotional, and social aspects, and in their limbs, is a factor that causes difficulty to the mother to accept their child's condition (Stanford et al. 2020). Almost all mothers expect positive things to happen to their children, but the discordance between such an expectation and the actual condition of having a child with different development plus difficulties they experience related to childcare because of maladaptive behaviours their child often display can lead to parenting stress on the part of the mother (Horsley and Oliver 2015). This present study aimed to determine the relationship between mother's perception of child's maladaptive behaviours and types of children's neurodevelopmental disorders and maternal parenting stress, and to test the role of types of child's neurodevelopmental disorders as a moderating variable for the relationship between the mother's perception of child's maladaptive behaviours and parenting stress. The results of this study support the proposed hypotheses. The first hypothesis was supported when this study revealed, using the Pearson product-moment correlation analysis, that the mother's perception of both child's internalizing and externalizing maladaptive behaviours correlates positively with maternal parenting stress (Alamdarloo and Majidi 2020); Stone et al. 2016). The studies by Bader et al. (2015); Stone et al. (2016); and Zheng et al. (2019) have also confirmed that parents experience high degree of parenting stress due to their children's externalizing maladaptive behaviours. More specifically, mothers tend to experience parenting stress due to their children's internalizing maladaptive behaviours (Rodriguez 2011).

The second hypothesis stated that there is an effect of types of child's neurodevelopmental disorders (NDD) on maternal parenting stress and that the types of child's NDD moderate the relationship between the mother's perception of child's maladaptive behaviours and parenting stress. Types of NDD describe the child's characteristic conditions, including the severity of the disability, the severity or frequency of challenging behaviours exhibited by children with NDD, and the presence of other comorbid disorders. This means that the more severe the child's NDD, the lower the mother's perception of the child's adaptive behaviours and the higher the mother's perception of the child's maladaptive behaviours. Previous studies found that the severity of disability relates to the emerging maladaptive behaviours in children with NDD (Lee *et al.* 2020). Other research found that child's characteristics and symptom severity are strongly associated with the experience of parenting stress in mothers of chidren with ASD (Brobst *et al.* 2009, Ekas and Whitman 2010, Estes *et al.* 2009), mothers of chidren with ADHD (Leitch *et al.* 2019), and mothers of chidren with ID (Biswas *et al.* 2015).

The importance of factors that influence parenting stress in parents of children with NDD is reflected in the items of PSI-SF scores, and Zaidman-Zait et al. (2010), fore example, used item-response theory to examine the discriminability of PSI-SF items in a sample of parents of young children with ASD who experience varying levels of parental stress. In this present study, this is supported by the results of the analysis of the mean differences of each PSI-SF such scale scores which indicated that mothers of children with ASD experience higher levels of parenting stress. In the Parental Distress Subscale, the items that indicate the mother is experiencing a stressful condition with a high score are item 2 ("Gave up my life for children's needs"); item 4 ("Unable to do new and different things"); and item 8 ("Having a child caused problems with my spouse"). The Difficult Child Subscale reveals how mothers experience stress caused by children's behaviour. High scores on this subscale were found in statements such as: "Child cries or fusses more often than other children" (item 25); "Child does things that bother me a great deal" (item 28); "Child's sleeping or eating schedule hard to establish" (item 31). The more negative the mother perceives the child's maladaptive behaviour, the more stressed the mother becomes. Next, the Parent-Child Dysfunctional Interaction Subscale assesses whether the mother perceives her interaction with the child is positive (i.e. reinforcing) or negative (i.e. unsatisfying). This study found that mothers perceived their interactions with their children to be negative, as revealed by item 15 (Child smiles at me less than expected); item 18 (Child doesn't learn as quickly as other children); and item 20 (Child isn't able to do as much as expected).

The importance of the influence of the types of child's neurodevelopmental disorders in causing parenting stress is demonstrated in this present study through the multiple regression analysis carried out to examine the effect of the mother's perception of child's maladaptive behaviours and types of child's NDD on parenting stress. Through subgroup regression analysis, this study also shows that the types of child's NDD can moderate the relationship between the mother's perception of child's maladaptive behaviours and maternal parenting stress or, in other words, the level of maternal parenting stress is influenced by the types of child's NDD. The types of child's NDD correlate with the severity of the symptoms they experience. This means that the more severe the child's symptoms, the more severe the child's maladaptive behaviour, and vice versa. The results of previous research showed that autism symptom severity was positively and significantly correlated with inattention/impulsivity, indicating that children with more severe symptoms of ASD tended to have higher scores on the measure of inattention/impulsivity (Tureck *et al.* 2015). It means that an ASD child who displays maladaptive behaviours more often than adaptive behaviours would be more likely to give rise of negative perception on the part of parents which in turn make them more susceptible to parenting stress. In this present study, the severity of child's symptoms was indicated by the higher parenting stress experienced by mothers of children with ASD children compared to mothers of children with other types of NDD (ID and ADHD).

This also supports the third hypothesis that mothers of children with ASD experience higher parenting stress than mothers of children with other neurodevelopmental disorders (ID and ADHD). The results of this present study are in line with that of a meta-analytic study conducted by Hayes and Watson (2013) in showing that children with ASD children experience higher parenting stress than parents of with other developmental disorders as well as parents of children with normal development. This meta-analytic study did not only found and report differences in parental stress but also sought to reveal the cause of the difference and found that the dominating causing factor of stress is the child's characteristics. Autism spectrum disorders (ASDs) are characterized by deficits in social interaction and communication, and the presence of restricted and repetitive behaviours (American Psychiatric Association 2013). While the prevalence of ASDs is growing rapidly, affecting approximately 1 in 59 American children according to the United States Centre for Disease Control (CDC 2018), the prevalence of children with autism in Indonesia in 2013 was 1 in 50 children (Autism Service Centre Development in Indonesia 2014). Tureck et al. (2015) explained that ASD is a developmental disorder that is classified as severe because children experience obstacles in almost all aspects of their development, therefore mothers of children with ASD are more susceptible to stress due to the severity of developmental disorders their children suffer, and self-harm behaviour, hyperactivity, and low adaptive behaviour they display (Golya and McIntyre 2018). Children with ASD present with sensory processing disorders (SPDs) that impact daily functioning (Alkhalifah 2019). Besides, children with ASD also have comorbid disorders (Simonoff et al. 2008) so that their neurodevelopmental disorder is more severe and they display more maladaptive behaviours.

The findings of this study further emphasize that parenting stress is influenced by the types of child's neurodevelopmental disorder that has to do with the severity of the neurodevelopmental disorders' symptoms which has an impact on the increase of child's maladaptive behaviours (Lee *et al.* 2020). This is also confirmed by several other studies that have proven that the problematic behaviours in children with ASD (Harrop *et al.* 2016, Zaidman-Zait *et al.* 

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2014), the low adaptive ability of children with ADHD (Peasgood *et al.* 2020), and the increased maladaptive behaviour of children with ID (Giltaij *et al.* 2015) has an impact on maternal parenting stress. Low independence and increased maladaptive behaviours in children with neurodevelopmental disorders are conditions that mothers see and deal with in their daily life. Such a difficult condition will likely reduce the psychological well-being of the mother, especially when the mother has a dual role of being wife to her husband and being mother who has to take care of a child (or children) with developmental disabilities and their siblings.

## 5. Conclusions, implications, and limitations

The findings of this study indicate that the mother's perception of child's maladaptive behaviours and types of child's neurodevelopmental disorders influence the emerging maternal parenting stress, and that maternal parenting stress is influenced by the types of child's NDD disorder in that mothers of children with ASD experience higher parenting stress than mothers of children with other types of NDD. Children with ASD experience complex developmental disorders, one of the causes is abnormalities in the structure and biochemistry of the brain and impaired sensory integration. The complexity of developmental disorders experienced by children with ASD causes them to be unable to display adaptive behaviour and instead display maladaptive behaviours, such as tantrums, hyperactivity, self-harm behaviour, and lack of independency.

The implication of this research is to provide new information that types of NDD prove to be able to serve as a moderating variable for the relationship between the mother's perception of child's NDD and maternal parenting stress and that the severity of NDD symptoms have an effect on the severity of child's maladaptive behaviours. The complexity of problem the mother has to face leads to her susceptibility to experiencing stress, but she has to go with it and respond it positively so that the stress does not bring negative impact (distress) and become pathological. Thus, it is necessary to conduct training to increase mothers' psychological wellbeing, mindfulness (Chan and Neece 2018), and gratitude (Timmons 2015) and thus empower them (Bradshaw *et al.* 2018). Education institutions and professionals (physicians, psychologists) who are involved in the development of children with NDD are expected to provide parenting support and intervention that can be delivered either with individual or group approach to increase knowledge and skills of mothers who raise children with NDD. The importance and benefits of parenting support have been investigated by Schultz *et al.* (2011); Sankey *et al.* (2019) that parenting support intervention delivered with parent support group and psycho-education methods contributes to minimizing parenting stress.

Although this study is able to contribute by providing new information regarding the factors that influence parenting stress experienced by mothers of children with NDD in Indonesia, it still has several limitations. First, this study was only conducted on mothers who had children with NDD, so the generalizability of its finding is limited and it cannot be generalized to fathers who also play an important role in the development of children with NDD. Therefore, based on the results of this study, future research is suggested to examine the relationship between variables from the fathers' perspective. Second, this research was conducted in only one city in Indonesia, the City of Medan in North Sumatra Province, and thus did not cover subjects in other provinces in other islands in Indonesia. Further research is expected to provide a more comprehensive picture of maternal parenting of mothers of children with NDD in various regions in Indonesia.

Suggestions that can be given based on the findings of this study is that, given the importance of studying the influence of child's maladaptive behaviour on parenting stress, further research should not only conduct survey research but also provide training to parents on how to reduce parenting stress due to maladaptive behaviours in children with NDD, for example by utilizing the role of parent-child interaction therapy (Hansen and Shillingsburg 2016), music therapy (Salomon-Gimmon and Elefant 2019), joint attention and play intervention (Fahy *et al.* 2020, Mora *et al.* 2018), and dance movement therapy to improve child's communication (Sengupta and Banerjee 2020).

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## **Consent for publication**

Each participant gave written informed consent.

## **Declaration of conflicting interests**

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publications of this article.

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