

Master Thesis

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Abstract

Currently we live in a society where people experience all the influences from the COVID-19 pandemic on our daily lives. We are living in a world with many uncertainties like being able to maintain a job and/or a home, being able to finish your education programme and being able to stay healthy (Bögels, 2020). Some research studies on the potential consequences of the COVID-19 pandemic on families indicate that the pandemic may worsen (existing) mental health (Golberstein et al., 2020). To explain the relations between exposure to COVID-19 and the mental health of children, this study examined the extent to which Dutch children (1 to 6 years old, $N = 1316$) were exposed to COVID-19 and how this affected their mental health. In addition, this study also examined whether there was a moderate effect of warm- and neglecting parenting practices between the exposure to COVID-19 and mental health in children. In total 1316 parents participated within this research study ($M_{age} = 34.46$, $SD = 4.00$, 97% mothers). Participants completed an online survey via Qualtrics about the degree in which they and their children were exposed to COVID-19, the two different forms of parenting practices and their children's mental health (De Young et al., 2020). The findings within this research study imply that different concepts of exposure to COVID-19 like suspiciousness of parents and/or children being infected, parents and children being tested and/or diagnosed with COVID-19, a close friend or family member being diagnosed with COVID-19, children who were separated from a primal caretaker and a close friend or family member died because of COVID-19 are associated with the mental health problems in children. This only applies when only the independent Exposure to COVID-19 is included. In addition, this study also found that neglecting parenting practices are associated with the mental health problems in children. Regarding the warm parenting practices no associations were found according to the mental health in children. Finally, there was no moderating effect of parenting practices on the association between exposure to COVID-19 and mental health problems in children. The main result within this research study is the significant association between neglecting parenting practices and mental health problems in children.

Keywords: Children, 1 to 6 years, parents, COVID-19 exposure,, parenting practices

Exposure to COVID-19 and the mental health of young children: The moderating role of parenting practices?

Currently people live in a society where we experience all the influences from the COVID-19 pandemic on our daily lives. People are living in a world with many uncertainties like being able to maintain a job and/or a home, being able to finish your education programme and being able to stay healthy (Bögels, 2020). Some research studies focused on the consequences of the COVID-19 pandemic on families. In response to the COVID-19 pandemic, the scientific community has increasingly reported on child mental health and wellbeing (Prime et al., 2020; Golberstein et al, 2020). These first studies conclude that the COVID-19 pandemic may worsen (existing) mental health problems and lead to more cases among children and adolescents because of the unique combination of the public health crisis, social isolation and economic recession (Golberstein et al., 2020).

Only a few studies specifically focused on the influence of a disease outbreak on the mental health of young children. Within this research study the mental health in children refers to the extent in which children are showing aggressive/irritated, anxious and/or depressed behaviour and also the experienced sleep disturbance in children. Shen and colleagues (2020) discuss that this pandemic may continue to have increased long term adverse consequences on children and adolescents. Another study that examined the impact of the COVID-19 pandemic on young children and adolescents found younger children (3- 6 years old) were more likely to manifest symptoms of clinginess and the fear of family members being infected than older children (6-18 years old) (Sing et al., 2020). Also Jiao and colleagues (2020) indicated that children experienced disturbed sleep, nightmares, poor appetite, agitation, inattention and separation related anxiety during the on-going pandemic. It is important to know that the research studies mentioned above focused on the COVID-19 pandemic in different countries like; China, United Kingdom and the United States. This research study will be the first that focuses on the COVID-19 pandemic in the Netherlands. In addition, the impact that is measured in those studies above consists of different concepts like; the impact of family members being infected but also the impact of the absence of structured settings at school and the impact of social distancing. This study will be more specific and we will examine whether exposure to COVID-19 relates to the mental health of children from 1 to 6 years old. Moreover, we will go one step further and also examine whether parental warmth and rejection can either protect children from the potential adverse effects or increase the effects on the mental health problems in children.

According to the COVID-19 pandemic there are different sources of exposure that impact young children. Within this research study the exposure to COVID-19 refers to the extent in which children experienced different situations in which they have been confronted with the virus. This could mean either the child or parent being suspected or tested and diagnosed with COVID-19, children being separated from their primal caretaker due to quarantine, or a close friend or family member being diagnosed with COVID-19 or died because of this virus. These forms of exposure may lead to different consequences in children like; pervasive fears about their health, worries to infect others and fear infecting family members (Serafini et al., 2020, Cava et al., 2020; Bai, et al., 2020; Desclaux et al., 2017; Jeong et al., 2016). A review study from Imran and colleagues (2020) focused on the impact of COVID-19 social distancing on the mental health of children in Pakistan. They indicated an increase in feelings of anxiety and uncertainty (Cowie & Myers, 2020). In addition this study also indicates that children quarantined under suspicion of having COVID-19 or diagnosed are likely to develop mental health disorders such as anxiety, acute stress and adjustment disorders. Finally they also report that separation from parents and social isolation can all have negative psychological impact on children (Imran et al, 2020). Another study also examined the effect of quarantine including separation and restriction (Brooks et al., 2020). The results showed that the longer the quarantine, the poorer the mental health. In the Netherlands rules are also applied with regard to quarantine. Even children have to stay in quarantine until they have no more complaints that are related to the virus. In addition, when parents or other family members are diagnosed with COVID-19 children also need to stay in quarantine. This may affect their mental health as well. According to Dyregrov (2008) children can also experience many kinds of loss. They can lose people close to them because of death, or they can lose daily contact with one or several loved ones. Studies indicate that certain losses can have a great impact on the mental health of children (Marcussen et al., 2019). Children that experienced losses because of COVID-19 might also develop mental health problems. Not only the different sources of exposure to COVID-19 may influence the mental health in children. Many studies have also analysed different aspects of parental behaviour in relation to the mental health of children (Pinquart, 2016; Larzelere et al., 2013; Maccoby & Martin, 2013).

Within this research study the parenting behaviour refers to two different concepts of parenting practices; warm parenting practices and neglecting parenting practices. The warm parenting practices within this study refers to parents knowing what their child is thinking or feeling and parents that do special things with their children. The neglecting parenting

practices within this study refer to parents that don't understand their child very well and parents that have less time to invest in their child. According to the literature there is sufficient evidence that parenting style or practices has a major influence on the development of the child (Sahithya et al., 2019). Most of the studies have focused on the quantities and qualities of parent's responsiveness/warmth, control/demandingness, and discipline (Sahithya et al., 2019). A large number of empirical studies indicated that negative parenting style and inconsistent parental support and warmth are significantly associated with higher level of internalizing and externalizing symptoms in children and adolescents (Mousavi et al., 2016). For example, Mousavi and colleagues (2016) indicate that parents who demonstrate acceptance and emotional warmth of children's negative emotions rather than criticizing or minimizing their feelings help promote children's emotion regulation and reduce children's vulnerability to anxiety. In addition, parental rejection is assumed to undermine children's emotion regulation by increasing sensitivity to anxiety (Mousavi et al., 2016). However, there are much fewer research studies that specifically focused on young children between one and six years old (Wood et al., 2002). This study will complement the existing literature by only focusing on children between 1 and 6 years old in the Netherlands. In addition, those studies did not mention that the parenting style, dimensions or practices were included as a moderator.

Within this research study the parenting practices will also be examined as a moderator. This means that we will examine if the degree of children being exposed to COVID-19 and the mental health problems in children can also be affected by the parenting practices. In addition, we will examine whether the association between a higher degree of exposure to COVID-19 and mental health problems may be reduced by more warm parenting practices or whether it will increase by more neglecting parenting practices. According to the literature there is some research that specifically focused on forms of exposure and parenting styles as a moderator. For example, a study focused on natural disasters on children found that low levels of parental acceptance and higher levels of firm control were associated with increased anxiety symptoms in children after a hurricane (Kessel et al., 2019). In addition, another study found that there were some moderating effects of parenting style and warmth on the association between children being exposed to protracted periods of war, missile bombardments and terrorism and children's mental health (Slone & Shoshani, 2017). Slone & Shoshani (2017) indicate that low authoritativeness was associated with more severe internalizing and externalizing symptoms at high levels of exposure. In addition, high responsiveness and empathic support of family have been identified as powerful resilience

factors for children (Slone & Shoshani, 2017). However, these studies did not specifically focus on the COVID-19 pandemic as exposure variable and were performed in other countries.

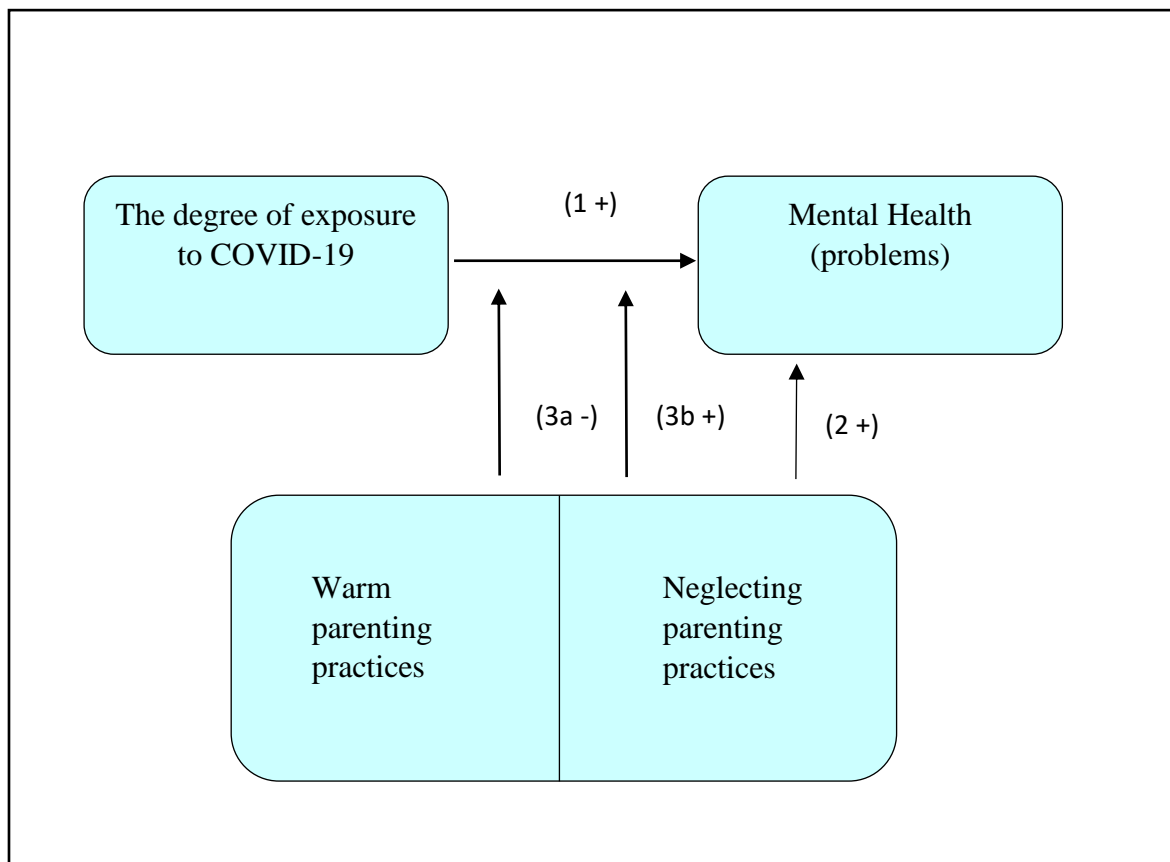
Nowadays the COVID-19 pandemic plays also an important role in today's Dutch society. The current pandemic in the Dutch society may lead to different challenges for families, especially for parents. Parents need to explain to their children about the outbreak and explain or share facts in a way their children can understand it, but also it does not alarm them. Parents should be able to assure children in times of uncertainty and become role models for them in reacting to a dynamic event (Buheji et al., 2020). The way of parents interacting with children and implement different ways of parenting practices during a pandemic like COVID-19 in the Dutch society, may affect the mental health of children. This study aims to give an clearer picture of the moderating role of warm- and neglecting practices on the association between the degree of exposure to COVID-19 and mental health problems in children (1 to 6 years old) in the Netherlands.

Present Study

To summarise, the current study aims to examine whether the degree of exposure to COVID-19 is associated with the mental health of young children and if this association depends on the parenting practices. Based on previous research and literature it is expected that; (1) a higher degree of exposure to COVID-19 is related to mental health problems in young children in the on-going pandemic. It is also expected that (2) more neglecting practices from parents will be associated with more mental health problems in young children and more warm and caring practices will be associated with reduced mental health problems in young children. Finally it is also expected that (3a) the association between the degree of exposure to COVID-19 and the mental health problems of young children in the on-going pandemic can be decreased by warm and caring parenting practices. In contrast (3b), it is expected that the association between the degree of exposure and the mental health problems of young children will increase for children with parents with more neglecting parenting practices. Figure 1 gives an overview of the assumed expectations and associations.

Figure 1

Conceptual model of the research question within this study



Note. This figure shows associations between the exposure to COVID-19 and the mental health of young children. Moderated by warm- and neglecting parenting practices.

Methods

Participants

The research focused on families in the Netherlands with at least one child between the age of 1- to 6 years old, only one parent needed to participate. The parents are recruited through information letters, flyers, professional networks, partner organisations and advertising on social media platforms. Participation was voluntary and participants agreed to participate based on their own motivation. This sample is referred to as a convenience sample. The survey aimed to recruit as many families as possible and from diverse socio-economic and cultural backgrounds.

In total 1328 parents participated within this research study. There were 12 participants with missing data on different items. Those participants are not included in the sample. Complete data was collected from 1316 parents aged between 22 and 50 years old ($M_{age} = 34.46$, $SD = 4.00$, 97% mothers). The difference in age between mothers ($M = 34.37$, $SD = 3.96$) and fathers ($M_{age} = 37.54$, $SD = 4.35$) was significant ($t(1311) = -4.67$, $p < .001$). The children included in this study were aged between 1 and 6 years old ($M_{age} = 3.09$, $SD = 1.35$, 48% girls). The difference in age between girls ($M = 3.08$, $SD = 1.38$) and boys ($M = 3.10$, $SD = 1.31$) was not significant ($t(1314) = -.24$, $p = .81$). From the entire sample most of the participants were from Dutch origin (96.7%). In addition, participants were also asked to report their highest education obtained, their income and their marital status. Most of the participants were higher educated, 20.7% accomplished secondary vocational education, 40.5% accomplished higher education and 36.4% accomplished university education. The incomes that participants reported were mostly between €2000 and more than €5000. Last but not least, most of the participants were in a relationship, had a registered partnership or was married (96.7%). See Table 1 for an overview of all background characteristics.

Table 1

Sample Characteristics age and gender of the parents and children

| | Frequency | % |
|---|--------------|------|
| Total N | 1316 | |
| Age | | |
| Age parent, M (SD) | 34.46 (4.00) | |
| Age Child, M (SD) | 3.09 (1.35) | |
| Gender parents | | |
| Woman (mother) | 1281 | 97.3 |
| Man (father) | 35 | 2.7 |
| Gender child | | |
| Girl | 643 | 48.2 |
| Boy | 682 | 51.8 |
| Marital status | | |
| In a relationship, registered partnership or married | 1272 | 96.7 |
| Divorced | 14 | 1.1 |
| Single | 36 | 2.7 |
| Widow/widower | 1 | <0.1 |
| I prefer not to declare | 1 | <0.1 |
| Education parent | | |
| Preschool education | 3 | 0.2 |
| Pre-vocational secondary education | 29 | 2.2 |
| Secondary vocational education | 272 | 20.7 |
| Higher education | 533 | 40.5 |
| University education | 479 | 36.4 |

| Income | | |
|-------------------------|-----|------|
| Less than €500 | 4 | 0.3 |
| Between €500 and €1000 | 10 | 0.8 |
| Between €1000 and €2000 | 73 | 5.5 |
| Between €2000 and €3000 | 197 | 15.0 |
| Between €3000 and €5000 | 708 | 53.8 |
| More than €5000 | 306 | 23.3 |
| Missing | 18 | 1.4 |

| Origin | | |
|---------------|------|------|
| Dutch | 1273 | 96.7 |
| Other | 43 | 3.3 |

Note. M = Mean, SD = Standard Deviation

Procedure

Participants completed an online survey via Qualtrics. The duration of filling in the entire questionnaire was approximately 30 minutes. This study has a cross sectional design, only the first measurement is included because several measurements will be taken over a longer period of time. Participating parents will complete the survey four times over a twelve-month period (De Young et al., 2020). They provided information on the different types of experiences children and families are having, and how families are coping with these experiences (De Young et al., 2020). The order of the questionnaires was the same for all participants; background information, COVID-19 exposure and loss, Impact of COVID-19 Pandemic on family life, the child's understanding and worries about COVID-19, questions about the child's mental health and wellbeing, PTSD scale for young children, parenting and interactions with their children during COVID-19 and questions about parenting their children in general. If parents had more than one child in the age range from 1- to 6 years, they were asked to choose one child to answer the questions. The study is approved by the Ethics Committee of the Faculty of Social and Behavioural Sciences of Utrecht University.

Measures

Background characteristics. Parents reported their own gender (0 = man, 1= woman) and age, their children's gender (0 = boy, 1= girl), and the year in which their child was born (1= 2014, 2= 2015, 3= 2016, 4= 2017, 5= 2018, 6= 2019, 7= 2020). This will be recoded to the age of the child (1=6 years old, 2= 5 years old, 3= 4 years old, 4 = 3 years old, 5 = 2 years old, 6 = 1 year old, 7 = 0 years old).

Exposure to COVID-19. Five indicators were used to assess the degree of exposure to COVID-19. First, parents indicated on a four-point scale if their child was tested because of suspicion of contamination with COVID-19 or diagnosed with COVID-19 (1= yes we were suspicious of possible contamination, but we haven't tested, 2 = yes, he/she was tested, but the result was negative, 3 = yes, he/she was tested and diagnosed with COVID-19 and recovered in isolation at home, 4 = yes he/she was tested and diagnosed with COVID-19 and was taken to the hospital). This item was recoded because the first scale does not contain a form of exposure (1 = 0, 2= 1, 3= 1, missing = 0). Missing values means that there wasn't any suspicion of the child being infected the COVID-19 virus. Second, parents also indicated if there was any suspicion of themselves being infected with COVID-19, or if they were tested or diagnosed. The same four-point scale as the previous item was used and recoded (1 = 0, 2= 1, 3= 1, 4= 1, missing = 0). Missing values means that there wasn't any suspicion of the child being infected the COVID-19 virus. Third, parents reported if there was another family member or person close to the family diagnosed with COVID-19 (1 = no, 0 = yes). This item is also recoded (0= 1, 1= 0). The recoded value 1 means that there was a form of exposure by a close friend or family member being diagnosed with COVID-19. The recoded value of 0 means there was no form of exposure by a close friend or family member being diagnosed with COVID-19. Fourth, parents indicated if their child was separated for more than one day from a primal care taker (1 = no, 2 = yes). This item is also recoded (0 = 1, 1 = 0). Fifth, parents reported if the family had lost a family member or close friend because of the COVID-19 pandemic (1 = no, 2 = yes). This item is also recoded (0 = 1, 1 = 0). The recoded scores were averaged to create a composite variable with higher scores reflecting a higher degree of exposure (Cronbach's $\alpha = .38$). The final range of the exposure variable is: minimum = 0.0 and maximum = 1.0.

Mental health. Four subscales from the Promis-Early Childhood questionnaire were used to measure the degree of mental health problems in children (Blackwell et al., 2020). Parents answered questions about different aspects of their children's behaviour in the past 7 days on

a five-point Likert-scale (1= *never*, 2= *almost never*, 3= *sometimes*, 4= *almost always*, 5= *always*). Within this variable the 4 subscales ‘anger/irritability’, ‘anxiety’, ‘depression’ and ‘sleep disturbance’ are included. For the first subscale ‘anger/irritability’ parents indicated on sixteen questions in which way and how frequently they experienced forms of angry or irritated behaviour. Example items within this subscale are ‘my child had a tantrum while he/she was upset’ and ‘my child became angrily easy’. For the second subscale ‘anxiety’ parents indicated on fourteen questions in which way and how frequent they experienced forms of anxious behaviour in their child. Example items within this subscale are ‘my child became scared and talked about things that were bad’ and ‘my child was worried or upset about what possibly could happen to him/her’. For the third subscale ‘depression’ parents indicated on ten questions in which way and how frequent they experienced forms of depressed behaviour in their child. Example items within this subscale are ‘my child kept crying even when I or the other parent tried to comfort him/her’ and ‘my child was talking negative about him/her- self’. For the fourth subscale ‘sleep disturbance’ parents indicated on eight questions in which way and how frequent they experienced forms of sleep disturbances in their child. Example items within this subscale are ‘my child needed a lot of time falling asleep’ and ‘my child woke up too early and needed a lot of time falling back asleep or couldn’t sleep anymore’. All the items on the different themes were averaged to create a final variable of the children’s mental health with higher scores reflecting more mental health problems (Cronbach’s $\alpha = .95$). The researcher also looked at the correlations between those subscales (see Table 2). The results show that there is a significant medium- positive correlation between all subscales used. This means that a higher value on one of the subscales goes together with a higher value on the other subscales.

Table 2

Correlations between the subscales of the mental health variable

| | 1. | 2. | 3. | 4. |
|-----------------------|--------|--------|--------|--------|
| 1. Anger/irritability | | .546** | .626** | .391** |
| 2. Anxiety | .546** | | .701** | .489** |
| 3. Depression | .626** | .701** | | .434** |
| 4. Sleep disturbance | .391** | .489** | .434** | |

Note. Values lower than 0.2 = low, values between 0.2 and 0.5 = medium, values above 0.8 = high (Aarts & de Koning). *p < .05 **p < .001

Parenting practices. To measure parenting practices in the current study an adaptation of the Parent as a Social Context Questionnaire (PSCQ) was used (Zimmer-Gembeck et al., 2015). This adapted questionnaire consisted of different questions, describing different parenting behaviour and practices. All the questions were answered on a four-point Likert-scale (1= *not true at all*, 2= *not very true*, 3= *sort of true*, 4= *very true*). Within this research study two different concepts of parenting practices are examined; (1) Warm parenting practices and (2) Neglecting parenting practices. For the subscale ‘Warm parenting practices’ parents indicated on four questions to what extent they show warmth and commitment towards their child. An example of the items on the subscale ‘Warm parenting practices’ is; ‘I really know my child very well’. The scores on ‘Warm parenting practices’ were averaged into a composite variable with higher scores reflecting more warm and caring parenting practices (Cronbach’s $\alpha = .44$). For the subscale ‘Neglecting parenting practices’ parents indicated on four questions in what extent parents find it difficult to understand their child and showing affection towards their child. An example of the items on the subscale Neglecting parenting practices is; ‘I don’t understand my child very well’. The scores on ‘Neglecting parenting practices’ were averaged to create a composite variable with higher scores reflecting more neglecting parenting practices (Cronbach’s $\alpha = .61$).

Analysis

For this study, analysis were conducted using SPSS version 26 was used (referentie). First the researcher will look at the descriptive statistics of and Pearson correlations between the study variables. The descriptive statistics will give a summary of the entire data set. It is also important to consider the assumptions of the hierarchical regression analysis. Within this research study we considered six different assumptions of the hierarchical regression analysis; (1) linearity, (2) multicollinearity, (3) independent values of the residuals (4) homoscedasticity, (5) normality and (6) no influential cases or significant outliers. The considered assumptions are further described in the result section.

Then, two answer the research question and examine whether exposure to COVID-19 is associated with mental health problems in children and if there is a moderating effect of warm- and/or neglecting parenting practices a hierarchical regression analyses was conducted. In the first step of the regression analysis the Mental health variable was entered as the dependent variable (Y) and Exposure to COVID-19 variable was entered as the independent variable (X). This step examined the first hypothesis that a higher degree of exposure to COVID-19 is related to mental health problems in young children in the on-going pandemic.

For the next step we examined the second and third hypotheses. In this second step the Mental health variable was entered as the dependent variable (Y) and the variables Exposure to COVID-19, Warm parenting practices and Neglecting parenting practices were entered as the independent variables. In addition, the researcher first centred the independent variables Exposure to COVID-19, Warm parenting practices and Neglecting parenting practices before creating the interaction variables. Then the interaction variables of Exposure to COVID-19 and Warm parenting practices and Exposure to COVID-19 and Neglecting parenting practices were entered. This step examined the second hypothesis that more neglecting practices from parents will be associated with more mental health problems in young children and more warm and caring practices will be associated with reduced mental health problems in young children. In addition, this step also examined the third hypothesis that the association between the degree of exposure to COVID-19 and the mental health problems of young children in the on-going pandemic can be decreased by warm and caring parenting practices and will increase for children with parents with more neglecting parenting practices.

Results

Descriptive statistics.

Table 3 displays correlations between all the continuous variables as well as the means and standard deviations for all variables included within this research study. Also the descriptive statistics of the entire sample and frequencies of the independent variable Exposure to COVID-19 will be displayed (see Table 4).

Table 3

Descriptive statistics of all continuous variables of the whole sample

| | 1. | 2. | 3. | 4. |
|---------------------------------|--------|-------|--------|--------|
| 1. MentalHealth | | .06** | -.20** | .45** |
| 2. ExposureCOVID-19 | .06* | | -.01 | .07** |
| 3. WarmParentingPractices | -.20** | -.01 | | -.45** |
| 4. NeglectingParentingPractices | .45** | .07** | -.45** | |
| <i>M</i> | 1.71 | .17 | 3.42 | 1.76 |
| <i>SD</i> | .47 | .19 | .43 | .56 |

Note. Values lower than 0.2 = low, Values between 0.2 and 0.5 = medium, Values above 0.8 = high (Aarts & de Koning). * $p < .05$ ** $p < .001$

First, we examined the correlations between the independent variable Exposure to COVID-19 and the other variables. The results show that there is a significant very low-positive correlation between exposure to COVID-19 and mental health. There is also a non-significant very low-negative correlation between exposure to COVID-19 and warm parenting practices. In addition there is a significant very low- positive correlation between exposure to COVID-19 and neglecting parenting practices. It can be concluded that there is little to no correlation between the exposure to COVID-19 and the other variables. Next, we examined the correlations between the moderator variables warm- and neglecting parenting practices. The results show that there is a significant low to medium- negative correlation between warm parenting practices and mental health. This shows that a higher value on warm parenting practices goes together with a lower value on mental health problems. There is also a significant low to medium- negative correlation between warm parenting practices and neglecting parenting practices. This shows that a higher value on warm parenting practices

goes together with a lower value on neglecting parenting practices and vice versa. Finally, the results also show a significant low to medium- positive correlation between neglecting parenting practices and mental health. This shows that a higher value on neglecting parenting practices goes together with a higher value on mental health problems.

To create a clearer image of the exposure variable we also examined the characteristics of the items that are used within this variable (see Table 4). For 1152 of the children (88%) applies that there wasn't any suspicion of the child being infected. For 120 of the parents (54%) there also wasn't any suspicion of being infected. In addition, none of the children as well as parents were diagnosed with COVID-19 and taken to the hospital. In total 995 (76%) of the family's did not have any close friend or family member diagnosed with COVID-19. The number of children that were separated for more dan one day from a primal caretaker was 146 (11%). As last but not least, 58 of the family's (4%) lost a close friend or family member because of COVID-19.

Table 4

Sample Characteristics of the Exposure variable

| | <i>N</i> | <i>Percent</i> |
|--|----------|----------------|
| <i>There was no suspicion of the child being infected at all</i> | 1152 | 87.5 |
| <i>We were suspicious of the child being infected, but we haven't tested</i> | 120 | 9.1 |
| <i>He/she was tested but the result was negative</i> | 43 | 3.3 |
| <i>He/she was tested and diagnosed with COVID-19 and recovered at home</i> | 1 | .1 |
| <i>There was no suspicion of the parent being infected at all</i> | 716 | 54.4 |
| <i>We were suspicious of the parent being infected, but we haven't tested</i> | 80 | 6.1 |
| <i>The parent was tested but the result was negative</i> | 422 | 32.1 |
| <i>The parent was tested and diagnosed with COVID-19 and recovered at home</i> | 98 | 7.4 |

| | | |
|--|------|------|
| <i>Someone close to the family was diagnosed with COVID-19</i> | 321 | 24.4 |
| <i>Nobody close to the family was diagnosed with COVID-19</i> | 995 | 75.6 |
| <i>Children that were separated for more than one day from a primal caregiver</i> | 146 | 11.1 |
| <i>Children that weren't separated for more than one day from a primal caregiver</i> | 1170 | 88.9 |
| <i>The family lost a close friend or family member because of COVID-19</i> | 58 | 4.4 |
| <i>The family did not lost a close friend or family member because of COVID-19</i> | 1258 | 95.6 |

Assumptions. To make sure the data within this research study gives a valid result, the researcher checked the assumptions of a multiple regression analysis. The assumptions are further elaborated below.

For the first assumption there needs to be a linear relationship between the dependent variable and each of the independent variables. To check this assumption the researcher produced scatterplots of the relationship between each of the independent variables and the dependent variable. The relationship between the independent variable Exposure to COVID-19 and the mental health variable could be modelled by a straight line, suggesting that the relationship between these variables is linear. The relationship between the moderator variables Neglecting- and Warm parenting practices and the mental health variable could also be modelled by a straight line, suggesting that the relationship between these variables is also linear. It can be concluded that the assumption of linearity has been fulfilled.

Second, the researcher examined the multicollinearity within the data. Table 2 with the correlations of all variables within the sample shows that the highest correlation is $r = -.450$. This refers to a low- to medium correlation. In addition, all VIF scores were below 4 and this means that our independent variables are not highly correlated and thereby the assumption has been met (Siero, et al., 2009)

For the third assumption it is important that the values of the residuals are independent. To test this assumption the Durbin-Watson statistic was analysed. Values below

1 and above 3 are cause for concern (Chatterjee & Simonoff, 2013). In this case the Durbin Watson shows a value of 1.995. This means that this assumption has been met.

Fourth, the assumption of homoscedasticity was examined with the final graph of the output. This graph plots the standardised values that our model would predict, against the standardised residuals. The variances along the line of best fit needs to remain similar as you move along the line. In this case the dots resemble the shape of a cloud. It can be concluded that this assumptions has been met.

Fifth, the assumption of normality of the residuals was first examined with the histograms of the variables separately then we examined the residuals with the q-q plots and the Kolmogorov-Smirnov test. The normal distribution of the variable Exposure to COVID-19 is skewed to the right. Most of the observations are located on the left side of the normal distribution ($M = 1.17$, $SD = .185$). This shows that most of the participants had an lower average score on the exposure variable. The normal distribution of the variable Neglecting parenting practices is also mostly normal ($M = 1.76$, $SD = 0.555$). The normal distribution of the variable Warm parenting practices is skewed to the left. Most of the observations are located on the right side of the normal distribution ($M = 3.42$, $SD = .432$). This shows that most of the participants had an higher average score on the Warm parenting practices variable. The normal distributions of the variable Mental health is skewed to the right. Most of the observations are located in the left side of the normal distribution ($M = 1.17$, $SD = .471$). This shows that most of the participants had an lower average score on the Mental health variable. In addition, with the q-q plots the dots need to be as close to the line as possible. In this case, the data points hardly touch the line at all. Last but not least, the Kolmogorov-Smirnov test shows all the variables significantly deviate from a normal distribution. All the Sig. values are below 0.05 (Twente University, 2018). It can be concluded that the assumption of normality has been violated. Because of the bigger sample size within this study ($N = >100$), it may be assumed that the data is powerful enough so this shouldn't be a concern (Studiedata, 2021).

As last but not least, the assumption of no significant outlier was examined. To make sure there were no influential cases or significant outliers the researcher used Cook's Distance to check this assumption. Any values over 1 are likely to be significant outliers, which may influence the outcome of the model. It can be concluded that there are no values over 1, there are no influential cases (Chatterjee & Simonoff, 2013).

Exposure to COVID-19 and children's mental health problems.

The first step of the hierarchical multiple regression was examining the first hypothesis that the degree of exposure is associated with mental health problems in children. As shown in Table 5, including the degree of exposure in step 1 lead to a significant model(1) $F(1, 1314) = 5.23, p < .05$. The model explained 0.3% of the variance of the children's mental health. The model results are displayed in Table 5 and showed that exposure to COVID-19 was significantly associated with the level of mental health problems in children. The results show that exposure to COVID-19 is associated with a higher level of mental health problems in children from 1 to 6 years old. This corresponds to the first hypothesis formulated within this research study that a higher degree of exposure to COVID-19 is related to mental health problems in young children in the on-going pandemic is correct.

Exposure to COVID-19, parents practices and interaction effects

In step 2 we added the independent variables (moderators) warm- and neglecting parenting practices and two interactions of exposure to COVID-19 with warm parenting practices and exposure to COVID-19 with neglecting parenting practices. As shown in Table 5, the model(2) was significant $F(5, 1310) = 66.38, p < .001$, and explained 20% of the variance in the children's mental health. First, Model 2 shows that the association between exposure to COVID-19 and mental health is no longer significant ($p > .05$). Second, the model shows that there is no significant association between warm parenting practices and mental health ($p > .05$). Third, the model shows that there is a significant association between neglecting parenting practices and mental health ($p < .001$). Third, the model shows that there are no interaction effects between exposure to COVID-19 and mental health moderated by warm- and neglecting parenting practices ($p > .05$). The results do no longer correspond to the first hypothesis formulated within this study that is was expected that the degree of exposure to COVID-19 is associated with mental health (problems) in children. In addition, only a part of the results corresponds to the second hypothesis that warm- and neglecting parenting are associated with mental health problems in children. Only neglecting parenting practices were found to be associated with mental health problems in children when all the independent variables are included. Last but not least there, the results do not correspond to the third hypothesis within this research study that parenting practices influence the association between exposure to COVID and mental health problems in children.

Table 5

Hierarchical Multiple Regression Analysis Predicting Children's Mental Health from Exposure to COVID-19 and Moderation by Warm- and Neglecting Parenting Practices

| | | <i>B</i> | <i>St. Error</i> | β | ΔR^2 | <i>p</i> |
|---------|---|----------|------------------|---------|--------------|----------|
| Model 1 | (Constant) | 1.679 | .017 | | .003 | .000** |
| 1 | ExposureCOVID-19 | .161 | .070 | .063 | | .022* |
| Model 2 | (Constant) | .992 | .128 | | .199 | .000** |
| 2 | Exposure to COVID-19 | .074 | .064 | .029 | | .247 |
| | Warm Parenting Practices | .009 | .030 | .008 | | .764 |
| | Neglecting Parenting Practices | .380 | .024 | .448 | | .000** |
| | Exposure to COVID-19*Warm Parenting Practices | .231 | .165 | .039 | | .162 |
| | ExposureCOVID-19*Neglecting Parenting Practices | .153 | .126 | .034 | | .226 |

Note. Model 1: Predictors: (Constant), ExposureCOVID-19. Model 2: Predictors: (Constant), ExposureCOVID-19, WarmParentingPractices, NeglectingParentingPractices, ExposureCOVID-19*WarmParentingPractices, ExposureCOVID-19*NeglectingParentingPractices . *p <.05 **p<.001.

Discussion

This research study gave more insight in the current impact of COVID-19 on young children in the Netherlands. The main research question within this study focused on the associations between exposure to COVID-19 consisting of different concepts and the mental health in young children. A few previous research study's examined mostly the impact on older children and adolescents. In addition, there weren't any studies that specifically focused on the impact of COVID-19 in the Netherlands. This research study was one of the first studies that specifically focused on young children (1 to 6 years old) in the Netherlands. Thereby, this study also focused on the associations between warm- and neglecting parenting practices and mental health in young children. Most previous studies only focused only on older children rather than children between 1 and 6 years old. As last but not least this study also examined the moderating role of both warm- warm and neglecting parenting practices. For this moderating role also applies that previous studies mostly focused on children and adolescents of an older age group. This makes this study very innovative with regard to this young age group.

The results show that there is an positive association between exposure to COVID-19 and mental health problems in children. Although, it needs to be taken into account that this association only explains a small part of the variance and it only holds when only the exposure variable is included. Second, there was no association found between warm parenting practices and mental health problems in children. Third, there was a association found between neglecting parenting practices and mental health problems in children. Last but not least, there was no interaction effect between exposure to COVID-19 and mental health problems in children moderated by both warn- and neglecting parenting practices. The results of all the associations are discussed further below.

First, as expected there was found that the degree of exposure to COVID-19 was indeed associated with the mental health of children. With children being more exposed to COVID-19 showing relatively more mental health problems. According to the literature people who have been exposed to the risk of infection may develop pervasive fears about their health, worries to infect others and fear infecting family members (Serafini et al., 2020, Cava et al., 2020; Bai, et al., 2020; Desclaux et al., 2017; Jeong et al., 2016). Imran and colleagues (2020) also indicated an increase in mental health problems of children being exposed to COVID-19. Also separation and restriction during quarantine is found to being related to mental health problems (Brooks et a., 2020). Like it was already described before, it needs to

be taken into account that this association only explains a small part of the variance and it only holds when only the exposure variable is included. This shows that exposure to COVID-19 isn't a strong predictor for mental health problems in children.

Next, there was also found that neglecting parenting practices were associated with the mental health of children. This confirms a part of the second hypothesis that parents showing more neglecting parenting practices towards their children results to relatively more mental health problems in children. This also corresponds to the literature that negative parenting style and inconsistent parental support and warmth are significantly associated with higher level of internalizing and externalizing symptoms in children and adolescents (Mousavi et al., 2016). In contrast, there were no associations found between warm parenting practices and the mental health of children. This doesn't correspond to the other part of the second hypothesis that parents showing more warm parenting practices toward their children should lead to a reduction of mental health problems in children. According to the literature parents showing warmth toward their child should promote positive feelings and reduced negative feelings (Pinquart, 2016; Alegre et al., 2014, Yap et al., 2015). It can be concluded that within this study neglecting parenting practices is the most relevant predictor according to mental health problems in children when all the independent variables are included. This corresponds to the literature that harsh parenting is among the most reliable correlates of child internalizing and externalizing problem behaviour (Erath et al., 2009).

In addition, the hypothesis about the moderation role of warm- and neglecting parenting practices in the association between exposure to COVID-19 and mental health problems was not confirmed within this study. According to the literature there is some research that specifically focused on forms of exposure and parenting styles as a moderator. For example, a study focused on natural disasters on children found that low levels of parental acceptance and higher levels of firm control were associated with increased anxiety symptoms in children after a hurricane (Kessel et al., 2019). However, not many studies focused on children being exposed to the COVID-19 pandemic.

Within this research study there are also some limitations. First, this study has a cross-sectional design. For this study only the first measurement was included. The data collection started in the beginning of the second wave of the COVID-19 pandemic in the Netherlands. Thereby there is a possibility that there at that time were less children being exposed to the different concepts of COVID-19 used within this study. At that time there was also an indication that children were less contagious and it was expected that children would transmit the virus less quickly. There is a possibility that this had less of an impact on children at that

time. It is advised to do further research with the other measurements included. This may lead to a clearer image of the influences of the different exposure concepts used within this study on children. However, there is already some research showing that forms of exposure to COVID-19 are indeed associated with the mental health of children (Serafini et al., 2020, Cava et al., 2020; Bai, et al., 2020; Desclaux et al., 2017; Jeong et al., 2016; Cowie & Myers, 2020; Imran et al., 2020, Brooks et al., 2020).

Second, because of the correlational design of this study we are not able to determine the direction of effects in the associations between neglecting parenting practices and mental health problems in children. According to the literature children may also influence parents and their behaviour. Berg- Nielsen and colleagues (2002) concluded that children with mental problems is a major stressor for families and substantially impacts on parenting abilities, increasing parental negativity and various forms of ineffective disciplining practice. In addition, another study indicated that children's emotional and behavioural problems impacted specifically in terms of parental well- being and parent's sense of competence to handle their children's problems (Faust & Scior, 2008; Farmer et al., 1997).

Third, because of the correlational design within this study there is also a possibility that there are other predictors that may influence the mental health of children that weren't included within this research study. A systematic review of measures of mental health and emotional wellbeing in parents of children aged 0-5 indicates that parental mental health problems are also associated with the infant being more likely to experience mental health problems (Webb, et al., 2018). In addition, many studies indicate that parental stress caused by the COVID-19 pandemic and all its uncertainties affects the mental health of children (Imran et al., 2020). However, the neglecting parenting practices within this study were found being significantly associated with the mental health problems in young children, thereby it can be concluded that neglecting parenting practices is a significant predictor of mental health problems in children.

Fourth, it is important to look critically at the items being used for the parenting practices variables. Only a limited number of items is used. According to the literature there are more different concepts of parenting styles. Baumrind (1991) identified three basic styles of childrearing: authoritarian, permissive and authoritative. Those three parenting styles differ in two particular areas of parenting: the amount of nurturing a child receives and the extent to which a child's activities and behaviour are controlled (Dwairy, 2004). Whiting this research study the items that are used mainly focused on the extent in which they understand their child, doing fun activities with their child and make time for their child. This does not fully

correspond to the basic styles of childrearing. However, within this study is clearly described what items are used. It also important to keep in mind that this study focused on young children. For example, the childrearing practices according to controlling children's activities and behaviour will be less applied at this age (Harker et al., 2016).

Fifth, it is also important to look critically at the parenting practices variables. Within this research study the biggest part of the participants were mothers. According to the literature there can be some substantial differences in parenting styles or practices between mothers and fathers (Casas et al., 2006; Tamis-LeMonda et al., 2004; Verhoeven et al., 2009). Previous research indicated that father's parenting behaviour was differentially related to children's behaviour in comparison to mothers (Rinaldi & Howe, 2012). When more dads had participated this may led to different scores on the parenting practicing items which could possibly have led to different associations between parenting practices and mental health outcomes in children. However, previous research studies according to parenting styles and differences between mothers and fathers do not show consistence in the results (Rinaldi & Howe, 2012).

Finally, it is also important to take the generalizability into account. For example, most of the parents and families within this study were higher educated and had a higher level of income. According to the literature this also affects the mental health of children. A study that focused on socioeconomic status and children's mental health indicates that disadvantaged children with low socioeconomic status likely suffer from mental health problems by twice as much as those with high socioeconomic status (Chunkai Li & Fang, 2017). In addition, some studies suggest that parental educational level was positively associated with some indicators of psychological positive health (Padilla-Moledo et al., 2016). Because of the small variation in parents on different background characteristics limited generalizability must be taken into account.

Conclusion

In sum, the findings within this research study imply that different concepts of exposure to COVID-19 like suspiciousness of parents and/or children being infected, parents and children being tested and/or diagnosed with COVID-19, a close friend or family member being diagnosed with COVID-19, children who were separated from a primal caretaker and a close friend or family member died because of COVID-19 are associated with the mental health problems in children. However, this only applies when only the exposure to COVID-19 variable is included. It can be concluded that when all the independent variables; Exposure to COVID-19 and Warm- and Neglecting parenting practices are included there only is a significant association between neglecting parenting practices and mental health problems in children.

The COVID-19 pandemic influences all the people around the world. We are living in a world with many uncertainties like being able to maintain a job and/or a home, being able to finish your education programme and being able to stay healthy (Bögels, 2020). Further research can provide more clarity on the impact of COVID-19 and children being exposed to different concepts of COVID-19 like those included within this study and the effects on children's mental health. Because of the greatest association between neglecting parenting practices on children's mental health it is recommended for parents to spend more quality time with their children. It can also help to setting up a routine for the family which provides more structure and clarity in this day and age (Imran et al., 2020). It is also important for parents to make sure to talk with their child(ren) about what is happening and make sure they have mix of activities across the day (Imran et al., 2020).

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