

The Effects of the COVID-19 Pandemic on First-Time Parents



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The Effects of the COVID-19 Pandemic on First-Time Parents

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Abstract

The COVID-19 pandemic affected a particular population of first-time parents who had their first child either right before the pandemic or during it. Postpartum depression (PPD) and anxiety (PPA) can affect both the mother and father of the infant suggesting 1 in 7 parents may experience PPD and 35% may experience PPA (*Statistics on Postpartum Depression - Postpartum Depression Resources*, n.d.; MBA, 2022). It is also thought that PPD and PPA share a comorbidity together and that up to 50% of cases have both PPD and PPA present (*Postpartum Anxiety - How Postpartum Depression Can Cause Anxiety*, 2016). PPD and PPA can also affect the parents ability to bond with their child, and research shows that being bonded with at least one parent is beneficial for the child in the future (Lewis, 2012). While parental mental health and the parent-infant bond may already be a struggle for some parents under non-pandemic circumstances, the COVID-19 pandemic may have affected both (Hyland et al., 2020; Ustun, 2021; Öngören, 2021; Gambin et al., 2020). In this study, a correlational and mediation analysis was conducted to examine the relationship between parental mental health (PPD/PPA) and parent-infant bonding, and with parent coping as a mediator of those associations. I conceptualized coping through the Responses to Stress framework, which categorizes coping as primary control, secondary control, and disengagement (Conner-Smith et al., 2000). A cross-sectional sample of parents (N = 52, M parent age = 33.6, 75% female, 76.9% White) of 1-3-year-old children (M child age = 1.9, 51.9% male, 67.3% White) living in the US were recruited online through Amazon Mechanical Turk (MTurk). The Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987) was used to examine PPD symptoms. The Postpartum Specific Anxiety Scale (PSAS; Adapted; Fallon et al., 2016) was adapted to examine any PPA symptoms. The Responses to Stress -COVID-19 Questionnaire (RSQ; Conner-Smith et al., 2000) was used to examine parent coping strategies in response to COVID-19 pandemic stress. The Postpartum Bonding Questionnaire (PBQ; Brockington et al., 2006) was adapted to examine any bonding difficulties. It was hypothesized that parents who endorsed more anxious and

depressive symptoms would also report more difficulty with parent-child bonding. It was also hypothesized that parents who experienced less anxious and depressive symptoms would be more likely to use primary and secondary control engagement coping strategies, and would experience better parent-child bonding. Both PPD symptoms and PPA symptoms were both significantly associated with greater difficulties with parent-infant bonding. None of the mediation analyses were significant. In sum, greater parent-reported PPD and PPA symptoms were associated with greater difficulties with parent-child bonding, but those relationships were not mediated by parent coping strategies. Implications include the importance of mental health support accessibility, involving parent-infant bonding interventions in the treatment of PPD or PPA, and assessing PPD and PPA symptoms well beyond the immediate postpartum period.

Keywords: Postpartum Depression; Postpartum Anxiety; Parent-Infant Bonding; Parent Coping; COVID-19

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The Effects of the COVID-19 Pandemic on First-Time Parents

The COVID-19 pandemic was, and still is, an extremely unprecedented event that changes several things about how people function. For example, parents experienced changes to their family dynamics, with children sometimes needing to stay home from school and parents needing to work from home, or parents being required to work outside the home but their children were sent home. Several studies have looked at the effects of the COVID-19 pandemic on families with children born before the COVID-19 pandemic. Some studies have focused on established families prior to the COVID-19 pandemic (Ustun, 2021; Chu et al., 2021; Russell et al., 2020; Sevilla & Smith, 2020), but limited studies have looked specifically at families who became first-time parents during the COVID-19 pandemic (Feinberg & Kan, 2008; Sledge et al., 2022; Kim & Kochanska, 2012; Jarvis & Creasey, 1991). The studies on established families demonstrate that family dynamics changed during the COVID-19 pandemic. The present study will investigate the experiences of parents with their first child born during the COVID-19 pandemic. Becoming a parent is often associated with increases in depressive and anxious symptoms (Gelfand & Teti, 1990; Gharagozloo et al., 2020). These symptoms may have been exacerbated by the COVID-19 pandemic and may have the potential to affect parent-child bonding that occurs during these early stages of infancy and toddlerhood.

The current study will examine the association between parent depressive and anxiety symptoms and their bonding with their infant, specifically during the COVID-19 pandemic. Additionally, the present study will investigate parent coping with the COVID-19 pandemic as a mediator of the link between parent depressive and anxiety symptoms and bonding with their infant.

Parental Depression and Anxiety

Depression and anxiety can cause many challenges for those who deal with them. The level at which the difficulties affect the lives of those with these illnesses depends on the person.

When a parent experiences anxiety and/or depression, it can impact not only themselves but their families as well. Postpartum depression (PPD), as defined by the DSM-V, is when a parent experiences a period of major depressive disorder symptoms right before or soon after giving birth, and must be severe enough to disrupt the person's life. Some symptoms of PPD include severe mood swings or consistently depressed mood, excess and uncontrollable crying, doubting ability to take care of the baby, and trouble bonding with the baby (American Psychiatric Association, 2013). PPD is mostly associated with mothers but can occur in fathers as well, and this is sometimes referred to as paternal postpartum depression. Studies show that 1 in 7 to 1 in 10 mothers will be diagnosed with PPD, and it is suggested that this is an underestimate, as almost 50% of mothers with PPD are not diagnosed (*Statistics on Postpartum Depression - Postpartum Depression Resources*, n.d.). PPD is most likely to be experienced within the first year of the child's life, but depression rates in parents within the first 12 years of the child's life is 39% in mothers and 21% in fathers, which could have stemmed from the PPD experience (Health, 2010).

Postpartum anxiety (PPA) is when a parent experiences anxiety soon after giving birth to their child (American Psychiatric Association, 2013). Some symptoms of PPA include an overwhelming sense of stress and concern on being a good parent, excess worry about the safety and development of the baby, feeling of something about to go wrong, and trouble sleeping even when exhausted. The DSM-5 does not have an official diagnosis for PPA, but has been mentioned to be similar to generalized anxiety disorder (GAD) that relates specifically to the infant (Jordan & Minikel, 2019). As with PPD, fathers can experience PPA in addition to mothers. Studies suggest that up to 35% of parents will experience PPA (MBA, 2022). It is also believed that up to 50% of PPD and PPA cases occur together, so having comorbid PPD and PPA is common, even though PPA is not as commonly discussed (*Postpartum Anxiety - How Postpartum Depression Can Cause Anxiety*, 2016). PPA, and PPD, affects not only the parent

experiencing it, but also the child, which can have implications for the child's well being as they get older.

Several studies demonstrate the effects of PPA and PPD on parenting and children's outcomes. In one study, Gelfand & Teti (1990) found that mothers with higher depressive symptoms used less favorable parenting techniques such as unresponsiveness, inattentiveness, intrusiveness, and inept discipline, and had negative perceptions of children. McClure et al. (2001) looked at adolescents with high-risk anxiety disorders and found that mothers with anxiety disorders predicted anxiety disorders in the children, but paternal anxiety did not. They say that their findings also replicate studies that found that anxiety in children could be predicted if the child had an anxious parent, but only when their mother was the anxious parent. Since there was a lack of findings for paternal anxiety having an effect, this could point towards societal standards of having the mother spend more time with the children, and being more involved in the raising of the children than the father is.

Gharagozloo et al. (2020) looked specifically at mental health and marital satisfaction of women who were pregnant and lactating. They compared these women who were not pregnant and lactating. With a total sample of 604 women between the ages of 18-45, they found that mental health problems were significantly higher in those who were pregnant and lactating when compared to women who were not. Specifically, they found that pregnant and lactating women experienced more anxiety when compared to the women who were not pregnant and lactating. Marital satisfaction was also significantly lower in pregnant and lactating women when compared to women who were not. The results of this last study show that potentially within this study we will see a higher level of depressive and anxiety symptoms, within the mothers, since these women will still be, or would have been lactating, during the COVID-19 pandemic, and some of them will have been pregnant during the height of the COVID-19 pandemic.

During the COVID-19 pandemic, many parents began working from home and others were still required to go in-person to work even though they may have wanted to be home. Therefore, we may see the effects of paternal anxiety and depression since parents may have become more or less involved in the child's life than what they had originally wanted, depending on how the COVID-19 pandemic affected their lives. Also with this being the first child in the family, this may lead to spending more or less time together for family bonding purposes. In one COVID-19 study, Sevilla & Smith (2020) found that for their sample of 2,782 participants between the ages of 18-60 who were in couples and had a child less than 12 years of age, the mother took on more of the childcare load, along with their current workload, when the COVID-19 pandemic began which can heighten depression and anxiety symptoms. Additionally, they found that fathers who were not working at the start of the COVID-19 pandemic ended up creating a more equal balance of parent responsibilities, which may help alleviate depressive symptoms, at least for the mother. Hyland et al. (2020) found that 20% of their participants, who were 1,041 sample from an online research panel representative of the general population of the Republic of Ireland, experience generalized anxiety disorder (GAD), 22.8% experience GAD and depression, and 27.7% experience depression as a result of COVID-19 pandemic. This study shows that the COVID-19 pandemic had an effect on some people, and that they had diagnosable mental illnesses, which within my study could be seen as symptoms which can affect parenting. Ustun (2021) found that people experienced anxiety about the future and depression during the COVID-19 pandemic, but depression scores were lower for those who spent time with family, so potentially in this study it will be found that depression levels will not be as high because of being able to spend time with their partner and newborn.

Renaud-Charest et al. (2021) looked over eight different studies and found that within them depressive symptoms ranged from 11-28% within the participants, and clinically-significant and/or severe depressive symptoms ranged from 3-12% within the participants during the course of COVID-19 pandemic. While this article talked about those who

had COVID-19, it could show that parents who may have had COVID-19 may be more predisposed to PPD because of their depressive symptoms while having the virus. Lakhan et al. (2020), found that across all of their studies that 20% of the participants were experiencing symptoms of depression, 35% were experiencing symptoms of anxiety, and 53% were experiencing stress. These articles, along with others, show that while the majority of people may not have experienced depression and anxiety symptoms because of the COVID-19 pandemic, a portion of people did, which may have risen in those who had their first child during the COVID-19 pandemic.

Parent-Child Bonding and Infancy

Parental PPD and PPA can impact children in many ways. In this study, the focus will be on parent-child bonding, and how PPD and PPA can have an affect on these growing relationships. Parent-child bonding is the intense bond that forms between a parent and their child. While parent-child bonding may sound more like a mother-child experience, it is also a very important step for fathers as well, but may be represented in different ways. Stephens (2009) examined if there were gender differences between mothers and fathers and their parent-child bonding. This study involved 306 children, who consisted of a wide range of ages from children to adults. One portion of their results indicated that most participants either felt closer to their mother or equally close to both parents. Mothers were also associated more with the caregiver role, and fathers more of the working role. While this current study will not be looking for gender differences specifically, it illustrates how parents view bonding in different ways, which may be seen within my results.

Impact of Parent Mental Health on Parent-Child Bonding

Parent-child bonding is not only important for the parents' wellbeing, but is also extremely important for the development of the baby. Kim & Kochanska (2012) did a longitudinal study on 102 infants, and parent-child interactions were observed at 7 months, 15 months, and then self-regulation in the child at 8 years, with 86 participants being followed up.

They collected data at the 8 years mark from parents, teachers, and the child, and found that the child and teachers had similar things to say but that the parents' answers would sometimes greatly differ. They found that highly negative infants were less self-regulated in unresponsive relationships, but had better self-regulation in responsive relationships, and that negative emotionality only mediated the mother-infant relationships. A different article by Lewis (2012), found that they observed that babies with close, intimate relationships with at least one of their parents are likely to be less troubled, aggressive, or experience emotional or behavioral issues when they reach school age. Surprisingly to them, infants who experienced a strong bond with both parents did not differ from those who were strongly bonded to one parent. They also found that the maternal bond was just as important as a paternal bond, and that there were no differences in positive aspects in being bonded with one parent over the other. Mordeno et al. (2022) did a study on 1,431 left-behind, and non left-behind children, of migrating parents. They found that if there was a stronger parent-child relationship, the child experienced lower levels of psychological distress, and increased emotional, psychological, and social well-being. Skovgaard et al. (2007) examined the association between parent-child relationships and child mental health problems within 211 children at 18 months old. They found that parent-child relationship disturbances were significantly related to child mental health problems. While non-significant, they also noticed a trend of more mental health issues within girls. These few studies show that child bonding is extremely important for the child and can potentially influence the healthiness of their adult relationships as they grow up.

Bonding is extremely important for the development of the child; bonding is also an important step for parents, as well. Feinberg & Kan (2008) did an intervention study on 169 couples who were expecting their first child, and examined associations between the coparental relationship, parental mental health, the parent-child relationship, and infant emotional and physiological regulation. Through the courses they supplied, they found that anxiety and depression within both parents declined from pre- to postpartum, showing that the pregnancy

was more disruptive mental health-wise for the parents. They also found that mothers in the intervention group showed a decrease in depression and anxiety when compared to the control group. They also found that both the mother's and father's that were in the intervention group showed lower levels of parent-child relationship dysfunction, and significantly lower levels of distress in the relationship. While my study is not an intervention study, their results show that parents with less depressive and anxious symptoms may have better parent-child relationships within my study.

Impact of the COVID-19 Pandemic on Parent-Child Bonding

The COVID-19 pandemic has the potential to have helped parent-child bonding for those who had their first child during the COVID-19 pandemic, or it may have hindered this relationship. Öngören (2021) did their study on 19 parents who had at least one child that was currently in preschool. Each parent ranged from having 1-3 children, and 18 lived with their spouses. To gather data they used a semi-structured interview form to then have the parents talk about the positive and negative aspects of having a small child during the COVID-19 pandemic. Their results found that the positive impact of the COVID-19 pandemic on parent-child relationships was that they spent more time together, shared more, did more activities together, and had better communication. The negative aspects were social isolation, more domestic conflicts, and mobile-phone addictions. Some of these aspects, such as mobile-phone addictions and domestic conflicts, are more relevant for the parent, but as seen in previous research the parents' well-being and their relationship with their partner can affect parent-child bonding. The negative aspects seem to relate less to the actual child, so potentially the COVID-19 pandemic did not have a negative effect on the relationships directly, but that it affected other aspects that do have a direct affect on these parent-child relationships. The study also looked into, more specifically, mother-child and father-child relationships separately. They looked into the changes experienced between the parent and child and found that in mother-child relationships some changes were knowing each other better, spending more time together, and

more conflict. In the father-child relationship, some changes were more communication, doing more activities together, and a sense of responsibility (Öngören, 2021). In the present study on parent-child bonding during infancy, parents may report similar positive experiences with spending quality time together doing activities with their infant. I also may find similarities in negative aspects such as domestic conflicts because of the added stress of the COVID-19 pandemic, and isolation because of quarantining.

Another study done by Gambin et al., (2020) decided to look at the positive aspects the COVID-19 pandemic had on the parent-child relationship. They looked at 228 mothers and 231 fathers aged from 18-73 years, and the ages of the children are not specified. Their results found that parenting self-efficacy and social support were the best predictors for a positive parent-child relationship for both mothers and fathers. For mothers, they found that the ability to perspective predict more positive mother-child relationships, and for fathers, they found that more displays of affective empathy was a positive predictor for the parent-child relationship. An additional result was that the mothers who had depressive symptoms experienced less positive aspects in their parent-child relationship. These results show that looking at the positives within the stressful context of the COVID-19 pandemic can help the parent-child relationship. Chu et al. (2021) also looked at the positives and negatives of COVID-19 pandemic on the parent-child relationship, and found that parents expressed more diversity in positive themes when compared to their children. Their sample consisted of 56 parents and 43 of their children who were between the ages of 6 to 17. Some of these positive themes were gratitude, and reflecting on the upsides of the COVID-19 pandemic and their parent-child bonding. Some negative aspects reported by the parents were concerns for how the COVID-19 pandemic would impact their child, health concerns for others, and the stress of parenting. All of these articles' results show that potentially within this study, we will see some benefits to the COVID-19 pandemic and allowing the family to have better parent-child bonding, depending on the circumstances of the family when the COVID-19 pandemic hit, even when negative aspects are occurring.

Russell et al. (2020) conducted a study that looked at the challenges of caregiving burden, mental health, and the parent-child relationship during the COVID-19 pandemic. They found that within their 420 participants, which were any adults caring for a child under the age of 18, the caregiving burden, mental health, and perceptions of children's stress was significantly linked to child-parent closeness and conflict. Specifically, they found that families with higher parent-child relationship conflict experienced less parent-child relationship closeness, and that families with higher parent-child relationship closeness experienced less generalized anxiety, depression, caregiver burden, and perceived child stress. Sledge et al. (2022) looked at 304 parents who were raising their baby during the COVID-19 pandemic in a longitudinal study, and would check in at 6-month intervals. Of their participants, 44.7% were first-time parents. At the 12-month mark, the parents were asked to use a few words to describe how it was raising a baby during the COVID-19 pandemic. The words were usually negative with the most used words being lonely (44.4%), and isolating (31.9%). The most positives were strong bond (15.8%) and time with family (14.5%). These four studies show how parent-child bonding can be negatively affected by parental mental health, parent-parent relationships, and that the COVID-19 pandemic has exacerbated these factors.

The COVID-19 pandemic had both positive and negative impacts on families, and as a result affects the parent-child bond. Parent-child bonding was affected among infants (Feinberg & Kan, 2008; Sledge et al., 2022; Kim & Kochanska, 2012), children between the ages of 15 months to 8 years (Stephens, 2009; Russell et al., 2020; Kim & Kochanska, 2012; Mordeno et al., 2022; Skovgaard et al., 2007; Öngören, 2021; Gambin et al., 2020; Chu et al., 2021), adolescents up to 17 years old (Stephens, 2009; Russell et al., 2020; Mordeno et al., 2022; Öngören, 2021; Gambin et al., 2020; Chu et al., 2021), and adults (Stephens, 2009; Gambin et al., 2020). While a few of these studies examined infants and the effects of the COVID-19 pandemic and parent mental health, no studies, to my knowledge, have looked directly at

first-time parents who had an infant during the COVID-19 pandemic. This study will also examine how parent coping mechanisms may mediate these relationships.

Parent Coping

One potential mechanism by which PPD and PPA may impact parent-child bonding is through parent coping. In this study, I will be investigating whether coping strategies potentially mediate the association between PDD and PPA symptoms and parent-child bonding. Coping can be defined as the cognitive and behavioral strategies someone would use to alleviate or tolerate internal and external stressors (Nielsen & Knardahl, 2014). One framework, the Responses to Stress framework (Conner-Smith et al., 2000), used to describe coping strategies divides the strategies into two categories: engagement and disengagement strategies. Engagement strategies can be further divided into primary control and secondary control coping strategies. Primary control engagement strategies are when the parent attempts to change their situation through things like problem-solving, or ways to express themselves, or ways to regulate their emotions. Secondary control engagement strategies are when they adapt to the environment around them and do things such as accepting the stressor, thinking more positively about the stressor, and distracting from the stressor. Disengagement strategies are when a parent denies the stressor, completely withdraws from it, and wishes the stressor would go away (Compas et al., 2001).

Other studies have also found that parental stress and parental coping strategies can affect parent-child bonding. McKelvey et al. (2002) did their research on 105 low-income mother-infant pairs and looked into how life stressors affected the parent-infant relationship and how coping strategies mediated the relationship. Some of their findings were that mothers who reported fewer stressors had more positive parent-child interactions. They also found that mothers who reported less stressors were using more family support and cognitive reframing coping strategies to alleviate their stress. The studies results on the interaction between coping and parent-infant bonding were not significant, suggesting it may mediate parenting behaviors

and stress instead. Jarvis & Creasey (1991) decided to look into parental stress, attachment, and how coping mediates the two within their sample of 32 families and their 18-month-old infants. They found that parental stress was significantly associated with insecure attachment to both mothers and fathers. They suggest that psychological separation may be more salient than physical separation when considering the impacts on parent-child relationships. The coping strategies of positive reappraisal (a type of secondary control engagement coping) reduced the relationship between parental stress and attachment security.

Parent Coping and the COVID-19 Pandemic

A few studies have looked into how COVID-19 pandemic has affected parenting coping strategies. Pratiwi et al. (2020) looked into how “toxic” parenting behavior and coping became during the COVID-19 pandemic. From a total of 568 parents, they found that 97.79% respondents from one area and 95.29% of parents showed low toxic levels. The other percentages showed moderate toxic levels. Some common strategies they found being used were seeing a positive side, attempting to address and solve the problem, withdrawing, looking for social support, and releasing emotions through activities. These studies’ results show that it seems that the COVID-19 pandemic did not necessarily make parents worse, so even though this study plans to look at new parents, the COVID-19 pandemic may not change much about their parenting and that they may have parented the same if there had not been a COVID-19 pandemic. A study done by Clemens et al. (2021) shows that this may not be exactly the case, though, and that the COVID-19 pandemic may make the parent more harsh. The study looked at 687 parents that had minors, and had them take a cross-sectional online survey to see how the parents were doing in regards to the COVID-19 pandemic, and how their parenting has been. Their results showed that the younger the child was, income loss, and dissatisfaction with sharing of childcare duties were associated with an increased potential of harsh parenting behaviors. Ollivier et al. (2021) focused on just new mothers and how they were coping with their newborns during COVID-19 pandemic. Their findings showed that mental health and

socialization were important to the parents, and that many were expressing concerns with feelings of worry, loneliness, isolation, anxiety, and stress within themselves. Potentially, within the present study, I will find that if the child was born closer to the beginning of the COVID-19 pandemic (early 2020), and those born closer to the end of 2021, will show different results on parenting coping strategies and will have different effects on their parent-child bonding.

The research on parental coping strategies during the COVID-19 pandemic, and with normally developing children is extremely limited. This study will hopefully be able to broaden the research and more research will follow. What is even more limited is how coping mediates the relationship. One study did not find results of mediation (McKelvey et al., 2002), but hopefully this study will have different results.

Present Study

This present study investigated the relationship between parent anxious and depressive symptoms and infant bonding among parents who had their first child during the COVID-19 pandemic. This study extended the research into how parents dealt with the stress of the COVID-19 pandemic. Prior studies have looked into families with infants and first-time parents (Feinberg & Kan, 2008; Sledge et al., 2022; Kim & Kochanska, 2012; Jarvis & Creasey, 1991) but no prior studies had examined the effects of depressive and anxious symptoms on the parent-child bond of new families during a global stressor like the COVID-19 pandemic. I hypothesized that parents who endorsed more anxious and depressive symptoms would also report more difficulty with parent-child bonding.

The present study also investigated parent coping strategies as mediators of the association between the parents' anxious and depressive symptoms and parent-child bonding among parents who had their first child during the COVID-19 pandemic. I predicted that parents who experienced less anxious and depressive symptoms would be more likely to use primary and secondary control engagement coping strategies, and would experience better parent-child bonding.

This study recruited first-time parents of infants born in 2020 and 2021 using Amazon Mechanical Turk, an online recruitment tool. This study was correlational and involved a series of questionnaires that the parents completed about their mental health, their coping with the COVID-19 pandemic, and their bonding with their infant.

Method

Participants

The participants for my study were first-time parents during the COVID-19 pandemic. The goal for participants was 50 parents. There were 64 parents who initially participated, with a final sample of 52 participants after inclusion criteria was assessed. Inclusion criteria included parents being 18 years old or older when their baby was born, and that they had their first child during the COVID-19 pandemic. Amazon Mechanical Turk was used to recruit participants. The study was advertised on Amazon's Mechanical Turk as pertaining to first-time parents during the COVID-19 pandemic in an effort to recruit these parents. Participants were compensated \$1.00 for their time.

For a summary of participant demographic information, see Table 1. Out of the 52 participants, the majority of the participants identified as female (75%), White (76.9%, with the other 23.1% identifying as Black (7.7%), Hispanic (5.8%), Asian (5.8%) and multi racial (1.9%)), and married (71.2%) with a mean age of 33.6 years old. In addition, 26.9% had a High School Diploma, 40.4% with a Bachelor's degree, and 32.7% with a Master's or Doctorate degree. Family income during the pandemic ranged from 3.8% earning less than \$10,000, 15.4% earning between \$10,000 - \$25,000, 34.7% earning between \$25,000 - \$75,000, and 46.2% earning more than \$75,000. Family income currently ranged from 3.8% earning less than \$10,000, 9.7% earning between \$10,000 - \$25,000, 32.7% earning between \$25,000 - \$75,000, and 53.8% earning more than \$75,000. The majority of the participants were employed during the pandemic (76.5%) with 17.6% of parents being unemployed, and 5.9% listing their employment as "other". Also, the majority of the participants were employed currently (66.7%)

with 23.5% of parents being unemployed, and 9.8% listing their employment as “other”.

Additionally, according to the parent-report, the gender of the children was evenly distributed (51.9% male), and White (67.3%, with the other 32.7% identified as Black (5.8%), Hispanic (1.9%), Asian (3.8%), and multi racial (19.2%)), with a mean age of 1.9 years old.

Procedure

This study was conducted entirely online. From Amazon Mechanical Turk, participants were directed to SurveyMonkey to complete the study. First, the participants read through, and consented before officially beginning the study. Next, the participants completed four questionnaires: Edinburgh Postnatal Depression Scale, Postpartum Specific Anxiety Scale, Responses to Stress -COVID-19 Questionnaire, and Postpartum Bonding Questionnaire. Importantly, attention check questions were included to make sure those taking the survey were paying attention as they answered many questions within the four questionnaires. They were also given a demographic questionnaire to further characterize the sample as well as four open-ended questions to get more insight on the participants. Finally, the participants were debriefed about the study and were directed to an email if they had any questions regarding the study, and were compensated \$1.00 for their involvement in the study.

Measures

Edinburgh Postnatal Depression Scale

Participants completed the Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987). The EPDS is a 10-item, self-report questionnaire that assesses the postpartum depressive symptoms someone may be experiencing. Some of the items are: “I have blamed myself unnecessarily when things went wrong”, “I have felt sad or miserable”, and “I have looked forward with enjoyment to things”. These are rated on a scale from 0 to 3 with each individual question having varying answer choices. Six of the items are reversed and are scored on a 3 to 0 scale. Maximum score is 30, with any score above 10 meaning possible depression. The EPDS

was shown to be reliable in this sample, $\alpha = .88$. The depression symptom score is calculated as a sum, with higher scores indicating more postpartum depression symptoms.

Postpartum Specific Anxiety Scale

The next questionnaire that participants completed was the Postpartum Specific Anxiety Scale (PSAS; Adapted; Fallon et al., 2016). The PSAS is a 51 item, self-report questionnaire that assesses postpartum anxiety symptoms someone may be experiencing. The questionnaire is separated into four factors: competence and attachment anxieties, safety and welfare anxieties, practical infant care anxieties, and psychosocial adjustment to motherhood. In this study, only safety and welfare anxieties and practical infant care anxieties are included, making up a total of 18 items. Some of the items on the questionnaire are: “I have felt frightened when my baby is not with me”, and “I have worried about my baby’s weight”. These are rated on a scale of 1 (Not at all) to 4 (Most of the time). The adapted PSAS was shown to have good reliability in this sample: infant safety and welfare anxieties, $\alpha = .87$, and practical infant care anxieties, $\alpha = .89$. The anxiety factors are calculated as sums, with higher scores indicating more postpartum anxiety symptoms.

Responses To Stress - COVID-19 Questionnaire

The next questionnaire the participants completed was the Responses to Stress -COVID-19 Questionnaire (RSQ; Conner-Smith et al., 2000). The RSQ is a questionnaire that assesses a specific stressor and coping in response to that stressor. For this study, I used the COVID-19 version, which assesses the stress someone is feeling because of the COVID-19 pandemic and their associated coping strategies. The questionnaire starts with a 15-item section about how stressful certain situations were for the person. Some of the questions are: “Unable to participate in normal routines and activities because of COVID-19 (e.g., spiritual services, shopping, dining at restaurants, going to the gym)”, and “Uncertainty about when COVID-19 will end or what will happen in the future”. These are rated on a scale from 1 (Not at all) to 4 (Very). This section is then followed with a 57-item section assessing coping strategies when

dealing with the stress of the COVID-19 pandemic. Some of the items are: “When I am dealing with the stress of COVID-19, I just can’t be near anything that reminds me of what’s happening”, “My mind just goes blank when something stressful happens related to COVID-19, I can’t think at all”, and “My thoughts start racing when I am faced with the stressful parts of COVID-19”. Some have accompanying checklists or writing portions. These items are rated on a “How much do you do this?” scale from 1 (Not at all) to 4 (A lot). Two subscale scores were calculated: primary control engagement coping and secondary control engagement coping. The RSQ was shown to have good reliability in this sample: primary control engagement, $\alpha = .84$, and secondary control engagement, $\alpha = .83$. The subscale scores are calculated as proportions, with higher scores indicating that a greater proportion of their overall coping strategies were that particular type.

Postpartum Bonding Questionnaire

The final questionnaire the participants completed was the Postpartum Bonding Questionnaire (PBQ; Brockington et al., 2006). The PBQ is a 25-item questionnaire that is designed to measure the quality of mother-infant bonding. This questionnaire was made specifically for mother-infant pairs, but was adapted such that the language was gender neutral in order for parents of any gender to respond. Some items within the questionnaire are: “The baby does not seem like mine”(N), “My baby is the most beautiful baby in the world”(P), and “My baby annoys me”(N). The negative (N) items are rated on a scale of Always (5) to Never (0), and positive (P) items are rated on a scale of Always (0) to Never (5). Eight of the items are reverse scored. The measure contains four subscales: a general factor (1), rejection and pathological anger (2), anxiety about the infant (3), and incipient abuse (4). For the present study, items that make up the anxiety about the infant and incipient abuse factors were not included. As stated before, questions were reworded so that gender neutral terms were being used and that all parents could answer. One question specifically mentions mothers: “I feel trapped as a mother” and was reworded to be “I feel trapped as a parent”. The adapted PBQ was

shown to have good reliability in this sample: general factor, $\alpha = .84$, and rejection and pathological anger, $\alpha = .79$. The subscale scores were calculated as sums, with higher scores indicating more difficulty with parent-infant bonding.

Demographic Questionnaire

The participants also completed a demographic questionnaire to collect general information about them for later analysis, including the age of the participants, their gender, their marital status, their race/ethnicity, their child's race/ethnicity, age of their child, gender of their child, their employment status during the COVID-19 pandemic (if applicable) and currently, their highest level of education, and their income during the COVID-19 pandemic (if applicable) and currently.

Design and Data Analysis Plan

Based on my research questions and hypotheses, I planned to do a correlational design study. I intended to look at the correlational relationship between parental depressive/anxious symptoms and parent-infant bonding, during the COVID-19 pandemic. To test hypothesis 1, Pearson's correlations were conducted between (a) parent depressive symptoms and parent-infant bonding, and (b) parent anxious symptoms and parent-infant bonding. To test hypothesis 2, if there is a significant correlation between parent depressive or anxious symptoms and parent-infant bonding, I also conducted a mediation analysis, examining (a) primary control engagement coping, and (b) secondary control engagement coping as mediators.

Results

Preliminary Analysis

For a summary of the descriptive statistics for all measures, see Table 2. On the Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987), parents reported a mean postpartum depression score $M = 10.06$ ($SD = 6.13$), where a score of 10 on the measure indicating possible depression, with 26 participants (50%) in this study having a score of 10 or more. On the Postpartum Specific Anxiety Scale (PSAS; Adapted; Fallon et al., 2016), sum scores

were calculated to indicate postpartum anxiety on two anxiety factors, and parents reported a mean score for infant safety and welfare anxieties of $M = 20.89$ ($SD = 6.92$), and a practical infant care anxieties mean of $M = 13.35$ ($SD = 5.37$). On the Responses to Stress - COVID-19 Questionnaire (RSQ; Conner-Smith et al., 2000); proportion scores were calculated to indicate the relative proportion of the two coping strategies, and parents reported a mean proportion score for primary control coping of $M = 1.07$ ($SD = .22$), and a secondary control coping mean of $M = 1.18$ ($SD = .30$), indicating a similar proportion of each coping strategy. On the Postpartum Bonding Scale (PBQ; Adapted; Brockington et al., 2006), sum scores were calculated to indicate postpartum bonding on two factors, and parents reported a mean score for general bonding of $M = 8.49$ ($SD = 7.50$) and a rejection and pathological anger mean of $M = 3.47$ ($SD = 4.15$). Higher scores indicate less parent-infant bonding and potential parent-infant bonding challenges with the cut off for factor 1 being a score of 12 or higher, and factor 2 being a score of 13 or higher. In this study's sample, 10 participants (19.2%) had a score of 12 or higher in factor 1, and 3 participants (5.8%) had a score of 13 or higher for factor 2.

For a summary of intercorrelations among variables, see Table 3. Intercorrelations between demographics (pandemic income, current income, pandemic employment, and child gender) and study variables were conducted. Postpartum depressive symptoms were negatively correlated with pandemic income ($r = -.39, p < .01$), such that more depressive symptoms were found in parents with less pandemic income. Postpartum depressive symptoms were also found to be negatively correlated with current income ($r = -.49, p < .001$), such that more depressive symptoms were found in parents with less current income. Infant safety and welfare anxieties were negatively correlated with pandemic income ($r = -.36, p < .01$), such that more infant safety and welfare anxieties were experienced by parents with less pandemic income. Infant safety and welfare anxieties were also negatively correlated with current income ($r = -.30, p = .03$), such that more infant and welfare anxieties were experienced by people with less current income. Primary control coping was positively correlated with pandemic income ($r = .28, p = .05$), such

that more primary control coping strategies were used by parents with higher pandemic income. Secondary control coping was positively correlated with pandemic income ($r = .37, p < .01$) and current income ($r = .44, p = .001$), such that more secondary control coping strategies were used by parents with higher pandemic and current income.

In addition, correlations were conducted between all study variables. Infant safety and welfare anxious symptoms ($r = .60, p < .001$) and practical infant care anxious symptoms ($r = .45, p < .001$) were both significantly positively correlated with postpartum depressive symptoms, indicating that parents who experienced greater postpartum anxiety symptoms also experienced greater postpartum depressive symptoms. Primary control coping strategies ($r = -.28, p = .05$) and secondary control coping strategies ($r = -.72, p < .001$) were both significantly negatively correlated with postpartum depressive symptoms, indicating that parents who used more primary and secondary coping strategies to manage stress associated with COVID-19 experienced less depressive symptoms. Infant safety and welfare anxious symptoms ($r = -.40, p < .01$) were significantly negatively correlated with secondary control coping strategies, indicating that parents who experience more anxious symptoms because of infant safety and welfare used fewer secondary control coping strategies. Secondary control coping strategies ($r = .34, p = .02$) were significantly positively correlated with primary control coping strategies, indicating that parents who used more secondary control coping strategies also used more primary control coping strategies. General bonding ($r = -.39, p < .01$) and bonding difficulties related to rejection and anger ($r = -.39, p < .01$) were both significantly negatively correlated with secondary control coping strategies, indicating that parents who had more difficulty with general bonding and experienced more bonding difficulties because of rejection and anger used fewer secondary control coping strategies (see Table 3).

Aim 1: Postpartum Depression and Anxiety and Parent-Infant Bonding

Pearson's correlations were conducted to examine the potential relationship between postpartum depressive symptoms and parent-infant bonding, as well as the relationship

between postpartum anxious symptoms and parent-infant bonding. Postpartum depressive symptoms were significantly associated with general bonding difficulties ($r = .32, p = .02$), and bonding difficulties related to rejection and anger ($r = .44, p = .001$). This supports the hypothesis that greater postpartum depressive symptoms are associated with more parent-infant bonding difficulties (see Table 3).

Infant safety and welfare anxieties were significantly correlated with bonding difficulties related to rejection and anger ($r = .39, p = .005$). These findings showed that more parent anxiety about how their infant is doing was associated with less parent-infant bonding because of rejection or anger. Practical infant care anxieties were significantly correlated with both general bonding ($r = .33, p = .02$) and bonding difficulties related to rejection and anger ($r = .40, p = .004$). These findings suggest that more parent practical care anxieties regarding their infant was associated with less general bonding with their infant and less bonding because of rejection or anger (see Table 3).

Aim 2: Mediation Analyses

For each significant correlation between postpartum psychopathology and parent-infant bonding difficulties, two mediation analyses were conducted to examine whether primary control and secondary control coping strategies mediated the associations. In total, ten mediation analyses were conducted.

Postpartum Depression

Neither primary control coping ($ab = .03, 95\% \text{ CI } [-.07, .12]$) nor secondary control coping ($ab = .26, 95\% \text{ CI } [-.05, .60]$) mediated the relationship between parent depressive symptoms and general parent-infant bonding difficulties. Neither primary control coping ($ab = -.01, 95\% \text{ CI } [-.06, .04]$) nor secondary control coping ($ab = .07, 95\% \text{ CI } [-.10, .24]$) mediated the relationship between parent depressive symptoms and bonding difficulties related to rejection and anger.

Postpartum Infant Safety and Welfare Anxiety

Neither primary control coping ($ab = -.00$, 95% CI $[-.04, .03]$) nor secondary control coping ($ab = .07$, 95% CI $[-.01, .14]$) mediated the relationship between parent infant safety and welfare anxiety and bonding difficulties related to rejection and anger.

Postpartum Practical Infant Care Anxiety

Neither primary control coping ($ab = .03$, 95% CI $[-.06, .12]$) nor secondary control coping ($ab = .12$, 95% CI $[-.03, .27]$) mediated the relationship between practical infant care anxieties and general bonding. Neither primary control coping ($ab = -.00$, 95% CI $[-.05, .04]$) nor secondary control coping ($ab = .06$, 95% CI $[-.02, .14]$) mediated the relationship between practical infant care anxieties and rejection and bonding difficulties related to rejection and anger.

Discussion

The present study examined the relationship between parent anxious and depressive symptoms and infant bonding among parents who had their first child during the COVID-19 pandemic. For Aim 1, it was hypothesized that parents who endorsed more anxious and depressive symptoms would also report more difficulty with parent-child bonding. For Aim 2, it was hypothesized that parent coping strategies would mediate the association between the parents' anxious and depressive symptoms and parent-child bonding among parents who had their first child during the COVID-19 pandemic. Aim 1 hypotheses were partially supported, while Aim 2 hypotheses were not supported.

Aim 1: Postpartum Depression and Anxiety and Parent-Infant Bonding

Regarding the main effects of postpartum depression and parent-infant bonding, the hypothesis was partially supported by demonstrating that greater parent-reported symptoms of depressive symptoms was significantly associated with less parent-infant bonding in respect to both general bonding and bonding difficulties related to rejection and anger. Based on previous research, Gelfand & Teti (1990) found that mothers who endorsed more depressive symptoms tended to use less favorable parenting strategies that can affect the parent-infant bond. Some

symptoms of depression include: markedly diminished interest or pleasure most days, inability to concentrate, fatigue or loss of energy, and a slow down of thoughts and/or movements which are observable, and another criteria for being diagnosed is that it causes impairment to the person's life (American Psychiatric Association, 2013). If a parent is struggling with some of these symptoms, even without meeting full criteria for diagnosis, it could lead them to struggle to parent their infant effectively. If they no longer take interest or pleasure in things, such as their infant, it could lead the parent to not want to be near their infant as much and not spend time with them. Feeling fatigued or having a loss of energy could lead them to say they are too tired to have bonding time with their child and may spend more time sleeping or resting instead.

Postpartum depression is also linked to irritability and anger (Busch, 2009; Ou et al., 2022, Ou et al., 2022). Busch (2009) found that there is a potential link between depression and anger, and that the anger can stem from perceived or actual loss or rejection. Depression and bonding difficulties related to rejection and anger were significant, showing that the parents' depression may make them more irritable and may be making the parent perceive rejection from their infant furthering bonding issues. A study done by Ou et al. (2022) looked at postpartum anger in relation to sleep and found that 31% of the mothers reported intense anger with depressive symptoms, mother's sleep quality, and anger about the infant's sleep being predictors of this anger, showing that parents, in this study, depressive symptoms and anger relating to their infant may have exacerbated their overall anger making it more difficult for them to bond with their infant. A different study by Ou et al. (2022) looked into postpartum anger and had the participants describe their anger over the two years postpartum and found that mother felt most angry when their expectations were violated, compromised needs, and felt on edge (particularly around the infant sleeping), showing that, in this study, participants may have experienced similar anger-inducing experiences that were exacerbated by the COVID-19 pandemic making it more difficult for them to bond with their infant. The article also mentioned that receiving support from their partner or family helped manage the mother anger, so if this

current study's participants did not have a good support system throughout the COVID-19 pandemic when they were postpartum, then their anger may have been unmanaged leading to worse parent-infant bonding.

Prior research has also shown that during the COVID-19 pandemic, there were increases in depressive symptoms across the general population (Lakhan et al., 2020; Renaud-Charest et al., 2021; Hyland et al., 2020). With that, it is possible that parents having their first child during the pandemic were potentially already experiencing more depressive symptoms from the COVID-19 pandemic, and in turn may have experienced less bonding with their child. In this study, 50% of participants had a score above the clinical cut off for PPD, indicating that they showed elevated depressive symptoms. It is possible that the pandemic exacerbated depressive symptoms for many people and in-turn exacerbated parents' PPD symptoms as a result.

Regarding the main effects of postpartum anxious symptoms and parent-infant bonding, the hypothesis was partially supported by demonstrating that greater parent-reported anxious symptoms were significantly associated with less parent-infant bonding. First, infant safety and welfare anxieties were associated with bonding difficulties related to rejection and anger, meaning that parents that experienced safety and welfare anxieties around their infants also struggled with bonding with their infant because of rejection and anger relating to their infant. This makes sense since this could mean that parents who reported being really focused on making sure their baby was healthy it could cause them to change how they did things or what they did before having their baby, and in turn this change could lead to the parent regretting their baby and feeling angry with their baby because they feel that their baby is not safe and their baby can not be fully protected unless they change how they did things because of the added COVID-19 stressors.

Second, practical infant care anxiety was associated with general bonding difficulties, meaning that parents that experience anxieties around practical infant care also struggled with general bonding with their infant. This also makes sense since this would mean that a parent

would be so overwhelmed in making sure that their baby is drinking enough, sleeping enough, and developing normally that the parent in turn starts resenting their baby, feels trapped as a parent, and wishes their baby would go away, which can negatively impact the parent-infant bond.

Third, practical infant care anxiety was associated with bonding difficulties related to rejection and anger, meaning that parents who experience anxiety relating to practical infant care also struggled with bonding with their infant because of rejection and anger relating to their infant. This makes sense as well since this would mean that parents were continuing to be overburdened in making sure their baby was drinking enough, sleeping enough, and developing normally that they would become angry with their baby, annoyed with their baby, and regret having their baby which would negatively impact their parent-infant bonding. DSM-5's criteria for generalized anxiety disorder included symptoms such as being restless, being irritable, and having difficulty concentrating (American Psychiatric Association, 2013), so it is very probable that parents who scored high in one or both anxiety factors would be experiencing some of these symptoms, which then affects how they bond with their infant. Previous research has also found that a part of the general population also experienced anxious symptoms during the COVID-19 pandemic (Hyland et al., 2020; Lakhan et al., 2020). Because of this, it is possible that mothers, specifically, experienced more anxiety during their pregnancy, that could have continued postpartum, as well as the fathers developing anxious symptoms, and was also potentially exacerbated during the COVID-19 pandemic.

It is plausible that parental anxieties surrounding their infants may have been exacerbated by the COVID-19 pandemic because they may have been worried about themselves or their partner catching COVID-19, affecting their ability to parent effectively as well as putting their infant at risk, and probably being extremely worried about their infant catching COVID-19 any way, and as a result, parents experienced more symptoms of PPA and it affected their ability to bond efficiently with their infants.

Aim 2: Mediation Analyses

Of the 10 mediations analyses that were conducted, none of them had significant findings. To review, each mediation model tested primary or secondary control coping strategies as a mediator of the link between parent postpartum anxiety or depression and parent-infant bonding difficulties. Overall, this demonstrates that while higher postpartum depression and anxiety symptoms in parents were associated with less general bonding and more bonding difficulties related to rejection and anger, the coping strategies the parents used when dealing with the COVID-19 pandemic was not a main factor in explaining these relationships.

A study done by McKelvey et al. (2002) looked at coping as a mediator of the association between family stress and parent-infant interactions. They found that coping was not a mediator of the link between maternal mental health and the mother-infant bond, which is similar to the present study's finding. The present study, while not finding coping to be a mediator, did find that coping strategies did correlate with parental mental health and both bonding factors. McKelvey et al.'s (2002) study also found that mothers with less stress were using more adaptive coping strategies (cognitive reframing, and actively seeking support) than high stress mothers, and they posited that mothers with higher stress may not be able to implement more adaptive coping strategies. The present study found that only secondary coping strategies (using positive distractions, and noticing positive aspects of the COVID-19 pandemic) were significantly correlated to both general bonding and bonding difficulties related to rejection and anger. This makes sense since it could mean that parents who reported coping in ways that were positive, in regards to their stress of the COVID-19 pandemic, were feeling overall better about the COVID-19 pandemic, so any bonding difficulties the COVID-19 pandemic could have exacerbated were potentially negated by these positive secondary coping strategies the parents were using, allowing them to bond better with their infant.

McKelvey et al. (2002) also brings in the idea that maternal depression or self-esteem may have mediated the relationship between the effects of stress on coping and parenting

behaviors instead. Future studies could look at how parental mental health mediates the relationship between coping strategies and parent-infant bonding since this present study was able to find significant findings between parental mental health, parent-infant bonding, and coping strategies just not with coping strategies mediating the relationship. Coping strategies have high potential to affect parent-child relationships, but finding where it fits is where it gets more tricky.

A study by Fernandes et al. (2021) looked at mothers who gave birth during and before the COVID-19 pandemic and looked at interactions between mothers' anxious and depressive symptoms, parenting stress, mindful parenting, and mother-infant relationships. They found that mothers who had given birth during the pandemic had more difficulties with mother-infant bonding, and found that bonding difficulties were due to increased parental stress and lower levels of mindfulness in parenting. They also list several reasons why mothers may not have experienced deeper bonds with their children (e.g. more focuses on fear and danger of COVID-19, feeling robbed of maternity joys postpartum, and feelings of guilt and loss) if their child was born during the pandemic. While that study did not look specifically at coping strategies, they did find factors that could have affected the relationship between maternal depression and mother-infant bonding. It is possible that parental stress and/or mindfulness may have mediated the relationship between infant safety and welfare anxieties and bonding difficulties related to rejection and anger, similar to what McKelvey et al. (2002) suggested from their findings. Future research could look into whether mindful parenting, which is the parent making a conscious decision to be in the present moment so they are aware of the choices they are making in front of their child(ren), mediates the relationship between postpartum mental health and parent-child bonding, or look at how mindful parenting and coping strategies interact in relation to the parent-child bond since coping strategies, in this present study, had significant correlations with parent-child bonding factors.

Liu et al. (2022) looked into how maternal depression and anxiety affected the parent-child bond during the COVID-19 pandemic and found that, in their sample, maternal anxiety did not affect the parent-child bond, which is different from what this study found, but they did notice that COVID-19 related grief negatively affected the parent-child bond, and that health worries related to COVID-19 increased the parent-child bond, with this latter finding being contradictory to this current study's findings. Both the practical infant care and infant safety and welfare anxiety factors have questions related to the baby's health, and the parents would have already been thinking about COVID-19, so it is possible that something COVID-19-related mediated the relationship, just not COVID-19-related coping strategies. This present study did find higher anxiety related to practical infant care to be significantly correlated to general bonding and bonding difficulties related to rejection and anger, as well as infant safety and welfare anxieties to be significantly related to bonding difficulties related to rejection and anger, but that coping strategies did not affect this relationship. This current study, though, did find that primary coping strategies did significantly correlate with depressive symptoms, and secondary coping strategies were significantly correlated to depressive symptoms, anxious symptoms related to infant safety and welfare, and both general bonding and bonding difficulties related to rejection and anger. Because of these findings, future research could look into how COVID-19 related grief may have affected the parents' mental health, their ability to cope, and the parent-child bond.

Limitations and Future Directions

One limitation of this current study is the reliance of parent-reports on how they coped with the entirety of the COVID-19 pandemic, which has just recently met its 3rd anniversary. Essentially, parents had to remember and recall almost 3 years worth of coping with the pandemic, which may have varied greatly depending on the circumstances of the parents at different points during the pandemic. A study by Newell et al. (1999) looked at the accuracy of self-reports for risk factors and health behavior and found that inaccuracies with self-reports is

prevalent and should not be the only reporting technique. Future research could focus on one portion of the COVID-19 pandemic experience, like the initial lockdown, instead of overall to pinpoint how one factor may have affected parents' relationships with their infants.

Another limitation is that this study used a non-clinical sample in that participants were recruited online without having a previous diagnosis of PPD or PPA. This study solely looked at PPD or PPA symptoms that were fully self-reported, so while some participants may have met the criteria for a diagnosis, they were not asked to report on this. Since we do not know the true severity for any participant, it is possible that coping strategies may mediate relationships more for parents who are really struggling with PPD, PPA, or other mental illness beyond the scope of this study. It may just be that this sample coped really well with the pandemic and were coping with their PPD/PPA symptoms well enough that coping did not mediate their bonding with their child, but it is possible that with a clinical sample of parents that coping plays a larger role in how they bond with their infant. Future research that looks at a clinical sample of depressed and or anxious parents could find stronger correlations, significant mediation of coping strategies, or how other factors mediated the parent mental health to the parent-infant bonding relationship.

An additional limitation of this study is that there is no comparison to families that did not give birth during the pandemic. Because of this, it is hard to determine how the variables in the study may have looked when compared to pre-pandemic families. The relationships between the variables may have been stronger, or weaker, and more general coping strategies, versus a COVID-19 pandemic specific ones, may have had a different impact on the variables. This study also looked at specifically postpartum depression and anxiety versus the more general diagnoses, so for pre-pandemic families, general depressive and anxious symptoms may have played bigger roles during the pandemic for those families changing the relationships between variables. Even for this study's sample, general depressive and anxious symptoms could have played different roles in the relationships between variables, so future research using non-PPD or PPA questionnaires might lead to different results as it would be focusing more generally on

the parent's mental health as an individual thing instead of a postpartum factor. Future research could also compare pandemic families to both pre- and post-pandemic families to see how families may or may not differ among the different contexts.

Clinical Implications and Conclusions

Overall, this study demonstrates how a pandemic, like COVID-19, can negatively impact the mental health of not only the general population, but specifically new parents and their ability to bond with their child. We know that those who experience more postpartum depression, in general, and postpartum anxiety related to infant safety and welfare and practical infant care experienced negative effects to their parent-child bonding.

With this information, the first thing that clinicians could look into is how to be more accessible with their support for parents who are struggling with PPD and PPA. Some parents may not be able to meet in-person due to many circumstances, so focusing on how to bring the therapy to the person versus the person to the therapy may be a good option. Telehealth ideas are already being brought to life, but it still needs improvement as the quality of the telehealth may be lacking for some individuals, and needs improvement for people in rural communities who may not have as much access to both in-person and telehealth options.

Clinicians might also consider incorporating parent-infant bonding into their treatments for PPD and PPA. Poor parent-infant bonds can negatively affect the child across development (Lewis, 2012), so incorporating an infant bonding component may not only help the parent struggling, but also help their child. Holt et al. (2021) did a study on how a particular intervention (HUGS) to improve the mother-infant bond with mothers with PPD compared to a control group. The HUGS intervention targets two key factors within the mother-infant relationship: maternal skills in observation, communication and responsiveness, as well as distorted maternal internal cognitions. Some aspects of the HUGS intervention are having the mother and infant play and have physical contact, promote observing and understanding the baby's signals, working on parental responses to the infant's cues, and reinforcing positive

behaviors and cognitions about the infant. Their results found that at 6-month follow-up, the HUGS group had significant improved parental positive affect and less impaired bonding when compared to the control group. These findings suggest that along with usual PPD treatment, adding in a parent-infant bonding intervention can improve the parent-infant bond as well as improve the PPD symptoms a parent is experiencing to offset the potential negative effects the parents PPD and poor parent-infant bond can have on the infant later on in life.

Finally, another thing clinicians could do is continue to assess their patients who may be struggling with PPD or PPA well beyond the typical postpartum period, which is considered to be the first 6 weeks after birth. This study found parents who may be dealing with PPD and/or PPA with children ranging from 1-3 years old as the PPD/PPA-specific questionnaires were only asking the participants to recall their last 7 days worth of symptoms, so clearly parents can still be struggling with PPD and/or PPA symptoms even into their infant becoming a toddler. Because of how PPD and PPA can affect the abilities of the parent to parent better, it is important to make sure treatment is being conducted as early as possible for the parent, and that continued support is given if needed in the future for said parent since prolonged symptoms may not only affect the parent-infant bond, but also the child in the future. It would also be important to look into parents who may not have previously been dealing with PPD or PPA as they may have not developed symptoms until way past the postpartum period. Because of PPD's and PPA's unpredictability of when they may develop, it is important to continue assessments well beyond the postpartum period as well as continuing to give PPD and PPA support to parents who have been dealing with them for a long time.

The COVID-19 pandemic was an extremely unprecedented time that left people with a lot of uncertainty of what to expect or do, but it has shown us that "just staying in for two weeks" was not enough and that COVID-19 did have negative impacts on people, and that if something like this happens again, first-time parents need additional accessibility and coping strategies for

PPD or PPA to help improve their parent-child bonding as well as their own and their child's future mental health.

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Tables

Table 1

Demographic Characteristics of Participants and their Child

	Parent	Child
N	52	52
<i>M Age</i>	33.5	1.9
% Female	75%	48.1%
% White	76.9%	67.3%
% Black	7.7%	5.8%
% Hispanic	5.8%	1.9%
% Asian	5.8%	3.8%
% Multi Racial	1.9%	19.2%
HS Diploma	26.9%	—
> HS Diploma	73.1%	—
Family Income ^a < \$50,000	24.9%	—
Family Income ^a > \$50,000	75.1%	—

^a Family income is for current family income, not the pandemic family income.

Table 2*Mean and Standard Deviation of Each Questionnaire*

	<i>M</i>	<i>SD</i>	Minimum	Maximum
EPDS	10.06	6.13	0	24
PSAS - Inf Saf Anx	20.89	6.92	11	36
PSAS - Prac Inf Care Anx	13.35	5.37	7	25
RSQ - Primary Control Coping	1.07	.22	.69	1.76
RSQ - Secondary Control Coping	1.18	.30	.63	1.81
PBQ - General Bonding	8.49	7.50	0	35
PBQ - Rej & Ang	3.47	4.15	0	18

Note. EPDS - Edinburgh Postnatal Depression Scale. PSAS - Postpartum Specific Anxiety Scale. Inf Saf Anx - Infant safety and welfare anxieties. Prac Inf Care Anx - Practical infant care anxieties. RSQ - Responses to Stress COVID-19 Questionnaire. PBQ - Postpartum Bonding Questionnaire. Rej & Ang Bonding - Rejection and pathological anger.

Table 3*Pearson's Correlation Table of Study Variables*

Variable	n	1	2	3	4	5	6	7	8	9	10	11
1. Child Gender	52	—										
2. Pandemic Employment	52	.05	—									
3. Pandemic Income	52	-.30*	-.38**	—								
4. Current Income	52	-.20	-.26	.83***	—							
5. Depressive Symptoms	52	-.03	.32*	-.39**	-.49***	—						
6. Infant Safety and Welfare Anxious Symptoms	52	-.07	.20	-.36**	-.30*	.60***	—					
7. Practical Infant Care Anxious Symptoms	52	-.08	.14	-.21	-.13	.45***	.70***	—				
8. Parent Primary Control Coping	52	-.24	.09	.28*	.21	-.28*	-.23	-.23	—			
9. Parent Secondary Control Coping	52	-.09	-.15	.37**	.44**	-.72***	-.40**	-.26	.34*	—		
10. General Bonding	51	-.04	.28	-.12	-.09	.32*	.26	.33*	-.17	-.39**	—	
11. Bonding Difficulties Related to Rejection and Anger	51	-.17	.28*	-.06	.00	.44**	.39**	.40**	-.08	-.39**	.82***	—

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

Appendix A

Measure 1. Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987)

Instructions: Please check the answer that comes closest to how you have felt in the **last 7 days**.

1. I have been able to laugh and see the funny side of things
 - ☐ As much as I always could
 - ☐ Not quite so much now
 - ☐ Definitely not so much now
 - ☐ Not at all
2. I have looked forward with enjoyment to things
 - ☐ As much as I ever did
 - ☐ Rather less than I used to
 - ☐ Definitely less than I used to
 - ☐ Hardly at all
3. I have blamed myself unnecessarily when things went wrong
 - ☐ Yes, most of the time
 - ☐ Yes, some of the time
 - ☐ Not very often
 - ☐ No, never
4. I have been anxious or worried for no good reason
 - ☐ No, not at all
 - ☐ Hardly ever
 - ☐ Yes, sometimes
 - ☐ Yes, very often
5. I have felt scared or panicky for no very good reason
 - ☐ Yes, quite a lot
 - ☐ Yes, sometimes
 - ☐ No, not much
 - ☐ No, not at all
6. Things have been getting on top of me
 - ☐ Yes, most of the time I haven't been able to cope at all
 - ☐ Yes, sometimes I haven't been coping as well as usual
 - ☐ No, most of the time I have coped quite well
 - ☐ No, I have been coping as well as ever
7. I have been so unhappy that I have had difficulty sleeping
 - ☐ Yes, most of the time
 - ☐ Yes, sometimes
 - ☐ Not very often
 - ☐ No, not at all
8. I have felt sad or miserable
 - ☐ Yes, most of the time
 - ☐ Yes, quite often
 - ☐ Not very often
 - ☐ No, not at all
9. I have been so unhappy that I have been crying
 - ☐ Yes, most of the time
 - ☐ Yes, quite often
 - ☐ Only occasionally
 - ☐ No, never
10. The thought of harming myself has occurred to me
 - ☐ Yes, quite often
 - ☐ Sometimes
 - ☐ Hardly ever
 - ☐ Never

Measure 2. Postpartum Specific Anxiety Scale (PSAS; Adapted; Fallon et al., 2016)

Instructions: Please indicate how often you have experienced the following questions **during the last 7 days** with (1) meaning not at all, (2) meaning a few times, (3) meaning several times, and (4) meaning most of the time.

1. I have worried about my baby being accidentally harmed by someone or something else	1	2	3	4
2. I have repeatedly checked on my sleeping baby	1	2	3	4
3. I have worried that my baby will stop breathing while sleeping	1	2	3	4
4. I have felt frightened when my baby is not with me	1	2	3	4
5. I have worried about leaving my baby in a childcare setting	1	2	3	4
6. I have worried about accidentally harming my baby	1	2	3	4
7. I have thought of ways to avoid exposing my baby to germs	1	2	3	4
8. I have not taken part in an everyday activity with my baby because I fear they may come to harm	1	2	3	4
9. I have worried about my baby's health even after reassurance from others	1	2	3	4
10. I have worried that I will become too ill to care for my baby	1	2	3	4
11. I have felt a greater need to do things in a certain way or order than before my baby was born	1	2	3	4
12. I have worried about my baby's milk intake	1	2	3	4
13. I have worried about my baby's weight	1	2	3	4
14. I have worried about getting my baby into a routine	1		3	4
15. I have worried about the way I feed my baby	1	2	3	4
16. I have worried about the length of time my baby sleeps	1	2	3	4
17. I have used the internet for reassurance about my baby's health	1	2	3	4
18. I have worried that my baby is not developing as quickly as other babies	1	2	3	4

Measure 3. Responses to Stress - COVID-19 Questionnaire (RSQ; Adapted; Conner-Smith et al., 2000)

Instructions: This is a list of things about COVID-19 that people may find stressful or a problem to deal with. Please indicate how stressful the following things have been for you during the COVID-19 pandemic. (March 2020 to present.)

1. Financial problems because of COVID-19	Not at all	A little	Somewhat	Very
2. Unable to spend time in person with close friends or family because of COVID-19	Not at all	A little	Somewhat	Very
3. Unable to participate in normal routines and activities because of COVID-19	Not at all	A little	Somewhat	Very
4. Having to change, postpone, or cancel important plans or events because of COVID-19	Not at all	A little	Somewhat	Very
5. Challenges at home or with others because of COVID-19	Not at all	A little	Somewhat	Very
6. Trouble obtaining groceries or other needed supplies because of COVID-19	Not at all	A little	Somewhat	Very
7. Watching or hearing distressing news reports about COVID-19	Not at all	A little	Somewhat	Very
8. Uncertainty about myself or someone close to me getting COVID-19, including being unable to access testing	Not at all	A little	Somewhat	Very
9. Myself or someone else to me experiencing symptoms or being diagnosed with COVID-19	Not at all	A little	Somewhat	Very
10. Trouble getting medical care or mental health services because of COVID-19	Not at all	A little	Somewhat	Very
11. Uncertainty about when COVID-19 will end or what will happen in the future	Not at all	A little	Somewhat	Very
12. Difficulty completing my work responsibilities remotely because of COVID-19	Not at all	A little	Somewhat	Very
13. Unable to complete educational or work requirements because of COVID-19	Not at all	A little	Somewhat	Very
14. Needing to take on greater family and/or work responsibilities because of COVID-19	Not at all	A little	Somewhat	Very
15. Other:	Not at all	A little	Somewhat	Very
Indicate how much control you generally think you have over these problems	None	A little	Some	A lot

Instructions: Below is a list of things that people sometimes do, think, or feel when they are dealing with COVID-19. Everyone deals with problems in their own ways -- some people do a lot of things on this list or have many feelings, other people just do or think a few of these things.

Think of all the stressful parts of COVID-19 that you indicated above. For each item below, choose an answer that indicates how much you do or feel these things when you have problems with COVID-19, like the ones you indicated above. Please let us know about everything you do, think, and feel, even if you don't think it helps make things better.

When dealing with the stress of COVID-19:

1. I try not to feel anything.	Not at all	A little	Some	A lot
2. When dealing with the stress of COVID-19, I feel sick to my stomach or get headaches.	Not at all	A little	Some	A lot
3. I try to think of different ways to change or fix the situation.	Not at all	A little	Some	A lot
4. When faced with the stress of COVID-19, I don't feel anything at all, it's like I have no feelings.	Not at all	A little	Some	A lot
5. I wish that I was stronger and less sensitive so that things would be different.	Not at all	A little	Some	A lot
6. I keep remembering what has happened with COVID-19 or can't stop thinking about what might happen.	Not at all	A little	Some	A lot
7. I let someone or something know how I feel.	Not at all	A little	Some	A lot
8. I decide I'm okay the way I am, even though I'm not perfect.	Not at all	A little	Some	A lot
9. When I'm around other people I act like COVID-19 never happened.	Not at all	A little	Some	A lot
10. I just have to get away from everything when I am dealing with the stress of COVID-19.	Not at all	A little	Some	A lot
11. I deal with the stress of COVID-19 by wishing it would go away, that everything would work itself out.	Not at all	A little	Some	A lot
12. I get really jumpy when I am dealing with the stress of COVID-19.	Not at all	A little	Some	A lot
13. I realize I just have to live with things the way things are.	Not at all	A little	Some	A lot
14. When I am dealing with the stress of COVID-19, I just can't be near anything that reminds me of what is happening.	Not at all	A little	Some	A lot
15. I try not to think about it, to forget all about it.	Not at all	A little	Some	A lot
16. When I am dealing with the stress of COVID-19, I really don't know what I feel.	Not at all	A little	Some	A lot
17. I ask other people or things for help or for ideas about how	Not at all	A little	Some	A lot

to make things better.				
18. When I am trying to sleep, I can't stop thinking about the stressful aspects of COVID-19 or have bad dreams about COVID-19.	Not at all	A little	Some	A lot
19. I tell myself I will get through this, or that I will be okay.	Not at all	A little	Some	A lot
20. I let my feelings out.	Not at all	A little	Some	A lot
21. I get help from other people or things when I'm trying to figure out how to deal with my feelings.	Not at all	A little	Some	A lot
22. I just can't get myself to face the stress of COVID-19.	Not at all	A little	Some	A lot
23. I wish someone would just come and take away the stressful aspects of COVID-19.	Not at all	A little	Some	A lot
24. I do something to try and fix the stressful parts of COVID-19.	Not at all	A little	Some	A lot
25. Thoughts of COVID-19 just pop into my head.	Not at all	A little	Some	A lot
26. When I am dealing with the stress of COVID-19, I feel it in my body.	Not at all	A little	Some	A lot
27. I try to stay away from people and things that make me upset or remind me of the stressful aspects of COVID-19.	Not at all	A little	Some	A lot
28. I don't feel like myself when I am dealing with the stress of COVID-19, it's like I am far away from everything.	Not at all	A little	Some	A lot
29. I just take things as they are; I go with the flow.	Not at all	A little	Some	A lot
30. I think about happy things to take my mind off the stressful parts of COVID-19 or how I'm feeling.	Not at all	A little	Some	A lot
31. When something stressful happens related to COVID-19, I can't stop thinking about how I am feeling.	Not at all	A little	Some	A lot
32. I get sympathy, understanding, or support from someone.	Not at all	A little	Some	A lot
33. When something stressful happens related to COVID-19, I can't always control what I do.	Not at all	A little	Some	A lot
34. I tell myself things could be worse.	Not at all	A little	Some	A lot
35. My mind just goes blank when something stressful happens related to COVID-19, I can't think at all.	Not at all	A little	Some	A lot
36. I tell myself it doesn't matter, that it isn't a big deal.	Not at all	A little	Some	A lot
37. When I am faced with the stressful parts of COVID-19 right away I feel really: ☐ Angry	Not at all	A little	Some	A lot

☐ Worried/anxious ☐ Sad ☐ Scared ☐ None of these				
38. It's really hard for me to concentrate or pay attention when something stressful happens related to COVID-19.	Not at all	A little	Some	A lot
39. I think about the things I'm learning from COVID-19, or something good that will come from it.	Not at all	A little	Some	A lot
40. After something stressful happens related to COVID-19, I can't stop thinking about what I did or said.	Not at all	A little	Some	A lot
41. When stressful parts of COVID-19 happen, I say to myself, "This isn't real."	Not at all	A little	Some	A lot
42. When I'm dealing with the stressful parts of COVID-19, I end up just lying around or sleeping a lot.	Not at all	A little	Some	A lot
43. I keep my mind off stressful parts of COVID-19.	Not at all	A little	Some	A lot
44. When something happens related to COVID-19, I get upset by things that don't usually bother me.	Not at all	A little	Some	A lot
45. I do something to calm myself down when dealing with the stress of COVID-19.	Not at all	A little	Some	A lot
46. I just freeze when dealing with the stressful parts of COVID-19, I can't do anything.	Not at all	A little	Some	A lot
47. When stressful things happen related to COVID-19, I sometimes act without thinking.	Not at all	A little	Some	A lot
48. I keep my feelings under control when I have to, then let them out when they won't make things worse.	Not at all	A little	Some	A lot
49. When something stressful happens related to COVID-19, I can't seem to get around to doing things I'm supposed to do.	Not at all	A little	Some	A lot
50. I tell myself that everything will be all right.	Not at all	A little	Some	A lot
51. When something stressful happens related to COVID-19, I can't stop thinking about why this is happening.	Not at all	A little	Some	A lot
52. I think of ways to laugh about it so it won't seem so bad.	Not at all	A little	Some	A lot
53. My thoughts start racing when I am faced with the stressful parts of COVID-19.	Not at all	A little	Some	A lot
54. I imagine something really fun or exciting happening in my life.	Not at all	A little	Some	A lot
55. When something stressful happens related to COVID-19, I get so upset I can't remember what happened or what I did.	Not at all	A little	Some	A lot

56. I try to believe it never happened.	Not at all	A little	Some	A lot
57. When I am dealing with the stress of COVID-19, sometimes I can't control what I do or say.	Not at all	A little	Some	A lot

Measure 4. Postpartum Bonding Scale (PBQ; Adapted; Brockington et al., 2006)

Instructions: Please indicate how often the following are true for you. There are no ‘right’ or ‘wrong’ answers. Choose the answer which seems right in your recent experiences.

1. I feel close to my baby	Always	Very often	Quite often	Sometimes	Rarely	Never
2. I wish for the old days when I had no baby would come back	Always	Very often	Quite often	Sometimes	Rarely	Never
3. I feel distant from my baby	Always	Very often	Quite often	Sometimes	Rarely	Never
4. I love to cuddle my baby	Always	Very often	Quite often	Sometimes	Rarely	Never
5. I regret having this baby	Always	Very often	Quite often	Sometimes	Rarely	Never
6. The baby does not seem like mine	Always	Very often	Quite often	Sometimes	Rarely	Never
7. My baby winds me up	Always	Very often	Quite often	Sometimes	Rarely	Never
8. I love my baby to bits	Always	Very often	Quite often	Sometimes	Rarely	Never
9. I feel happy whenever my baby smiles or laughs	Always	Very often	Quite often	Sometimes	Rarely	Never
10. My baby irritates me	Always	Very often	Quite often	Sometimes	Rarely	Never
11. I enjoy playing with my baby	Always	Very often	Quite often	Sometimes	Rarely	Never
12. My baby cries too much	Always	Very often	Quite often	Sometimes	Rarely	Never
13. I feel trapped as a parent	Always	Very often	Quite often	Sometimes	Rarely	Never
14. I feel angry with my baby	Always	Very often	Quite often	Sometimes	Rarely	Never
15. I resent my baby	Always	Very often	Quite often	Sometimes	Rarely	Never
16. My baby is the most beautiful baby in the world	Always	Very often	Quite often	Sometimes	Rarely	Never
17. I wish my baby would somehow go away	Always	Very often	Quite often	Sometimes	Rarely	Never
18. My baby annoys me	Always	Very often	Quite often	Sometimes	Rarely	Never
19. I feel the only solution if for someone else to look after my baby	Always	Very often	Quite often	Sometimes	Rarely	Never

Measure 5. Qualitative (Open-Ended) Questions

Instructions: Please answer the following questions.

1. Since your child was born, how has your relationship with your child changed over time? Provide examples if possible.
2. What were COVID-19 restrictions like when your child was born? How did these restrictions impact your experience as a first time parent? Provide examples if possible.
3. Did you have a support system outside of a romantic partner during the COVID-19 pandemic? If yes, who were they in relation to you, and how did they help you during the pandemic? If you had your child when lockdowns were in place, how did your support system change with and without those restrictions?
4. Has your mental health changed since becoming a parent? If so, has the COVID-19 pandemic played a role in the changes? Please provide examples.

Measure 6. Demographic Information

What is your gender?

Female

Male

Other:

Prefer not to say

What is your child's gender?

Female

Male

Other:

Prefer not to say

How old were you when your child was born?

How old are you currently?

How old is your child currently?

What is your marital status?

Single

Married

Divorced

Other:

Are you currently in a relationship with the person you had your child with?

Yes

No

What is your race/ethnicity?

What is your child's race/ethnicity?

What was your employment status during the COVID-19 pandemic?

Employed

Unemployed

Mix of employed and unemployed

Other:

What is your current employment status?

Employed

Unemployed

Other:

Your highest level of education?

No completion of High School

High School Diploma

Bachelor's degree

Master's degree
Doctorate degree

What was your total yearly family income during the COVID-19 pandemic (if employment status changed during the pandemic, answer to the average yearly income you had for the majority of the pandemic)?

Less than \$10,000
\$10,001 to \$15,000
\$15,001 to \$25,000
\$25,001 to \$50,000
\$50,001 to \$75,000
\$75,001 to \$100,000
\$100,001 to \$150,000
More than \$150,000

What is the total yearly family income currently?

Less than \$10,000
\$10,001 to \$15,000
\$15,001 to \$25,000
\$25,001 to \$50,000
\$50,001 to \$75,000
\$75,001 to \$100,000
\$100,001 to \$150,000
More than \$150,000

Appendix B

Research Participation Consent Form

The Effects of the COVID-19 Pandemic on First-Time Parents

Allegheny College
Department of Psychology

Purpose of Research: The purpose of this study is to examine how the COVID-19 pandemic affected first-time parents, looking specifically at parent mental health, parent-child bonding, and parent coping strategies.

Method/Procedure: I understand that I will be asked to complete four online questionnaires and answer four open-ended questions about my experience as a first time parent during the COVID-19 pandemic. The questionnaires will focus on parent depressive symptoms, parent anxiety symptoms, parent-child bonding, and parent coping during the pandemic.

Length of Participation: I understand that the questionnaires and open-ended questions will take approximately 30 minutes to complete.

Risks to the Individual: I understand that there will be no more risk other than what is normally experienced in everyday life. I understand that there will be questions regarding depressive symptoms and anxiety symptoms and if I need additional help, I can find additional resources available at [Postpartum depression \(apa.org\)](https://www.apa.org/postpartum-depression) & [Resources | Postpartum Support International \(PSI\)](https://www.postpartumsupportinternational.org/)

Benefits of the Research: Research is designed to benefit society by gaining new knowledge. This research will provide insight into the impacts of the COVID-19 pandemic on families.

Compensation: I understand that I may receive \$1.00 of compensation for my time. I understand there will be a total of 4 attention checks and I need to correctly answer 3/4 to receive compensation.

Confidentiality, Recording Information, and Data Security: I understand that my name will never be associated with the data I provide and will be completely confidential. I understand that no personal information will be collected in the required questions on the survey and that I will not be able to be identified by the answers I provide to these questions. Once the data is collected and examined, my responses will be destroyed.

Voluntary Nature of Participation: I understand that I do NOT have to participate in this research project. Furthermore, I may choose to withdraw my participation at any time without penalty. I understand that I may skip any individual questions that I do not wish to answer, and I may choose not to participate in any part of the study without being questioned.

Results of Research Project: I understand that I am entitled to a copy of the results once this study is completed. I may provide my email at the end of the study to receive a summary of the results. My email address will not be associated with any of my survey responses.

Contact Information: If I have any questions about this research project, I can contact the head investigator, Claire Henderson, at hendersonc@allegheny.edu or the research advisor, Dr. Sarah Stanger, at sstanger@allegheny.edu. If I have questions or concerns about the treatment of research participants in this IRB-approved project, I can contact the Chair of the Allegheny Institutional Review Board (IRB) at IRB@allegheny.edu.

By consenting to this form, you understand that your consent suggests that you have read and understood the information on this form and you have no further questions. If you agree to participate in this study, select “I consent”. If you do not agree to participate in this study, select “I do not consent”.

- I consent
- I do not consent

Debriefing Form

First-Time Parents During COVID-19

Thank you for your participation!

Purpose of Research: The purpose of this study is to gain more knowledge on the impact of COVID-19 first-time parents were doing during the COVID-19 pandemic in relation to postpartum depression and anxiety, and parent-infant bonding (Sledge et al., 2022; Ollivier et al., 2021; Russell et al., 2020). If parents can gain more support and resources to better their mental health, it may also have a positive impact on their relationship with their child (Sevilla & Smith, 2020; Gharagozloo et al., 2020; Öngören, 2021). If there is more knowledge on the coping strategies of parents, we can create better support systems for parents as well as additional resources especially in relation to situations such as the COVID-19 pandemic, and have better knowledge on the effects of the lockdown restrictions that were put into place (Pratiwi et al., 2020; Ollivier et al., 2021). My hypothesis is that parents who endorse more anxious and depressive symptoms will also report more difficulty with parent-child bonding. The present study will also examine how coping strategies mediated the relationship between postpartum depression and anxiety, and the parent-child bond. My other hypothesis is that parents who experience less anxious and depressive symptoms will be more likely to use primary and secondary control engagement coping strategies, and will experience better parent-child bonding.

For more information:

Ollivier, R., Aston, M., Price, S., Sim, M., Benoit, B., Joy, P., ... & Nassaji, N. A. (2021). Mental health & parental concerns during COVID-19: The experiences of new mothers amidst social isolation. *Midwifery*, 94, 102902.

Öngören, S. (2021). The Pandemic Period and the Parent-Child Relationship. *International Journal of Contemporary Educational Research*, 8(1), 94-110.

Sledge, H., Lawler, M., Hourihane, J., Franklin, R., Boland, F., Dunne, S., ... & Byrne, S. (2022). Parenting a newborn baby during the COVID-19 pandemic: a qualitative survey. *BMJ Paediatrics Open*, 6(1).

Confidentiality: I understand that my name will never be associated with the data I provide and will be completely confidential. I understand that no personal information will be collected in the required questions on the survey and that I will not be able to be identified by the answers I provide to these questions. Once the data is collected and examined, my responses will be destroyed.

For resources on coping in general, please see below:

- **Stressors: Coping Skills and Strategies** (Cleveland Clinic): [Stressors: Coping Skills and Strategies \(clevelandclinic.org\)](https://clevelandclinic.org/stressors-coping-skills-and-strategies)
- **Coping with Stress** (Centre For Studies on Human Stress): [Coping strategies - CESH / CSHS \(humanstress.ca\)](https://humanstress.ca/coping-strategies-cesh-cshs)
- **Coping with Stress** (Center of Disease Control and Prevention):

[Coping with Stress \(cdc.gov\)](https://www.cdc.gov/mentalhealth/need/coping-with-stress)

For resources on parental depression and anxiety, please see below:

- **The Online PPMD Support Group** (for mothers):
[The Online PPMD Support Group \(ppdsupportpage.com\)](https://ppdsupportpage.com)
- **Perinatal Mental Health, Postpartum Specialists, Postpartum Therapy** (Seleni Institute):
[Seleni Institute | Perinatal Mental Health, Postpartum Specialists, Postpartum Therapy](https://www.seleniinstitute.com/perinatal-mental-health-postpartum-specialists-postpartum-therapy)
- **Depression During and After Pregnancy** (Center of Disease Control and Prevention):
[Depression During and After Pregnancy \(cdc.gov\)](https://www.cdc.gov/mentalhealth/need/depression-during-and-after-pregnancy)
- **Postpartum Support International: Discussion Tool (PSI):**
[Discussion Tool | Postpartum Support International \(PSI\)](https://www.postpartumsupportinternational.com/discussion-tool)

Contact Information: If you would like a copy of the results, you may provide your email at this link: [INSERT SURVEYMONKEY LINK]. Your email will not be associated with your responses or the data. It is completely optional to provide your email.

If you have any questions about this study, you may contact the principal investigator, Claire Henderson, at hendersonc@allegheny.edu, the research supervisor, Sarah Stanger, at [sstanger@allegheny.edu](mailto:ssstanger@allegheny.edu) or the Chair of the IRB at IRB@allegheny.edu.

Thank you so much, again, for your participation!

Appendix C

Informed consent is a request for modification. Since the study will be done fully online, there is no way for the participant to provide their signature. Therefore, the participants will be able to give consent by selecting “I consent” at the end of reading the informed consent form.