Parenthood in the shadow of COVID-19: The contribution of gender, personal resources and anxiety to first time parents' perceptions of the infant

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Abstract
We sought to examine new parents’ perceptions of their infant during the worldwide spread of COVID-19, exploring the contribution of gender, personal resources (attachment orientation, presence of meaning in life and intolerance of uncertainty) and COVID-19-related anxieties. A convenience sample of 606 Israeli first-time parents (137 fathers and 469 mothers), whose child was 3–12 months old, was recruited through social media during April 2020. Findings indicate that being a woman, younger age, lower education, better physical health, older infant’s age, lower attachment anxiety, higher presence of meaning in life and greater COVID-19-related anxiety over the infant’s health contributed significantly to a greater perception of infant’s warmth; being a father, higher education and economic status, poorer physical health, higher attachment anxiety and intolerance of uncertainty and less presence of meaning in life contributed significantly to a greater perception of infant’s invasiveness. Gender moderated the associations between the personal resources and infant’s perception, and both the presence of meaning in life and intolerance of uncertainty mediated the associations between COVID-19-related anxieties and parent’s perception of the infant. The findings reveal the crucial contribution of gender, and both risk and resilience factors, to the parent’s perception of the infant in the shadow of COVID-19.

Keywords
anxieties, attachment, COVID-19, intolerance of uncertainty, meaning in life, parents

1 | INTRODUCTION

The COVID-19 pandemic, which began in December 2019 in Wuhan, China, is rapidly spreading worldwide. In addition to the damage caused by the virus to the physical health of millions of people around the world, the prolonged quarantine has taken its toll. Many people have lost their jobs, leaving them with no income and leading to a decline in their economic situation (Blustein et al., 2020). Moreover, an increase in family conflicts, such as negative feelings and tension between spouses and between parents and children, has been reported (Luetke et al., 2020; Zhang, 2020). These responses, along with the natural fear of being infected by the virus, are signs of the negative psychological consequences of the current crisis, on both the personal and interpersonal levels (Brooks et al., 2020).

Dealing with these complexities can be especially challenging for people in the midst of the transition to parenthood, one of the most sensitive and stressful periods in a person’s life. Even in typical times, new parents are forced to cope with numerous changes in their personal and marital life and are required to adapt to a new reality (Cowan & Cowan, 2000; Morse et al., 2000; Nelson et al., 2014). This adaptation can be expected to be even more difficult in view of the threat and pressure characterizing the pandemic.
One of the major domains that may be affected during this period is the new parent’s perception of the infant, an outcome that is of critical importance for the parent–child relationship (Ensink et al., 2019). According to Belsky’s parenting model (Belsky, 1984), parents’ perceptions of the child are influenced by various factors related to infant characteristics, parent’s personal characteristics and resources, and environmental influences. Accordingly, as will be expanded and discussed below, in this study, we chose to examine the contribution of the parent’s personal characteristics (gender), personal resources (attachment orientation, presence of meaning in life and intolerance of uncertainty) and environmental influences (COVID-19-related anxieties) to their perception of the infant. Specifically, in this study, we will focus on the parent’s perceptions in terms of warmth and invasiveness.

The perception of warmth is expressed in the parent’s sense that the infant is looking for and interested in their proximity. In addition, they feel that the infant expresses affection, and they view the motives for the baby’s behaviour in a positive light. The perception of warmth has important implications for the parent’s mental state and accordingly for their ability to form a sensitive and positive bond with the infant (Davies et al., 2008; Lefkovics et al., 2018). In contrast, the perception of invasiveness is a risk factor for these results and is expressed in the sense that the infant is difficult, demands too much attention and dominates the parent. In addition, the parent tends to interpret the infant’s behaviour negatively (Oates & Gervai, 2019).

The parent’s perception of the infant is strongly affected by the internal representations of their relationships with significant figures (Slade et al., 2005; Slade & Cohen, 1996), which are reflected in their attachment orientation. Attachment orientation refers to the nature of the bonds individuals form with others and is largely a product of the quality of their relationship with their primary caregiver during infancy (Bowlby, 1973). Attachment is assessed on two continuous dimensions: anxiety, which involves fear of rejection and abandonment and a tendency for symbiosis with others (Brennan et al., 1998), and avoidance, expressed in discomfort with intimacy or dependence. People low on both dimensions are considered securely attached. As the transition to parenthood is a life event that may trigger stress, it may result in increased activation of parents’ attachment styles (Simpson & Rholes, 2017). Studies have found that a high level of parent’s anxious attachment is associated with a perception of infant invasiveness, as well as conflict, inconsistency and insensitivity towards the child. On the other hand, a high level of avoidant attachment is associated with rejection and being less caring and sensitive towards the infant (Jones et al., 2015; Rholes et al., 2006).

Another personal resource that can contribute to parenting experiences and perceptions is the presence of meaning in life, which is considered a protective factor in coping with stress. Presence of meaning in life refers to the value that people place on the events and course of their life and the significance they attach to their existence and provides them with the feeling that their lives matter and make sense (Reker & Wong, 1988). It has been found to be positively associated with well-being in the transition to parenthood (Shenkman & Shmotkin, 2014; Taubman – Ben-Ari et al., 2012), as well as with positive perceptions of the child (Nelson et al., 2014).

In contrast to the positive role played by the perception that one’s life is meaningful, intolerance of uncertainty refers to the fear of the unknown future and the difficulty of coping with the possible occurrence of negative events (Buhr & Dugas, 2002). Life is naturally characterized by a diversity of situations and periods of uncertainty, but some people find them more difficult to bear and perceive them to be a great source of worry and threat (Carleton et al., 2007). Intolerance of uncertainty may create a negative bias in the individual’s thinking, lead to rumination and impair the ability to solve problems and deal with ambiguous and distressing situations (Greco & Roger, 2003). Furthermore, more intolerance of uncertainty has been related to more dysfunctional maternal behaviours in the postpartum period (Ambrosini et al., 2012). However, although intolerance of uncertainty has been associated with anxiety disorders (Boswell et al., 2013), which were found to contribute to a greater perception of infant invasiveness (Davies et al., 2008; Lefkovics et al., 2018), to the best of our knowledge, no previous studies have examined the relationship between intolerance of uncertainty and parents’ perceptions of the infant.

As noted above, external factors may also affect these perceptions. While previous studies have investigated negative and positive outcomes after coping with a disaster or crisis (Bonanno et al., 2010; Cohan & Cole, 2002), we had the unique opportunity to examine the consequences of an external event at the time of its occurrence, rather than retrospectively. Taking advantage of this situation, we examined the associations between new parents’ COVID-19-related anxieties (the economic damage they and their family may suffer, being infected by COVID-19 and the health of the child) and their perceptions of the infant.

Unlike in routine times, the lockdown has forced both fathers and mothers to stay at home with the infant. The constant presence of the spouse, along with the extraordinary concerns and stressors with which the parents are coping, has created a unique situation whose implications warrant investigation. Furthermore, to date, studies examining the factors that shape parental functioning have focused primarily on mothers (Pleck, 2010), although in recent years, fathers have taken a more active part in parenting and raising their children compared to the past (Amato et al., 2009; Lamb, 2010). The current circumstances demand deeper understanding of the effects of the crisis on fathers as well (Lista & Bresesti, 2020). Moreover, since studies show that the pandemic and the accompanying changes in the labour force had different implications between fathers and mothers (Collins et al., 2020; Dias et al., 2020; Möhring et al., 2020), and in order to deepen our understanding of the different ways that the COVID-19 has affected fathers and mothers in their transitioning to parenthood, we asked to examine whether there are gender differences in the parent personal resources, COVID-19-related anxieties and in the parent’s perceptions of the infant. In addition, we sought to learn whether gender would moderate the relationship between parents’ personal variables and their perceptions of the infant.
Finally, since both meaning in life and intolerance of uncertainty are possible responses to dealing with anxiety and stress and may therefore also affect parents’ perceptions of their infant, we examined whether these factors would mediate the relationship between the current situation, reflected in the COVID-19-related anxieties and the perceived warmth or invasiveness of the infant.

2 | **THE CURRENT STUDY**

The present study was conducted during April 2020. By then, 3 222 000 confirmed cases and 228 000 deaths were reported around the globe (CDC, 2020). In Israel, out of a population of about 9 million, as of 30 April 2020, there were over 16 100 confirmed cases, and 223 people died. In addition, the study began while Israeli citizens have been in lockdown for a period of about a month and were allowed to leave their homes only for essential errands. Given the complex and unique situation of new parents in the shadow of COVID-19, this study sought to understand the factors that may contribute to the way they perceive their infant. In view of the literature, the following hypotheses were formulated:

1. The higher the parents’ attachment anxiety or avoidance, the lower the infant’s perceived warmth and the higher the infant’s perceived invasiveness.
2. The greater the parents’ presence of meaning in life, the higher the infant’s perceived warmth and the lower the infant’s perceived invasiveness.

In addition, given the lack of previous research on which to rely, the following questions were examined exploratively:

1. Are there differences between fathers and mothers in their perception of the infant?
2. Is there an association between intolerance of uncertainty and parents’ perception of the infant?
3. What is the unique and combined contribution of the background variables, personal resources and COVID-19-related anxieties to parents’ perception of the infant?
4. Does gender moderate the associations between personal resources and parents’ perception of the infant?
5. Do presence of meaning in life and intolerance of uncertainty mediate the relationship between COVID-19-related anxieties and parents’ perception of the infant?

3 | **METHOD**

3.1 | **Participants and procedure**

Following approval from the university's Institutional Review Board, a convenience sample of 606 Israeli parents, 137 fathers and 469 mothers, was recruited during April 2020. A request to participate in the study was posted on social media groups for parents, and a link to an electronic version of the questionnaire was provided. Parents were ensured anonymity and confidentiality, and it was explained that they could cease to participate at any stage should they wish to do so. They were also informed that if they felt any distress during or after completing the questionnaire, they could call or email the researchers, whose contact details were supplied. Participants were considered eligible for the study if they were first-time parents whose child was aged 3 to 12 months, and they could complete questionnaires in Hebrew. Of the 783 parents who started to respond to the questionnaire, 606 completed it in full (77.39% response rate).

3.2 | **Measures**

**Mothers’ Object Relations Scale-Short Form (MORS-SF; Oates et al., 2018)** was used to assess the parent’s perception of the infant. The 14-item questionnaire was developed to identify potential areas of difficulty in the early mother–infant relationship by measuring two factors: infant’s perceived emotional warmth (e.g., “My baby is affectionate towards me”), and infant’s perceived invasiveness (e.g., “My baby wants too much attention”). In the present study, both mothers and fathers completed the scale, indicating their responses on a 6-point scale from 0 (never) to 5 (always). The instrument’s axis items have been shown to possess stable and internally coherent scales, with an internal reliability of 0.90 found for both dimensions in a previous study (McDonald et al., 2011). In this study, we used the Hebrew version of the questionnaire, which was found to have good reliability in a previous study (Chasson et al., 2021). In the current study, Cronbach’s alpha was 0.79 for warmth and 0.71 for invasiveness. A score for each dimension was calculated by averaging the participant’s responses to all relevant items, with higher scores indicating a greater perception of warmth or invasiveness.

**Experiences in Close Relationship Scale (ECR – Short form; Brennan et al., 1998)** was used to assess attachment orientation. The 18-item scale measures the two dimensions of attachment: avoidance (nine items; e.g., “I am very uncomfortable being close to people”) and anxiety (nine items; e.g., “I worry a fair amount about losing close relationships”). Responses were indicated on a 7-point scale from 1 (strongly disagree) to 7 (strongly agree). In this study, we used the Hebrew version of the questionnaire, which was found to have good reliability in several studies (e.g., Porat-Zyman et al., 2017; Taubman – Ben-Ari & Ben-Yaakov, 2020). Cronbach’s alpha in the original study was 0.95 for avoidance and 0.93 for anxiety. In the current study, Cronbach’s alpha was 0.65 and 0.75 for avoidance and anxiety, respectively. A score was calculated for each participant on each dimension by averaging their responses to the relevant items, with higher scores indicating higher avoidant or anxious attachment.

**Meaning in Life Questionnaire (MLQ; Steger et al., 2006)** was used to assess the parent’s sense that their life has meaning and purpose. The original questionnaire consists of 10 items examining two dimensions: the presence of meaning in life and the search for meaning in life. In the present study, only the five items relating to presence of
meaning in life were employed (e.g., “My life has a clear sense of purpose”). Responses were marked on a 7-point scale ranging from 1 (absolutely untrue) to 7 (absolutely true). In this study, we used the Hebrew version of the questionnaire, which was found to be reliable in several studies (e.g., Chasson et al., 2021; Heng et al., 2020). In the original questionnaire, an internal reliability of 0.88 was obtained for presence in meaning in life (Steger et al., 2006). Cronbach’s alpha in the current study was 0.84. A score was calculated for each participant by averaging their responses to all items, so that the higher the score, the higher the presence of meaning in their life.

Intolerance of Uncertainty Scale – Short Form (IUS-12; Carleton et al., 2007), a 12-item version of the original 27-item intolerance of uncertainty scale (Freeston et al., 1994) was used to measure the parent’s reactions to uncertainty, ambiguous situations and the unknown future (e.g., “I always want to know what the future has in store for me”). Responses were indicated on a 5-point Likert scale ranging from 1 (not at all characteristic of me) to 5 (entirely characteristic of me). In this study, we used the Hebrew version of the questionnaire, which was found to have good reliability in several studies (e.g., Kestler-Peleg & Lavenda, 2021; Zerach & Levi-Belz, 2019). An internal reliability of 0.96 is reported by the authors of the scale (Carleton et al., 2007) and was 0.91 in the current study. A score was calculated for each participant by averaging their responses to all items, so that the higher the score, the higher the intolerance of uncertainty.

COVID-19-related anxieties were measured by three specific items (Taubman – Ben-Ari et al., 2020), originally formed in Hebrew. The parents were asked how anxious they were about (1) the economic damage that may be caused to them and their family due to the outbreak of the COVID-19 pandemic; (2) being infected by COVID-19 and (3) the health of their child due to the outbreak of the COVID-19 pandemic. Responses were marked on a scale from 1 (very little) to 5 (very much). A score was given for each of the three anxieties, with higher scores indicating greater concern over the specific issue.

A sociodemographic questionnaire was used to obtain background information, including age, education, physical health, economic status, family status and child’s age.

3.3 | Data analysis

Analyses were conducted using SPSS (ver. 24). First, a series of t tests were computed to examine gender differences in the study variables between fathers and mothers. We then calculated the correlations between the independent variables and the perceptions of warmth and invasiveness. Next, two 4-step hierarchical regressions were performed to determine the contribution of the independent variables to the outcome variables. The variables were entered in the following order: background variables (gender, parent’s age, education, physical health, economic status and infants’ age) in Step 1; parent’s personal resources (attachment orientation, meaning in life and intolerance of uncertainty) in Step 2; COVID-19-related anxieties in Step 3 and the interactions between gender and parents’ personal resources and COVID-19-related anxieties in Step 4. Finally, PROCESS analysis (Hayes, 2017) was used to identify indirect effects and determine whether meaning in life and intolerance of uncertainty mediated the associations between the three COVID-19-related anxieties and parents’ perception of the infant.

4  | RESULTS

4.1 | Characteristic of study participants

The final sample, therefore, consisted of 606 new parents aged 21–50 (M = 31.42, SD = 4.14) whose child was 3–12 months old (M = 7.40, SD = 2.61). Most of the participants were married or in a spousal relationship (97.7%); 77.6% had an academic degree, and the rest had a high school or post-high school diploma. About a third (34%) reported a deterioration in their economic status following the outbreak of COVID-19, and the rest (66%) reported no significant change in economic status. A little over a half (55.9%) defined their income as average, 31.5% as above average and 12.5% as below average; 59.6% defined their health status as very good, 34.8% as good and the rest as poor. No differences were found between mothers and fathers on these variables, except that fathers were slightly older than mothers (M = 32.08, SD = 4.19, M = 31.22, SD = 2.15, respectively), t(605) = 2.15, P = 0.03.

4.2 | Differences between mothers and fathers

The means and standard deviations of the study variables for mothers and fathers, along with the results of the t tests, appear in Table 1. As can be seen from the table, fathers reported significantly higher avoidant attachment than mothers, while mothers reported significantly higher perception of infant’s warmth, lower perception of infant’s invasiveness and greater intolerance of uncertainty and presence of meaning in life than fathers. In addition, mothers displayed significantly more COVID-19-related anxieties, reporting greater anxiety over being infected and the infant’s health than fathers.

4.3 | Associations between background and personal variables and parents’ perception of the infant

The results of the Pearson correlations between the background variables, personal resources and COVID-19-related anxieties, on the one hand, and the outcome variables, on the other, for the sample as a whole are presented in Table 2. As Table 2 shows, younger age, lower level of education, better physical health, older infant’s age, lower attachment anxiety, higher presence of meaning in life, higher fear of infection, higher concern for infant health and higher economic anxiety were all related to a greater perception of the infant’s warmth. Higher level of education, higher economic status, poorer physical health, higher attachment anxiety, less presence of meaning in life and
more intolerance of uncertainty were related to a higher perception of the infant’s invasiveness.

### 4.4 Contribution of the independent variables to parents’ perception of the infant

The regression analysis for warmth revealed that the independent variables explained 27.8% of the variance in this outcome. The results are presented in Table 3.

As can be seen from Table 3, the parent’s background characteristics in Step 1 contributed a significant 17.3% to the explained variance, with being a woman, younger age, lower education, better physical health and older infant’s age contributing significantly to higher warmth. Attachment anxiety and presence of meaning in life in Step 2 added a significant 5.8% to the explained variance, so that the less the attachment anxiety and the higher the presence of meaning in life, the higher the perception of warmth. The COVID-19-related anxieties in Step 3 made a significant contribution of 1.7% to the explained variance, so that the more anxious the parents were about the infant’s health, the higher their perception of warmth. Finally, the interactions between gender, on the one hand, and personal resources and COVID-19-related anxieties, on the other, entered in Step 4, added a further 3% to the explained variance, with only the interaction between gender and anxious attachment associated with higher warmth. Analysis of the source of the interaction (Hayes, 2017), presented in Figure 1, revealed a significant negative association between anxious attachment and infant’s perceived warmth among fathers ($b = -0.22$, $P < 0.001$). This association was not significant among mothers ($b = -0.01$, $P = 0.67$). In other words, only among fathers was higher anxious attachment associated with a lower perception of infant’s warmth.

The regression analysis for invasiveness (Table 3) revealed that the independent variables explained 19.5% of the variance. The background characteristics in Step 1 contributed 5.8% to the explained variance, with being a father, higher level of education, higher economic status and poorer physical health, contributing significantly to higher perceived invasiveness. Personal resources in Step 2 contributed a further 10.2% to the explained variance, showing that higher anxious attachment, less presence of meaning in life and more intolerance of uncertainty were associated with a higher perception of the infant’s invasiveness. The contribution of COVID-19-related anxieties in Step 3 was nonsignificant (less than 1%). Finally, the interactions between gender on the one hand and personal resources and COVID-19-related anxieties, on the other, entered in Step 4, made a significant contribution, adding 3.4% to the explained variance, with
the interactions between gender and intolerance of uncertainty and between gender and concern for infant's health associated with higher invasiveness. Analysis of the source of the interactions (Hayes, 2017) is presented in Figures 2 and 3. As the figures show, the positive association between intolerance of uncertainty and invasiveness was higher among fathers ($b = 0.34, P < 0.001$) than among mothers ($b = 0.11, P < 0.05$), and a significant negative association between concern for infant's health and invasiveness was found among fathers ($b = -0.13, P < 0.01$) but not among mothers ($b = 0.03, P = 0.15$).

Finally, the results of the mediation analyses, presented in Table 4, reveal that the presence of meaning fully mediated the relationship between fear of infection and economic anxiety and warmth and partially mediated the relationship between concern for infant's health and warmth. In other words, COVID-19-related anxieties were
associated with a greater sense of presence of meaning in life, which, in turn, was associated with a higher perception of the infant’s warmth. Furthermore, presence of meaning in life fully mediated the relationship between fear of infection and concern for infant health and invasiveness and partially mediated the relationship between economic anxiety and invasiveness. That is, COVID-19-related anxieties were associated with a greater presence of meaning in life, which, in turn, was associated with a lower perception of the infant’s invasiveness. In other words, higher fear of infection and economic anxiety were associated with more intolerance of uncertainty, which, in turn, was associated with a higher perception of the infant’s invasiveness.

5 | DISCUSSION

This study sought to gain deeper understanding of the implications of the COVID-19 pandemic for individuals in the transition to parenthood, examining the contribution of parents’ sociodemographic characteristics, personal resources and COVID-19-related anxieties to their perception of the infant as being characterized by warmth or invasiveness. Importantly, the study was conducted in the midst of the crisis and reveals the crucial role of risk and resilience factors for new parents’ coping in such times.

The results reveal that fathers perceived their infants as expressing more invasiveness than mothers while mothers perceived them as expressing more warmth. To the best of our knowledge, these differences have not been found by any previous study. The explanation may lie in the extreme and uncharacteristic circumstances of the pandemic. It may be assumed that some of the mothers who participated in the study were still on maternity leave (which although officially is of 14 weeks of paid leave, some mothers in Israel stay at home with their babies for a longer period of up to 12 months) or had just recently returned to work and therefore had more experience of intense infant care. On the other hand, the fathers, who were now forced to remain at home with the infant because of the lockdown, had a greater sense of dissonance in respect to infant care.

The results also highlight the contribution of personal resources to parents’ perception of their infant in stressful times. First, as predicted, parents high in anxious attachment perceived their infants as expressing towards them less warmth and more invasiveness. On the other hand, contrary to our hypothesis, no significant associations were found between avoidant attachment and parents’ perceptions. These findings are consistent with the contention that people with high anxious attachment are less satisfied with their relationships than those low on this characteristic. Furthermore, unlike individuals high on avoidant attachment, their mental state is strongly influenced by their interpersonal relationships and their expectations from them (Mikulincer & Shaver, 2016). This may also apply to the parent–child relationship, thereby affecting the parent’s perception of their infant. Support for this explanation can be found in a study that examined the relationship between mothers’ attachment style and feelings of jealousy and closeness to their infants. It was found that mothers higher on anxious attachment were more jealous than non-anxious mothers and that more jealous mothers in general felt less close to their infants (Wilson et al., 2007). Moreover, attachment anxiety may lead people to focus on their own distress and needs, which may draw mental resources away from attending to others’ needs (Mikulincer & Shaver, 2019). Accordingly, in times of stress, such as dealing with the difficulties of the transition to parenthood during the COVID-19 pandemic, parents higher on anxious attachment may focus on their own needs and experience the infant’s needs as disruptive and invasive.

In addition, as predicted, the more meaningful the parents perceived their lives, the more they perceived the infant as expressing more warmth and less invasiveness towards them. This is in line with previous findings indicating the positive implications of presence meaning in life on parenting (Nelson et al., 2014; Taubman-Ben-Ari, 2014) and suggests that even in the face of the stress that characterizes the transition to parenting in general, and particularly in the shadow of COVID-19, parents’ sense of value and meaning may help them to develop a more positive relationship with the infant. This
Interpretation should be taken with caution, however, as this is a correlational study, and thus, the relationship between these variables may be such that a more positive perception of the infant may help parents achieve a higher sense of meaning in life.

In contrast, the more the parents were intolerant of uncertainty, the more they perceived their infant as expressing invasiveness towards them. This is consistent with the findings of previous studies showing an association between intolerance of uncertainty and the tendency for negative thoughts and perceptions in times of stress (Greco & Roger, 2003). To the best of our knowledge, however, this is the first study to indicate the negative impact of intolerance of uncertainty on the parent's perception of the infant.

In respect to the effect of COVID-19-related anxieties, investigated exploratively, it was found that concern for the infant's health contributed to a greater perception of warmth. Given the current situation, this concern may be natural and logical, rather than an expression of excessive anxiety or stress. Consequently, it may have caused the parent to be more invested in caregiving and have therefore led to a more positive perception of the infant.

That being said, the effect of COVID-19-related anxieties appears to be complex. In the two models of mediation we examined, we found that a high level of these anxieties was associated with a higher level of both meaning in life and intolerance of uncertainty. While meaning in life, in turn, was positively associated with warmth and negatively with invasiveness, intolerance of uncertainty was positively associated with invasiveness. These findings provide a crucial insight into the implications of the pandemic for new parents. On the one hand, COVID-19-related anxieties may lead to a stronger sense of meaning in life, which may be expressed in greater acknowledgement of the value of life and the important people in it, and, on the other hand, the same concerns may cause individuals to feel confused and overwhelmed (Van Bavel et al., 2020). As the findings of the current study demonstrate, these different emotional responses impact the parent's perception of the infant, which may, for better or worse, have a critical effect on the parent–child relationship.

As to the moderating role of gender, the interactions revealed that attachment anxiety was associated with less warmth only among fathers and that intolerance of uncertainty was more strongly related to the perception of invasiveness among fathers than among mothers. This might be explained by previous studies showing that while mothers maintained a positive sense of competence in transitioning to motherhood, even in the face of a variety of difficulties, fathers experiencing similar difficulties tended to be adversely affected by nonadaptive personal resources, such as anxious attachment style, and to have less of a sense of parental competence (Spielman & Taubman – Ben-Ari, 2009).

Finally, higher concern for infant’s health was related to lower perceived invasiveness only among fathers. It is possible that the

| Dependent variable | Independent variable | Mediator | Independent to mediator | Mediator to dependent | Indirect effect | Direct effect |
|--------------------|----------------------|----------|-------------------------|-----------------------|----------------|--------------|
| Warmth             | Presence of meaning in life | 0.13*** (0.03) | 0.15*** (0.02) | 0.02* |
| Fear of infection  | Intolerance of uncertainty | 0.09** (0.02) | 0.04 (0.03) | 0.003 | 0.04 (0.02) |
| Concern for infant's health | Intolerance of uncertainty | 0.10** (0.03) | 0.15*** (0.02) | 0.01* |
| Economic anxiety   | Intolerance of uncertainty | 0.04 (0.02) | 0.03 (0.03) | 0.001 | 0.08*** (0.01) |
| Invasiveness       | Presence of meaning in life | 0.13*** (0.03) | -0.11*** (0.02) | -0.01* |
| Fear of infection  | Intolerance of uncertainty | 0.09** (0.02) | 0.19*** (0.03) | 0.01* | -0.02 (0.02) |
| Concern for infant's health | Intolerance of uncertainty | 0.10** (0.03) | -0.11*** (0.02) | -0.01* |
| Economic anxiety   | Intolerance of uncertainty | 0.04 (0.02) | 0.19*** (0.03) | 0.008 | -0.02 (0.02) |

*P < 0.05. **P < 0.01. ***P < 0.001.
intense involvement with the infant imposed by the lockdown led fathers to a closer bond with the child, especially at this time.

In addition to the main findings discussed above, this study also found that younger age and lower education contributed to a higher perception of warmth. This is consistent with a previous study, showing that first-time mothers who were younger and less educated reported more positive bonding with their infant (Kinsey et al., 2014). In addition, higher education and higher economic status contributed to a higher perception of invasiveness. Similar findings have also been found in previous studies (Kinsey et al., 2014; Reck et al., 2006), which tend to interpret them as a sign of more honest and less socially desirable responses among older women with more education and a better financial status, an openness that may have caused them to be more willing to share their negative perceptions of the infant.

In addition, better physical health was found to contribute to a higher perception of warmth and lower perception of invasiveness. It is possible that healthy parents are more emotionally available and as a result are less frustrated from the difficulties involved in infant care and thus have a more positive perception of the child. In contrast, parents with poorer health may experience more distress, which may negatively impact their connection with the child (Silver et al., 2003). This situation may be aggravated by the current situation, when people in poorer health are at increased risk of infection, and therefore may be even more tense and less patient than usual.

Finally, older infant age contributed to a greater perception of warmth. This may be attributed to the fact that as infants grow older, they are better able to communicate their needs, reducing the parent’s frustration at not understanding what the baby wants (Porter & Hsu, 2003). At the same time, the parent becomes more competent in performing parental tasks. Both these developments may lead to a more positive perception of the infant.

5.1 Study limitations

Certain limitations of the study should be noted. First, this study examined parents at one point in time during the COVID-19 pandemic, so that the ability to draw conclusions about the effects of the crisis as a whole and over time is limited. Further studies are needed to examine the parental and psychological implications of the situation for people transitioning to parenthood. In addition, in accordance with the research model, this study emphasized the contribution of the parent’s characteristics and period to the parent’s perceptions of the infant. However, we have not examined the contribution of the infant’s characteristics, such as infant temperament or infant’s developmental delay or health issues. Such characteristics may have an important impact on outcomes, in general and specifically in the shadow of the pandemic, and should be referred to in future studies.

Furthermore, the sample cannot be considered representative for several reasons. First, recruitment of participants through social networks constituted a limitation on the ability to recruit participants from populations that are less exposed to the media in Israel, such as more religious and conservative populations. Second, parents reported on their economic status with respect to their definition of average income, without providing clear information about what the average income in Israel is, which may lead to biases regarding this data. Third, the sample is characterized by parents who were mostly married, healthy and highly educated and lack equal representation for populations of parents who do not have these characteristics, such as single parents or parents with economic or health disadvantages. In addition, in the question about the gender of the participants, we did not allow for non-binary gender identification. We also did not ask whether the participants are in a heterosexual relationship or in a same-sex relationship. Future studies might attempt to recruit parents from a variety of populations and shed further light on the diverse personal and marital variables that may be related to parenting during a crisis.

5.2 Contribution and implications of the study

This study makes an important contribution to the literature on parents’ perception of their child shortly after the transition to parenthood, particularly in times of crisis and stress. Not only does it reveal the crucial role of risk and resilience factors but it also shows that fathers may be at higher risk of negative perceptions of the infant.

Since as far as we know, this is the first study conducted about parents’ perceptions of the infant during COVID-19, further studies are needed. These studies should examine additional personal and circumstantial aspects that may contribute to these outcomes, such as the parents’ coping with chronic illness during the pandemic. They should also deepen the understanding about men’s experiences in transitioning to fatherhood in a time of crisis and how the pandemic and quarantine contributed to these outcomes at additional points in time during the current crisis. Such studies should also examine the implications of the parents’ perceptions of the infant during the COVID-19, both on the development of the parent-infant relationship and on the infant’s psychosocial development. Finally, additional studies should compare the parents’ perceptions of the infant during the COVID-19 to these results in future times, when the pandemic threat will finally diminish.

The insights of the current study indicate the importance of developing professional interventions for new parents in challenging times. These interventions can include fact-to-face and virtual sessions, depending on what is possible given the circumstances, to enable both mothers and fathers to share their feelings and receive information and support regarding the concerns, worries and difficulties aroused by the transition to parenthood in the shadow of a global crisis.

Such interventions should allow on the one hand a non-judgmental place for the sharing of complex emotions such as dealing with uncertainty, COVID-19-related anxieties and negative perceptions of the infant, and on the other hand should attempt to strengthen and encourage parents’ sense of meaning in life, which may help them cope with their new role and enhance their positive perception of the infant, even in a crisis situation.
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How to cite this article: Chasson, M., Ben-Yaakov, O., & Taubman – Ben-Ari, O. (2022). Parenthood in the shadow of COVID-19: The contribution of gender, personal resources and anxiety to first time parents’ perceptions of the infant. Child & Family Social Work, 27(1), 79–89. https://doi.org/10.1111/cfs.12883