

# **Postpartum Fatigue and Desire for Future Children**

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Master's Thesis in Psychology

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# POSTPARTUM FATIGUE AND DESIRE FOR FUTURE CHILDREN

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# POSTPARTUM FATIGUE AND DESIRE FOR FUTURE CHILDREN

## ÅBO AKADEMI UNIVERSITY – FACULTY OF ARTS, PSYCHOLOGY AND THEOLOGY

<b>Subject:</b> Psychology	
<b>Author:</b> Louise Hellström	
<b>Titel:</b> Postpartum Fatigue and Desire for Future Children	
<b>Supervisor:</b> Annika Gunst	<b>Supervisor:</b> Jan Antfolk
<b>Abstract:</b> <p>According to the theory of mother-offspring conflict, a child benefits from more maternal investment in itself compared to its siblings. A way in which the child can increase maternal investment in itself is by frequently waking the mother at night. Frequent night waking might tire the mother, making her prone to developing postpartum depression, and thereby decreasing her desire for future children, leading to more investment in the already existing offspring. It is yet unknown if frequent night waking, and the symptoms associated with it, can alter the mother's cognitions about having future children. Based on this, we examined the following associations: (i) maternal sleep disturbance being negatively associated with desire for future children, (ii) postpartum depression mediating the relationship between maternal sleep disturbance and desire for future children, and (iii) social support moderating the relationship between maternal sleep disturbance and desire for future children. We also explored the role of social support since it has been noted as a protective factor from developing postpartum depression. The sample consisted of 460 Finnish mothers with only one biological child under the age of one. We conducted four structural regressions, one for desire for future children, one for how soon respondents desired their second child, and two similar regressions as the previous, but with the sample divided into groups of high and low social support. The main finding was that postpartum depression was negatively associated with desire for future children (<math>\beta = -.45</math>). There were no significant associations between postpartum depression, maternal sleep disturbance and how soon after the first child respondents desired their second child. It is possible that the mechanism of infant night waking works, but not in consciously altering the mother's cognitions about future children.</p>	
<b>Keywords:</b> desire for future children, mother-offspring conflict, infant night waking, maternal sleep disturbance, postpartum depression	
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<p><b>Abstrakt:</b> Enligt teorin som på engelska kallas <i>mother-offspring conflict</i> gynnas ett barn av jämförelsevis mer moderlig investering i sig själv än i sina syskon. Ett möjligt sätt för barnet att öka moderns investering i sig själv är genom att väcka modern upprepade gånger på natten. Att vakna ofta kan trötta ut modern, göra henne benägen att utveckla postpartumdepression, och därmed minska hennes önskan om barn i framtiden, vilket leder till mer investering i den redan existerande avkomman. Det är fortfarande okänt om upprepat nattvaknande, och de tillhörande symtomen, kan förändra moderns kognitioner om barn i framtiden. Baserat på detta undersökte vi följande samband: (i) moderns sömnstörningar är negativt associerat med önskan om barn i framtiden, (ii) postpartumdepression medierar associationen mellan moderns sömnstörningar och önskan om barn i framtiden, och (iii) socialt stöd modererar associationen mellan moderns sömnstörningar och önskan om barn i framtiden. Vi undersökte också socialt stöd eftersom det har noterats som en skyddande faktor från att utveckla postpartumdepression. Samplet bestod av 460 finska mödrar med ett biologiskt barn under ett år. Vi genomförde fyra strukturella regressioner, en för önskan om barn i framtiden, en för hur snabbt deltagarna önskade sitt andra barn, och två likadana regressioner som de tidigare nämnda, men med samplet indelat i grupper av högt och lågt socialt stöd. Det huvudsakliga fyndet var den negativa associationen mellan postpartumdepression och önskan om barn i framtiden (<math>\beta = -.45</math>). Det fanns inga signifikanta associationer mellan postpartumdepression, moderns sömnstörningar och hur snabbt efter det första barnet deltagarna önskade sitt andra barn. Det är möjligt att mekanismen bakom spädbarns nattvaknande fungerar, men utan att aktivt förändra moderns kognitioner om barn i framtiden.</p>	
<p><b>Nyckelord:</b> <i>mother-offspring conflict</i>, önskan om barn i framtiden, spädbarns nattvaknande, moderns sömnstörning, postpartumdepression</p>	
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## POSTPARTUM FATIGUE AND DESIRE FOR FUTURE CHILDREN

### **Postpartum Fatigue and Desire for Future Children**

Mother-offspring conflict is the evolutionary conflict between a mother and an offspring over the limited maternal investment in an offspring (i.e., any costly investment made by the parent to improve the offspring's chances of survival and reproduction). The mother and the child have different fitness optima concerning how much parental investment should be provided, and how long it should last (Trivers, 1974). This is because a mother shares 50% of her own genes with every offspring, while an offspring has 100% of its own genes, and only shares 50% of its genes with every sibling. Therefore, it is evolutionary beneficial for the mother to invest equally between her present (and possible future) offspring, to increase the likelihood of their survival. The offspring's fitness, however, benefits from more investment in itself than in its siblings, because an allele copy in the offspring is only half as likely to be passed on by a sibling. There are different theories on how a child's behavior could have been shaped by natural selection to increase its mother's investment in itself at the expense of her investment in future children.

### **Infant Night Waking to Extend the Interbirth Interval**

A child might benefit from longer interbirth intervals (i.e., the time between the births of two maternal siblings), as longer interbirth intervals increase maternal investment in the existing offspring (Blurton Jones & da Costa, 1987). In contrast, a mother benefits from shorter interbirth intervals, this due to women's relatively short fertile window (Blurton Jones & da Costa, 1987; Haig, 2014). With shorter interbirth intervals, a mother can have more children during her lifetime.

A possible way for a child to increase the interbirth interval, and thereby maternal investment in itself, is by frequently waking the mother at night. Frequent night waking can lead to maternal sleep disturbance, tiring the mother and possibly making her less likely to reproduce soon after the birth of the previous child (Gunst, Sjöström, et al. 2021). Infant night waking would otherwise be evolutionary unbeneficial, because a tired mother would not be good for the child's fitness. Also, by frequently waking the mother at night to suckle, the return of ovulation is delayed, which reduces the chances of the mother to become pregnant (Blurton Jones & da Costa, 1987; Haig, 2014). By delaying the return of ovulation, the interbirth interval also increases.

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Infant night waking might be a strategy to extend the interbirth interval, via the mother's fatigue and sleep disturbance, caused by the frequent night waking (Gunst, Sundén, et al. 2021; Gunst, Sjöström, et al. 2021). A tired and exhausted mother with sleep disturbance might want to postpone having additional children, this due to her lack of energy. It is yet unknown how conscious this process is, if mothers actively reflect on postponing future children, or if it happens unconsciously.

Both mental and physical health tend to be negatively affected in mothers to children who frequently wake during the night (Bayer et al., 2007). A study by Giallo et al. (2011) found that having a child with sleeping problems puts the parent at risk of high levels of fatigue, with a potential impact on their daily functioning as well as parenting abilities. Giallo et al. (2011) also found links between fatigue and postpartum depression, fatigue being a possible precipitating factor for developing postpartum depression. Children with increased night waking reportedly have mothers with more depressive symptoms, as well as mothers with more feelings of fatigue and sleepiness (Meltzer & Mindell, 2007).

Previous studies (Gunst, Sjöström, et al. 2021) have found that postpartum depression seems to be associated with longer interbirth intervals. Postpartum depression could mediate the association between maternal sleep disturbance and desire for future children. Mothers with postpartum depression might want to postpone having additional children until later when the feelings of depression might have eased. Mothers with postpartum depression might also not desire additional children, compared to mothers without postpartum depression.

It is therefore possible that infant night waking works in extending the interbirth interval both by prolonging the return of ovulation, but also by tiring the mother and making her prone to develop postpartum depression.

### **The Role of Maternal Desire for Future Children**

Little is known about maternal desire for future children. Mothers might desire a certain age gap between children before having their first child, but then desire a larger age gap after having their first child. It is yet unknown if mothers' own cognitions about having future children are involved in the mechanism of infant night waking possibly extending the interbirth interval. It is possible that infant night waking possibly extends the interbirth interval without the mother reflecting over it. However, it is also possible that tired mothers cognitively recognize their state of fatigue and exhaustion, and actively plan on postponing additional children. If that

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would be the case, infant night waking would alter mothers' cognitions about having future children. Maternal fatigue could be associated with less desire for future children.

### **Social Support and Desire for Future Children**

A mother suffering from sleep disturbance can benefit greatly from social support. Different types of social support, from different people in the mother's life, can relieve the mother's fatigue and exhaustion. Practical support, financial support and emotional support can all be of great help to a mother.

Lack of social support has also been noted as a risk factor for developing postpartum depression. O'hara and Swain (1996) found a small but significant predictive relationship between low social support and postpartum depression. O'hara and Swain (1996) also found that support from the father during the postpartum period was negatively associated with the severity of depressive symptoms. A study by Baker et al. (1997) found a relationship between mental health, particularly symptoms of depression, and perceived amount of social support. The mothers' amount of received social support seemed to worsen as a consequence of motherhood, but when the amount of social support increased postnatally, the symptoms of depression decreased.

A mother might be more likely to desire future children, and desire them sooner, if she has an adequate amount of social support, reducing the symptoms associated with the sleep disturbance. Social support might therefore be a moderator in the association between maternal sleep disturbance and desire for future children, as social support relieves the mother's burden of taking care of the child.

### **The Current Study**

Based on the theory that infant night waking possibly extends the interbirth interval by tiring the mother, we here investigated whether maternal sleep disturbance is associated with desire for future children. We also investigated whether the relationship between maternal sleep disturbance and desire for future children is mediated by symptoms of postpartum depression and moderated by the amount of social support. We tested the following predictions:

- i. Maternal sleep disturbance is negatively associated with desire for future children.
- ii. The relationship between maternal sleep disturbance and desire for future children is mediated by symptoms of postpartum depression, so that symptoms of postpartum



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depression will explain a negative relationship between maternal sleep disturbance and desire for future children.

- iii. The relationship between maternal sleep disturbance and desire for future children is moderated by social support, so that mothers with low (vs. high) social support will report a stronger negative association between maternal sleep disturbance and desire for future children.

In line with previous literature on the topic of maternal sleep disturbance, we also expected that infant night waking would be positively associated with maternal sleep disturbance, and that maternal sleep disturbance would be positively associated with symptoms of postpartum depression.

### **Method**

#### **Ethical Statement**

The current study obtained ethical permission from the Ethical Committee of the Departments of Psychology and Logopedics at Åbo Akademi University. The respondents were informed about taking part in a study regarding their own and their children's sleep and well-being postpartum, and they gave their informed consent before taking part in the study.

#### **Participants**

The survey invitation reached a total of 824 mothers, of which 575 began filling out the survey. The completion rate of the survey was 78%. Some respondents failed to complete all questions and were therefore excluded. One respondent also reported in the feedback section of the survey that she had one 10-year-old child from before and was thus excluded. After excluding respondents, the total sample size landed on 460 respondents. All responding mothers were at least 18 years old and had only one biological child under the age of one year.

#### **Procedure**

The survey was created with Survey Analytics, a secure online platform. The survey was available in both Finnish and Swedish. The collection of data lasted for 26 days, from the 18<sup>th</sup> of November to the 14<sup>th</sup> of December 2021. The survey was disseminated through Facebook, especially in different Facebook groups for parents of small children in Finland. Respondents were informed that participation was voluntary, and that termination was possible, without giving a reason for it, at any time during the survey. The informed consent also included

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information about data being reported at group level, so individual results could not be connected with the particular respondent.

The respondents first answered questions regarding background information. The respondents were asked to report their age, the gender of their child, if the child's birth was upsetting or traumatic, and if so why. The respondents answered if their child had been healthy since birth, and if not what the child had suffered from. The respondents answered if the child had another caregiver and the gender of the other caregiver. The respondents were asked to report how many children they wanted to have before having any children at all, and what age difference they would have liked to have between their children back then, if they were to have more than one child in the future.

In the following section of the survey, the respondents were asked to rate their infant's night waking during the past four weeks, followed by questions measuring the respondents' sleep disturbance during the past four weeks. The questions measuring sleep disturbance were followed by items measuring the respondents' level of possible postpartum depression symptoms. After that, respondents answered questions about their perceived amount of social support, and lastly two questions about whether they wanted to have more children in the future and how soon they would like to have the second child, if they were to have more children in the future. After completing the survey, the respondents could take part in a lottery of three gift cards of 50€ to an online chain store by filling out their email in a separate questionnaire.

### **Measures**

All items described below were included in the survey and used in the statistical analysis. All items can be found in Appendix.

#### ***Infant Night Waking***

We used three items previously used in Gunst, Sjöström et al. (2021) to measure the night waking of infants. The items were rated on a 5-point Likert scale (1–5), with higher scores indicating a higher level of infant night waking during the past four weeks.

#### ***Maternal Sleep Disturbance***

To evaluate the sleep disturbance of mothers during the past four weeks, we used the Insomnia Severity Index (ISI; Bastien, Vallières & Morin, 2001). ISI consists of seven items designed to assess the degree of sleeping difficulties, affecting both nighttime and daytime. Each item is rated on a 5-point Likert Scale, with anchors of 0 = no problem; 4 = very severe problem.

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Total scores range from 0 to 28 points, with 0–7 indicating no insomnia, 8–14 subthreshold insomnia, 15–21 clinical, moderate insomnia and 22–28 clinical severe insomnia. (Bastien, Vallières & Morin, 2001). We also added one self-made question, regarding the mother's average slept hours per night during the past four weeks. The question was coded so that a low number of slept hours indicated a poor quality of sleep.

### ***Symptoms of Postpartum Depression***

To assess the degree of postpartum depression symptoms during the past four weeks, we used the Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987). The scale consists of 10 items, but only seven items (1,2,6–10) were used in this study since they focus merely on symptoms of depression, while the excluded items measure anxiety (Gollan et al., 2017). Every item is rated on a 4-point Likert Scale (0–3), with the total score ranging from 0 to 21. Higher total scores indicate more depressive symptoms, with eight points being a cut-off for depression (Gollan et al., 2017).

### ***Desire for Future Children***

We designed and included two self-made questions to measure the desire for future children. The first question measured if the respondent wanted future children or not, and the second questions measured how soon after the first child (in years and in months) they wished to have their second child, if they wanted to have additional children.

### ***Social Support***

We measured social support with nine self-made questions. The questions measured the self-perceived amount of emotional, practical, and financial support from the child's father, from the child's grandparents and from other people in the mother's life. The items were rated on a 5-point Likert scale (1–5), with anchors of 1 = no support at all; 5 = a lot of support. A higher total score indicated a higher amount of perceived social support. The sum score of the items was used to divide respondents into groups of high and low social support.

### ***Statistical Analysis***

We conducted the analyses using the statistical software *R* (R Core Team, 2021). The *lavaan* package (Rosseel, 2019) was used for the structural equation modelling and the *corrplot* package (Wei & Simko, 2017) to visualize the correlations between different items.

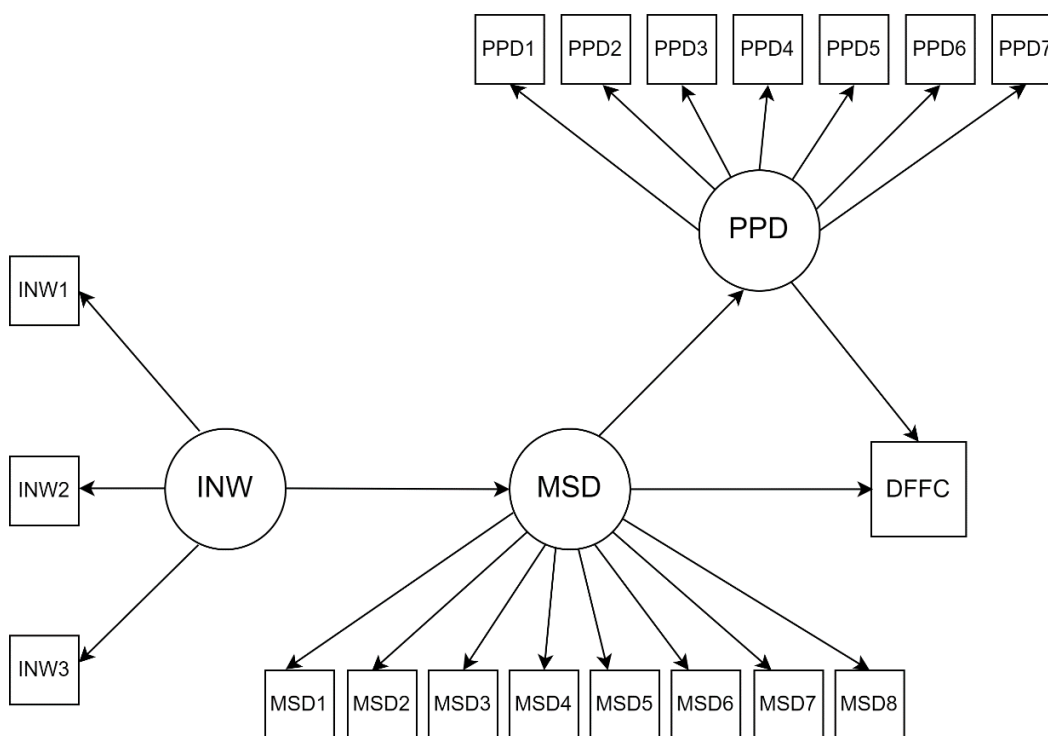
First, we calculated descriptive statistics for the data, then we conducted Spearman correlations because most variables were ordinal. After that, we made measurement models of

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infant night waking, maternal sleep disturbance, and postpartum depression symptoms. For both the measurement model and for the structural regression models we used the estimator Diagonally Weighted Least Squares (DWLS) since our data was ordinal. The structural regressions are visualized in Figure 1. The structural equation models were made using latent variables of the survey measures. Infant night waking, maternal sleep disturbance, and postpartum depression were latent variables, while desire for future children was a separate indicator. In the first structural regression, desire for future children was regressed on maternal sleep disturbance, and maternal sleep disturbance was regressed on infant night waking. Postpartum depression was included as a mediator between desire for future children and maternal sleep disturbance. In the second structural regression the time desired between the first and the second child was regressed on maternal sleep disturbance, and maternal sleep disturbance was regressed on infant night waking. Postpartum depression was also here included as a mediator between desired time between the first and the second child and maternal sleep disturbance.

For the third and fourth structural regression, we divided the respondents into two subgroups of high and low social support at the median of total social support scores. The median was 29 points, with scores over 29 indicating high social support. The group of low social support consisted of 244 respondents, and the group of high social support consisted of 216 respondents. The third and fourth structural regression were the same as the first and second regressions, but with the respondents divided into subgroups of high and low social support.

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**Figure 1***Simplified Model Visualizing the Structural Regressions*

*Note.* A simplified model of the structural regressions. INW = infant night waking. MSD = maternal sleep disturbance. PPD = postpartum depression symptoms. DFFC = either desire for future children, or the time desired between the first and the second child. PPD consisted of seven items from the Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987). MSD consisted of seven items from Insomnia Severity Index (ISI; Bastien, Vallières & Morin 2001) and one self-made question about average slept hours. INW consisted of three items used in Gunst, Sjöström, et al. (2021). DFFC consisted of two self-made items. All items can be found in Appendix.

**Results****Descriptive Results**

Descriptive statistics of the sample are presented in Table 1.

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**Table 1***Sample Descriptives*

Variable	<i>n</i>	%
Gender of respondent's child		
Girl	212	46.1
Boy	246	53.5
Other	2	0.4
Childbirth experience upsetting or traumatic		
No	350	76.1
Yes	110	23.9
Child health since birth		
Healthy	394	85.7
Unwell	66	14.3
Custody of child		
Single parent	18	3.9
Joint custody with child's father	433	94.1
Joint custody with someone else than child's father	9	2.0
Joint custody with another woman	4	0.9
Joint custody with another man	5	1.1

*Note.* *N* = 460.

The mean age of respondents was 27.8 years ( $SD = 6.70$ ). As shown in Table 1, most respondents did not experience the birth of their first child as traumatic. Those who reported that the birth was traumatic specified that the reason for this was for example rude staff at the hospital, emergency Cesarean section, the lack of epidural, prolonged and painful birth and the child being in the wrong position in the womb. Of the respondents' children, 14.3% had not been healthy since birth. The reported health-related issues were, for example, severe colds, milk allergy as well as other allergies, problems with heart- and kidney functioning, reflux, and colic.

The respondents' average amount of slept hours per night during the last four weeks was 5.13 hours ( $SD = 1.84$ ). Six-point five percent of the respondents had on average slept for one

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hour per night during the last four weeks. Only 1.5% of the respondents had on average slept for 10 hours per night during the last four weeks.

Before having children, 441 (95.9%) respondents desired to have children in the future. The average number of children desired was 2.30 ( $SD = 1.01$ ). The number of children desired before the birth of their first child can be seen in Table 2. Before having children, the average time the respondents wished to have between the births of future children was 28.41 months ( $SD = 9.54$ ).

**Table 2**

*Number of Children Desired Before Birth of First Child*

	Number of children	<i>n</i>	%
0		19	4.1
1		48	10.4
2		228	49.6
3		125	27.2
4		28	6.1
5		6	1.3
6+		6	1.3

*Note.*  $N = 460$ . Most respondents ( $n = 228$ ) wanted to have two children before having any children at all.

After having their first child, 354 (77.0%) respondents desired to have more children in the future, while 106 (23.0%) respondents reported that they did not want more children in the future. After the first child, the time desired between the birth of an additional child was on average 29.74 months ( $SD = 10.71$ ) for those wanting more children in the future.

The total scores from the social support measures showed that the respondents received most social support from the child's father ( $M = 11.98$ ,  $SD = 3.14$ ), compared to the social support they received from grandparents ( $M = 9.57$ ,  $SD = 3.14$ ) and from other people ( $M = 6.91$ ,  $SD = 2.29$ ). The mean for emotional support ( $M = 11.12$ ,  $SD = 2.88$ ) was higher than the means

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for practical ( $M = 9.82$ ,  $SD = 2.67$ ) and financial support ( $M = 7.52$ ,  $SD = 2.33$ ). All results of social support can be found in Table 3.

**Table 3**

*Means for Social Support from the Different Variables*

Measures	<i>M</i>	<i>SD</i>
Total emotional support	11.12	2.88
Emotional support from father	4.00	1.20
Emotional support from grandparents	3.72	1.28
Emotional support from other people	3.40	1.20
Total practical support	9.82	2.67
Practical support from father	4.10	1.15
Practical support from grandparents	3.45	1.35
Practical support from other people	2.27	1.21
Total financial support	7.52	2.33
Financial support from father	3.89	1.37
Financial support from grandparents	2.40	1.30
Financial support from other people	1.23	0.57
Total social support	28.46	6.54
Total support from father	11.98	3.14
Total support from grandparents	9.57	3.14
Total support from other people	6.91	2.29

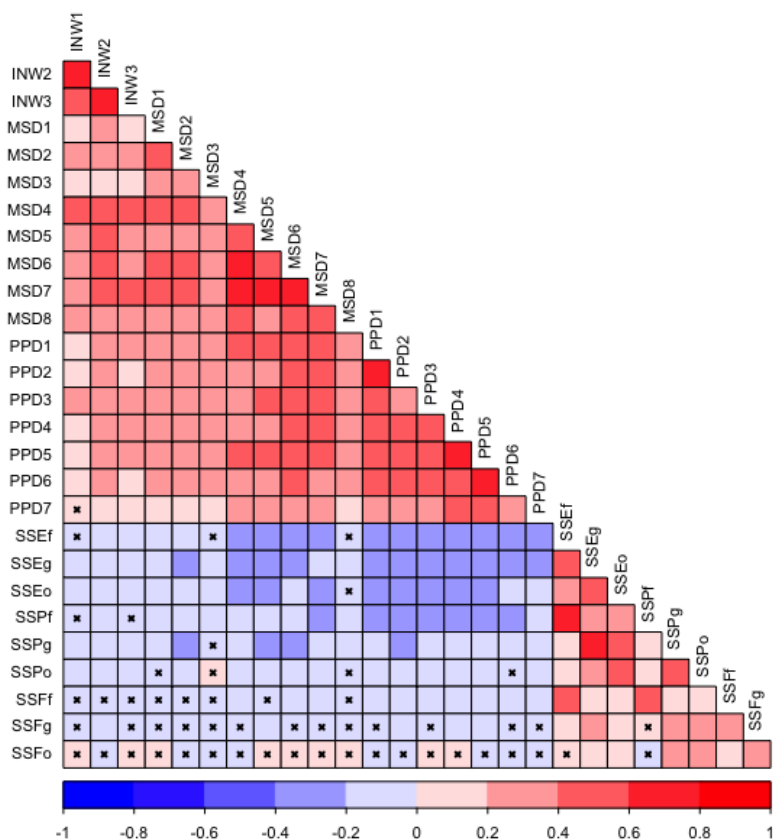
*Note.*  $N = 460$ . Social support was measured with nine self-made questions. Items were rated on a 5-point Likert scale (1 = *no support at all*; 5 = *a lot of support*), with higher scores indicating a higher amount of perceived social support.

**Correlations**

The correlations between the items are visualized in Figure 2, and all items are listed in Appendix.



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**Figure 2***Correlations Between the Items*

*Note.* All correlations marked with x are not significant ( $p > .05$ ). Red indicates a positive correlation while blue indicates a negative correlation. INW = infant night waking, MSD = maternal sleep disturbance, PPD = postpartum depression, SSE = emotional support, SSP = practical support, SSF = financial support, f = from the child's father, g = from the child's grandparents, o = from other people. All items are found in Appendix.

Correlations between items measuring infant night waking and items measuring maternal sleep disturbance were positive and significant. Items measuring infant night waking were positively and significantly correlated with items measuring postpartum depression, except for the positive but insignificant correlation ( $r = .05$ ) between items INW1 (measuring how many times the child woke up during the night) and PPD7 (measuring respondents' thoughts about hurting themselves).

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Items measuring maternal sleep disturbance were positively and significantly correlated with items measuring postpartum depression. Item MSD8 (measuring the respondents average slept hours per night) was significantly positively correlated with all items measuring postpartum depression, as well as with all items measuring infant night waking. However, MSD8 showed a slightly weaker positive correlation ( $r = .12$ ) with item PPD7 compared to the other items MSD8 was correlated with.

Items measuring social support were for the most part negatively correlated with the items measuring infant night waking, maternal sleep disturbance, and postpartum depression. Most of these correlations were significant. All items measuring postpartum depression were significantly negatively correlated with emotional support from the child's father. The items measuring postpartum depression were also significantly negatively correlated with emotional support from the child's grandparents. Most of the items measuring financial support from the child's grandparents and other people were uncorrelated with items measuring infant night waking, items measuring maternal sleep disturbance, and items measuring postpartum depression. Emotional and practical support from the child's father were strongly correlated ( $r = .68$ ). Similarly, emotional and practical support from the child's grandparents were strongly correlated ( $r = .64$ ).

### **Results from the Structural Regression Models**

#### ***Measurement Model***

First, we created a measurement model using the three latent variables infant night waking, maternal sleep disturbance, and postpartum depression. The model showed acceptable fit ( $\chi^2 [116] = 331.258, p < .001, CFI = .971, TLI = .966, RMSEA = .064 [.056, .072], SRMR = .049$ ). Since the measurement model worked well, we continued with the structural regressions.

#### ***Structural Regression Model for Desiring Future Children at all***

Results for all the structural regressions are found in Table 4. We first constructed the regression model for whether the respondents desired any future children at all. The model showed acceptable fit ( $\chi^2 [132] = 351.241, p < .001, CFI = .971, TLI = .967, RMSEA = .060 [.053, .068], SRMR = .050$ ). All other regression paths except the one between maternal sleep disturbance and desire for future children were significant. More infant night waking was associated with more maternal sleep disturbance ( $\beta = .60$ ), more maternal sleep disturbance was associated with more postpartum depression ( $\beta = .73$ ), and postpartum depression was negatively

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associated with desire for future children ( $\beta = -.45$ ). The indirect effect (i.e., the association between maternal sleep disturbance and desire for future children mediated by postpartum depression) was significant ( $\beta = -.33$ ). The total effect (i.e., the effect of maternal sleep disturbance alone, together with the indirect effect) was also significant ( $\beta = -.30$ ).

### ***Structural Regression Model for Desired Time between First and Second Child***

For the second model, we had to collapse some response categories for separate items because they lacked responses. The collapsed items measured postpartum depression and maternal sleep disturbance. Response option 4 was collapsed with response option 3 for items PPD1, PPD2, PPD7, and MSD6 (all items are found in Appendix). The second model, how soon respondents desired a second child, also showed acceptable fit ( $\chi^2 [132] = 325.177, p < .001, CFI = .958, TLI = .952, RMSEA = .065 [.056, .074], SRMR = .060$ ). The positive association between infant night waking and maternal sleep disturbance ( $\beta = .56$ ), and the positive association between maternal sleep disturbance and postpartum depression ( $\beta = .71$ ) were both significant. There were no significant associations between postpartum depression and the time desired between the first and the second child, or between maternal sleep disturbance and the time desired between the first and the second child. Neither the indirect effect (i.e., the association between maternal sleep disturbance and the time desired between the first and the second child mediated by postpartum depression) nor the total effect (i.e., the effect of maternal sleep disturbance alone, together with the indirect effect) were significant.

### ***Structural Regression Models for High and Low Social Support***

The model of desire for future children, assessed separately for the two groups of low and high social support, showed acceptable fit ( $\chi^2 [265] = 466.175, p < .001, CFI = .965, TLI = .960, RMSEA = .058 [.049, .066], SRMR = .064$ ). In the group of low social support, the following associations were significant: the positive association between infant night waking and maternal sleep disturbance ( $\beta = .52$ ), the positive association between maternal sleep disturbance and postpartum depression ( $\beta = .74$ ) and the negative association between postpartum depression and desire for future children ( $\beta = -.50$ ). The association between maternal sleep disturbance and desire for future children was not significant. In the group of high social support, the following associations were significant: the positive association between infant night waking and maternal sleep disturbance ( $\beta = .65$ ), and the positive association between maternal sleep disturbance and postpartum depression ( $\beta = .63$ ). Next, to see if there were significant group differences between

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the estimates, we sequentially constrained the following paths: the path between infant night waking and maternal sleep disturbance, the path between maternal sleep disturbance and postpartum depression, the path between postpartum depression and desire for future children, and the path between maternal sleep disturbance and desire for future children. We found no significant differences after constraining the paths.

The model of time desired between the first and the second child, assessed separately for the two groups of low and high social support, showed acceptable fit ( $\chi^2 [264] = 465.424$ ,  $p < .001$ , CFI = .927, TLI = .916, RMSEA = .067 [.056, .076], SRMR = .073). In the group of low social support, the only significant associations were the positive associations between infant night waking and maternal sleep disturbance ( $\beta = .43$ ), and between maternal sleep disturbance and postpartum depression ( $\beta = .67$ ). The group of high social support showed similar results, the only significant associations were the positive associations between infant night waking and maternal sleep disturbance ( $\beta = .63$ ), and between maternal sleep disturbance and postpartum depression ( $\beta = .63$ ). When constraining the paths as we did in the previous model, none of the estimates showed significant differences between the groups.

**Table 4**

*Results from the Structural Equation Models*

	<i>n</i>			$\beta$	95% CI	<i>SE</i>	<i>z</i>	<i>p</i>
Desire for future children	460	MSD	INW	.60	[.53;.67]	0.04	16.73	<.001
		PPD	MSD	.73	[.67;.79]	0.03	25.88	<.001
		DDFCany	PPD	-.45	[-.65;-.24]	0.11	-4.26	<.001
		DDFCany	MSD	.02	[-.19;.24]	0.11	0.20	.839
Total effect				-.30	[-.43;-.18]	0.07	-4.64	<.001
Indirect effect				-.33	[-.48;-.17]	0.08	-4.11	<.001
How soon future children	351	MSD	INW	.56	[.48;.65]	0.04	12.75	<.001
		PPD	MSD	.71	[.64;.77]	0.03	21.44	<.001
		DDFCtime	PPD	.08	[-.07;.24]	0.08	1.05	.295
		DDFCtime	MSD	-.00	[-.17;.16]	0.08	-0.05	.958
Total effect				.05	[-.05;.17]	0.06	0.97	.333

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Indirect effect				.06	[-.05;.17]	0.06	1.04	.297
Desire for future children, low social support	244	MSD	INW	.52	[.41;.63]	0.06	9.49	<.001
		PPD	MSD	.74	[.67;.81]	0.04	21.34	<.001
		DFFCany	PPD	-.50	[-.75;-.25]	0.13	-3.85	<.001
		DFFCany	MSD	.21	[-.07;.49]	0.14	1.48	.139
Desire for future children, high social support	216	MSD	INW	.65	[.56;.73]	0.05	12.39	<.001
		PPD	MSD	.63	[.54;.72]	0.05	13.14	<.001
		DFFCany	PPD	-.32	[-.59;-.06]	0.14	-2.37	.018
		DFFCany	MSD	-.23	[-.50;.03]	0.14	-1.72	.086
How soon future children, low social support	169	MSD	INW	.43	[.28;.58]	0.08	5.74	<.001
		PPD	MSD	.67	[.56;.77]	0.05	12.75	<.001
		DFFCtime	PPD	-.01	[-.25;.24]	0.13	-0.06	.951
		DFFCtime	MSD	.03	[-.22;.27]	0.13	0.21	.830
How soon future children, high social support	178	MSD	INW	.63	[.53;.74]	0.05	11.72	<.001
		PPD	MSD	.63	[.52;.74]	0.06	11.34	<.001
		DFFCtime	PPD	.16	[.02;.31]	0.07	2.20	.028
		DFFCtime	MSD	.02	[-.15;.18]	0.08	0.18	.856

*Note.* MSD = maternal sleep disturbance. INW = infant night waking. PPD = postpartum depression. DFFCany = desire for future children. DFFCtime = time desired between the first and the second child. DFFCany (DFFCtime in the second and fourth regressions) was regressed on MSD, MSD was regressed on INW, and PPD was included as a mediator between DFFCany (DFFCtime in the second and fourth regressions) and MSD. The sample was divided into subgroups of high and low social support for the third and fourth models.

### Discussion

Based on the theory of infant night possibly extending the interbirth interval by tiring the mother, we tested the following predictions: (i) maternal sleep disturbance being negatively associated with desire for future children, (ii) the negative relationship between maternal sleep

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disturbance and desire for future children being mediated by symptoms of postpartum depression and (iii) the negative relationship between maternal sleep disturbance and desire for future children being moderated by social support, so that mothers with low (vs. high) social support would report a stronger negative association between maternal sleep disturbance and desire for future children. Further, we expected a positive association between infant night waking and maternal sleep disturbance, and a positive association between maternal sleep disturbance and symptoms of postpartum depression.

### **Sample Descriptives**

The average amount of sleep per night for our respondents was slightly more than 5 hours, which is less than the recommended amount of sleep per night, (i.e., 7–9 hours; Partonen, 2021), indicating the possibility of sleep disturbance and the symptoms associated with it.

The average number of desired children for our respondents was 2.30, which is in line with the number obtained in another Finnish study, where 2.27 was the average desired number of children for Finnish women (Berg, 2018). It seems as if the desired number of children is somewhat higher than the actual number of children women give birth to: in 2018 Finnish women desired 2.27 children in general, while the total fertility rate for Finnish women in 2018 was on average 1.41 children (Tilastokeskus, 2019).

The respondents received most support from the child's father, which is expected since the father is most likely more present in the child's and the mother's life compared to grandparents and other people. The respondents reported receiving most emotional support, then practical support and lastly financial support. Postpartum depression was also negatively correlated with emotional support from both the child's father and the child's grandparents. Emotional and practical support from the child's father were strongly correlated, as were emotional and practical support from the child's grandparents, which seems logical since emotional and practical support can be closely related. Emotional and practical support can be given by, for example, spending time with the mother and the child, watching the child whilst listening and empathizing with the mother.

### **Infant Night Waking, Maternal Sleep, and Postpartum Depression**

We found that infant night waking was positively correlated with maternal sleep disturbance just as we expected. We also expected that maternal sleep disturbance would be positively correlated with postpartum depression, which was true for our sample. Infant night

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waking was also positively correlated with postpartum depression. This is in line with results from previous studies, that infant night waking might tire the mother, and a tired mother might be more prone to develop postpartum depression (Meltzer & Mindell, 2007; Giallo et al., 2011). However, our data was cross-sectional, which does not clarify causality, and it is therefore possible that infant night waking develops as a consequence of maternal depressive symptoms. Ynstrom et al. (2017) found that maternal symptoms of anxiety and depression, in mothers with two or more children, influence children's quality of sleep.

### **Maternal Sleep Disturbance and Desire for Future Children**

We found no association between maternal sleep disturbance and the desire for future children, and no association between maternal sleep disturbance and how soon the respondents desired their second child. This result was surprising and not in line with our hypothesis. A possible explanation might be that desire for future children is stable even if the mother suffers from disturbed sleep. A mother might still desire the same number of children as she did before having the first child.

### ***Postpartum Depression and Desire for Future Children***

As expected, we found that symptoms of postpartum depression were negatively associated with desire for future children. Postpartum depression was, however, not associated with how soon respondents desired their second child. This supports the idea that a mother suffering from postpartum depression is less likely to desire additional children due to her level of postpartum exhaustion.

### ***Social Support and Desire for Future Children***

We found no association between the amount of received social support and the desire for future children. When analyzing the differences between the groups of high and low social support, no differences were found in desire for future children, or in how soon the respondents desired their second child. These results were also surprising and not in line with our hypotheses. A possible explanation might be that social support does not play such a big role in the desire for future children as expected: if the mother is set on a certain number of children, she might keep her perception even though she lacks social support. Desire for future children might be stable despite burdensome circumstances.

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Since our hypotheses were not confirmed as expected, in line with the theory of mother-offspring conflict, there could be other explanations behind the desire for children except for maternal sleep disturbance.

### **Interpretations**

According to the mother-offspring conflict, a child could possibly extend the interbirth interval by waking the mother at night and tiring the mother. Infant night waking could thereby lead to maternal sleep disturbance, which in turn could lead to postpartum depression, and postpartum depression could in turn lead to declined desire for additional children. We did not find support for that infant night waking, by tiring the mother, was associated with a shift in the mother's cognitions about desiring future children. It is possible that infant night waking works in extending the interbirth interval by tiring the mother, but that it does not actually alter the mother's cognitions about future children. It seems as if the extended interbirth interval is due to other factors linked to the mother's fatigue. It is possible that infant night waking can lead to postpartum depression and that postpartum depression in turn can actively influence mothers' cognitions about having additional children. This could explain the found association between postpartum depression and desire for future children. Depressive symptoms might lead to mother's reflecting more over their situation and then actively deciding on postponing future children.

The time desired between the birth of the first and second child had changed little from before the birth of the first child to after, with only a difference of one month. Such a small difference might indicate that the respondents had a good perception of what age gap they desired between their children, and that the birth of the first child did not seem to have changed that. However, before having children, 95.9% of respondents reported wanting to have children in the future, but after having their first child, only 77.0% wanted additional children. This could be an indication of motherhood being hard, or reality not resembling their expectation of motherhood, or perhaps that the respondents were satisfied with having only one child.

We did not measure what the desired number of children was after the birth of the first child. This would have been interesting to see if the mother possibly desired several children before the birth of the first child, and then after the first child the mother becomes content with a smaller number of children. Future studies should consider focusing on this.



**Limitations**

The present study had some limitations. The questions measuring social support were self-made and have not been tested for validity. In order to provide broader insight in the respondent's social support, the self-made questions measured social support in three different categories: financial, emotional, and practical. Future studies could examine how the used questions function in other samples.

The respondents were solely recruited through various Finnish Facebook groups for mothers, parents, and women in different parts of Finland. This could affect the generalizability of the results, as the mothers who belong to these groups might not give the same answers as randomly selected mothers from Finland. It is possible that the mothers in these Facebook groups are overall more socially active. The fact that all responding women were solely Finnish might also affect the generalizability to other countries. Finnish women receive a lot of maternal support in comparison to women globally, and gender equality is also higher in Finland in comparison to other countries (Ray et al., 2010).

**Conclusions**

The main finding, we obtained from this study, was the negative association between postpartum depression and desire for future children. As predicted, we found a positive association between infant night waking and maternal sleep disturbance, and similarly, we found a positive association between maternal sleep disturbance and postpartum depression. Contrary to our hypotheses, we found no association between postpartum depression and how soon respondents desired their second child. We found no associations between maternal sleep disturbance, social support, and desire for future children either. Infant night waking did not seem to extend the interbirth interval by exhausting the mother and diminishing her desire for future children. It is possible that the mechanism of infant night waking works, but not in consciously altering the mother's cognitions about future children. Future studies should research this further, and possibly include other explaining factors for the desire of future children.

## Summary in Swedish – Svensk sammanfattning

### Postpartum trötthet och önskan om barn i framtiden

Teorin som på engelska kallas *mother-offspring conflict* beskriver den evolutionära konflikten mellan en moder och hennes barn gällande hur modern fördelar sina resurser och sitt engagemang i barnet. Modern och barnet har olika evolutionära fördelar gällande engagemanget och fördelningen av resurserna, samt hur länge engagemanget ska fortgå (Trivers, 1974). En mor delar 50 % av sina gener med varje avkomma, medan varje avkomma delar 100 % av sina egna gener, och endast 50 % av sina gener med varje syskon. Därför är det evolutionärt gynnsamt för modern att investera lika mycket tid och vård på varje avkomma för att öka avkommornas chans att överleva, medan det ur avkommans synvinkel är mest gynnsamt att få så mycket tid och vård av modern som möjligt. Det finns olika teorier om hur ett barns beteende kan ha utvecklats evolutionärt för att erhålla moderns resurser, på syskonens eller på eventuella framtida syskons bekostnad.

Ett möjligt sätt för ett barn att erhålla så mycket av moderns resurser som möjligt, är att väcka modern på nätterna och trötta ut henne. Ett barn gynnas av ökat nattvaknande ifall det förlänger det som på engelska kallas *interbirth interval*, det vill säga tidsintervallet mellan födslarna, så att barnet får mera tid och uppmärksamhet av modern (Gunst, Sundén et al., 2021). Modern gynnas däremot av kortare intervall mellan barnens födslar, på grund av kvinnors relativt korta fertila fönster (Blurton Jones & da Costa, 1987; Haig, 2014). Det kan vara mindre sannolikt att en trött mor vill ha fler barn, och dessutom att ha dem nära varandra. Att väcka modern på nätterna för amning tröttar inte bara ut modern, utan fördröjer också ägglossningens återkomst, vilket fördröjer moderns möjligheter att bli gravid (Blurton Jones & da Costa, 1987).

Upprepat nattvaknande får både mentala och fysiska följder för mödrar (Bayer et al., 2007). Det finns kopplingar mellan trötthet och postpartumdepression (Giallo et al., 2011). Trötthet påverkar dagsfunktionerna och kan vara en möjlig utlösande faktor för postpartumdepression. Mödrar med depressiva symtom kan vara mindre benägna att önska flera barn i framtiden, eller det är mer sannolikt att de önskar en längre tidsperiod mellan syskon.

Brist på socialt stöd har noterats som en möjlig riskfaktor för utveckling av postpartumdepression (O'hara & Swain, 1996). Det kan därför tänkas vara mer sannolikt att mödrar önskar barn snabbare om de upplever sig ha tillräckligt med socialt stöd.

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Spädbarns nattvaknande, moderns sömnstörningar och postpartumdepression kan alla uppfattas som de sätt *mother-offspring* konflikten fungerar på. Barnet gynnas av att ett större åldersspann mellan syskon, och kan därför väcka modern flera gånger om natten, vilket kan skapa sömnstörning hos modern (Blurton Jones & da Costa, 1987; Haig, 2014). Sömnstörningen kan i sin tur skapa symtom på postpartumdepression. Symtom på postpartumdepression kan ytterligare ha en negativ inverkan på önskan om ytterligare barn. Här kan socialt stöd spela en viktig roll, eftersom det kan avhjälpa moderns trötthet och skydda från postpartumdepression, och därför göra att modern önskar barn snabbare. Det är fortfarande oklart vilken roll moderns egna kognitioner om barnskaffande spelar. Om spädbarns nattvaknande fungerar genom att trötta ut modern och förlänga intervallet mellan nästa syskon, kan detta även ske genom att moderns kognitioner om barn i framtiden ändras, och därför väljer hon aktivt att skjuta upp barnskaffandet.

Denna studie undersökte följande antaganden: (i) moderns sömnstörningar är negativt associerat med önskan om barn i framtiden, (ii) det negativa förhållandet mellan moderns sömnstörningar och önskan om barn i framtiden medieras av postpartumdepression, och (iii) förhållandet mellan moderns sömnstörningar och önskan om barn i framtiden modereras av socialt stöd, så att mödrar med lågt socialt stöd uppvisar en starkare negativ association mellan sömnstörningar och önskan om barn i framtiden. Ytterligare undersökte studien korrelationer mellan spädbarns nattvaknande, moderns sömnstörningar och postpartumdepression.

### Metod

Studien fick etiskt godkännande av den etiska nämnden vid institutionen för psykologi och logopedi vid Åbo Akademi. Enkäten för studien spreds via olika finländska Facebook-grupper för mammor och föräldrar i olika delar av Finland, och totalt 460 personer deltog i studien. Alla deltagare var över 18 och gav informerat samtycke innan deltagandet. Deltagarna fick svara på bakgrundsfrågor om ålder, barnets kön, förlossningsupplevelser och barnets hälsa. Ytterligare fick deltagarna svara på frågor om den andra vårdnadshavaren, önskan om barn och önskad åldersskillnad mellan barn, innan, samt efter det första barnet. Spädbarns nattvaknande mättes med hjälp av tre frågor som tidigare använts i Gunst, Sjöström et al. (2021). Moderns sömnstörningar under de senaste fyra veckorna mättes med Insomnia Severity Index (ISI; Bastien Vallières & Morin, 2001), tillsammans med en egen fråga om det genomsnittliga antalet timmar nattsömn för modern. Symtom på postpartumdepression under de föregående fyra

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veckorna mättes med sju items från Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987). Önskan om barn mättes med två egna frågor, önskan om barn i framtiden, samt hur snabbt efter första barnet mödrarna önskade ett till barn. Socialt stöd mättes med nio egna items, som mätte emotionellt, praktiskt och ekonomiskt stöd av barnets pappa, barnets mor- och farföräldrar och från andra människor i moderns liv. I slutet av enkäten fick deltagarna svara på två frågor, om de önskade fler barn i framtiden eller inte, och hur snabbt de i så fall ville ha sitt andra barn. Analyserna gjordes i *R* (R Core Team, 2021). Först beräknades deskriptiv statistik, sedan Spearmankorrelationer för data. Därefter beräknades modeller för spädbarns nattvaknande, moderns sömnstörningar samt postpartumdepression. De strukturella regressionerna finns visualiserade i Figure 1 i huvudtexten. Strukturekvationsmodellerna gjordes med latenta variabler. Spädbarns nattvaknande, moderns sömnstörningar och postpartumdepression var latenta variabler medan önskan om framtida barn var en enskild indikator. I första modellen regrederades önskan om barn i framtiden på moderns sömnstörningar, och moderns sömnstörningar på spädbarns nattvaknande. I den andra modellen regrederades önskan om intervall mellan första och andra barnet på moderns sömnstörningar, och moderns sömnstörningar på spädbarns nattvaknande. Postpartumdepression inkluderades i båda modellerna som en mediator mellan önskan om barn i framtiden och moderns sömnstörningar. För de tredje och fjärde modellerna upprepades samma analyser, med samplet uppdelat i grupper av högt och lågt socialt stöd.

### Resultat

Samplets deskriptiva statistik återfinns i den första tabellen, Table 1, i huvudtexten. Medelåldern för respondenterna i samplet var 27,8 år ( $SD = 6,70$ ). Könen på deltagarnas barn var till 46,1 % flickor, till 53,5 % pojkar och till 0,4 % annat kön. De flesta deltagare (76,1 %) hade inte upplevt förlossningen som traumatisk, medan 23,9 % hade det. Av deltagarnas barn hade 85,7 % varit friska från födseln, medan 14,3 % inte hade varit det. Största delen av deltagarna (94,1 %) hade delad vårdnad med barnets far, medan 3,9 % var ensamstående föräldrar och 2,0 % delade vårdnad med någon annan än barnets far. Deltagarna hade under de fyra föregående veckorna sovit i genomsnitt 5,13 timmar ( $SD = 1,84$ ) per natt.

Innan deltagarna fått barn önskade 95,9 % av dem att få barn i framtiden. Antal barn som deltagarna önskade få återfinns i Table 2 i huvudtexten. Det genomsnittliga antal barn deltagarna önskat få, innan de fick barn, var 2,30 ( $SD = 1,01$ ). Innan deltagarna fick barn önskade de att

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tiden mellan barnens födslar skulle vara 28,41 månader ( $SD = 9,54$ ). Efter första barnet önskade endast 77,0 % av deltagarna fler barn i framtiden. Efter första barnet önskade deltagarna att tiden mellan det första och det andra barnets födsel skulle vara 29,74 månader ( $SD = 10,71$ ).

Medeltalen för resultaten av socialt stöd kan ses i Table 3 i huvudtexten. Måtten för socialt stöd visade att deltagarna fick mest socialt stöd från barnets far ( $M = 11,98$ ,  $SD = 3,14$ ), jämfört med socialt stöd från mor- och farföräldrar ( $M = 9,57$ ,  $SD = 3,14$ ) och från andra människor ( $M = 6,91$ ,  $SD = 2,29$ ). Medeltalet för emotionellt stöd ( $M = 11,12$ ,  $SD = 2,88$ ) var högre än för praktiskt stöd ( $M = 9,82$ ,  $SD = 2,67$ ) och ekonomiskt stöd ( $M = 7,52$ ,  $SD = 2,33$ ).

Alla korrelationer visualiseras i huvudtexten i Figure 2. Alla items som mätte postpartumdepression var starkt negativt korrelerade med emotionellt stöd från barnets far och barnets mor- och farföräldrar. Korrelationer mellan mått på spädbarns nattvaknande och moderns sömnstörningar var positiva och signifikanta. Items som mätte spädbarns nattvaknande och postpartumdepression vara alla positivt och signifikant korrelerade förutom ett. Items som mätte moderns sömnstörning var signifikant positivt korrelerade med mått på postpartumdepression. Items som mätte socialt stöd var för det mesta negativt korrelerade med items som mätte spädbarns nattvaknande, moderns sömnstörning och postpartumdepression. Emotionellt och praktiskt stöd från fadern visade en stark korrelation ( $r = .68$ ), emotionellt och praktiskt stöd från mor-och farföräldrarna visade också en stark korrelation ( $r = .64$ ).

Resultat från de strukturella regressionerna återfinns i huvudtextens Table 4. I modellen för önskan om barn i framtiden var spädbarns nattvaknande associerat med moderns sömnstörningar ( $\beta = .60$ ), moderns sömnstörningar associerat med postpartumdepression ( $\beta = .73$ ), och postpartumdepression negativt associerat med önskan om barn i framtiden ( $\beta = -.45$ ). Både den indirekta ( $\beta = -.33$ ) och den totala effekten ( $\beta = -.30$ ) var signifikanta. I modellen för önskad tid mellan första och andra barnet fanns det en association mellan spädbarns nattvaknande och moderns sömnstörningar ( $\beta = .56$ ), och en association mellan moderns sömnstörningar och postpartumdepression ( $\beta = .71$ ), som båda var signifikanta. De övriga associationerna i modellen förblev icke-signifikanta.

När önskan om barn i framtiden delades upp i grupper av hög och låg grad av socialt stöd, var följande associationer signifikanta i gruppen för lågt stöd: associationen mellan spädbarns nattvaknande och moderns sömnstörningar ( $\beta = .52$ ), associationen mellan moderns sömnstörningar och postpartumdepression ( $\beta = .74$ ), samt associationen mellan

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postpartumdepression och önskan om barn i framtiden ( $\beta = -.50$ ). I gruppen med hög grad av socialt stöd var följande associationer signifikanta: associationen mellan spädbarns nattvaknande och moderns sömnstörningar ( $\beta = .65$ ) och associationen mellan moderns sömnstörningar och postpartumdepression ( $\beta = .63$ ). För modellen över önskad tid mellan första och andra barnet, indelat enligt grupper med socialt stöd, var enbart dessa associationer signifikanta för gruppen med lågt socialt stöd: associationen mellan spädbarns nattvaknande och moderns sömnstörningar ( $\beta = .43$ ) och mellan moderns sömnstörningar och postpartumdepression ( $\beta = .67$ ). Gruppen med högt socialt stöd hade två signifikanta associationer: mellan spädbarns nattvaknande och moderns sömnstörningar ( $\beta = .63$ ) och mellan moderns sömnstörningar och postpartumdepression ( $\beta = .63$ ).

### Diskussion

Det huvudsakliga resultatet av studien var den negativa associationen mellan postpartumdepression och önskan om barn i framtiden. Postpartumdepression visade sig dock inte vara associerat med hur snabbt efter första barnet man önskade ett till barn. I studien upptäcktes ingen association mellan moderns sömnstörningar och önskan om barn i framtiden, inte heller mellan socialt stöd och önskan om barn i framtiden. Det fanns heller inga gruppskillnader mellan högt och lågt socialt stöd.

Spädbarns nattvaknande var positivt korrelerat med moderns sömnstörningar, vilket bekräftade hypotesen. Moderns sömnstörningar var också positivt korrelerat med postpartumdepression, vilket också bekräftade hypotesen. Postpartumdepression var negativt korrelerat med emotionellt stöd från både barnets far och barnets mor- och farföräldrar, och spädbarns nattvaknande var positivt korrelerat med postpartumdepression. Deltagarna rapporterade även få mest stöd av barnets far, och mest emotionellt stöd jämfört med de övriga kategorierna.

Resultaten visade inte att spädbarns nattvaknande, via moderns trötthet, skulle förlänga intervallet mellan syskon och aktivt förändra moderns kognitioner om barn i framtiden. Det är möjligt att teorin fungerar, att nattvaknande tröttar ut modern och därav förlänger intervallet mellan syskon, men utan att modern själv aktivt reflekterar över det. Det är även möjligt att önskan om barn i framtiden är stabil trots att modern lider av sömnstörning, eller har brist på socialt stöd. Det kan även finnas andra förklaringar bakom önskan om barn i framtiden förutom

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moderns sömnstörningar. Tidsintervallet som mödrarna önskade ha mellan sina barn, nu och före det första barnet, hade förändrats väldigt litet, endast förlängts med en månad.

Till studiens begränsningar hörde ett eventuellt icke-representativt sampel från de diverse Facebook-grupper enkäten spridits i. Mödrar i dessa Facebook grupper kan eventuellt vara mer socialt aktiva än mödrar i genomsnitt. Enbart finländska mödrar deltog i studien, vilket ytterligare kan påverka generaliserbarheten. Jämställdheten i Finland är högre jämfört med andra länder, och dessutom får finländska kvinnor mer moderskapsstöd än kvinnor globalt (Ray et al., 2010). Måtten på socialt stöd var egna, och därför kunde framtida studier replikera dessa resultat med våra mått. Framtida studier bör undersöka mekanismerna bakom *mother-offspring* konflikten ytterligare, och möjligen inkludera andra faktorer som kan ha en inverkan på önskan om barn i framtiden.

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## Appendix

**Table 1**

*Items Used to Measure Infant Night Waking*

Item name	Question	Response options
INW1	How many times on average did your child wake up per night during the last four weeks?	1) Almost never, 2) Once or twice per night, 3) Three times per night, 4) Four or five times per night, 5) 5+ times per night
INW2	How well did your child sleep on average during the last four weeks?	1) Very well, 2) Well, 3) Neutral, 4) Poor, 5) Very poor
INW3	How difficult was it on average to get your child to sleep through the night during the last four weeks?	1) Very easy, 2) Easy, 3) Neutral, 4) Difficult, 5) Very difficult

**Table 2**

*Items Used to Measure Maternal Sleep Disturbance*

Item name	Question	Response options
Please rate the severity of your current (the last four weeks) insomnia problems.		
MSD1	Difficulty falling asleep.	1) None, 2) Mild, 3) Moderate, 4) Severe, 5) Very severe
MSD2	Difficulty staying asleep.	1) None, 2) Mild, 3) Moderate, 4) Severe, 5) Very severe
MSD3	Problems waking up too early.	1) None, 2) Mild, 3) Moderate, 4) Severe, 5) Very severe
MSD4	How satisfied/dissatisfied are you with your current sleep pattern?	1) Very satisfied, 2) Satisfied, 3) Moderately satisfied, 4) Dissatisfied, 5) Very dissatisfied
MSD5	How noticeable to others do you think your sleep problem is in terms of impairing the quality of your life?	1) Not noticeable at all, 2) A little, 3) Somewhat, 4) Much, 5) Very much noticeable

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MSD6	How worried/distressed are you about your current sleep problem?	1) Not worried at all, 2) A little, 3) Somewhat, 4) Much, 5) Very much worried
MSD7	To what extent do you consider your sleep problem to interfere with your daily functioning (e.g., daytime functioning, mood, ability to function at work/daily chores, concentration, memory, mood etc.) currently?	1) Not at all interfering, 2) A little, 3) Somewhat, 4) Much, 5) Very much interfering
MSD8	How many hours on average have you slept per night during the last four weeks?	Numerical answer

**Table 3***Items Used to Measure Postpartum Depression Symptoms*

Item name	Question	Response options
	In the last four weeks...	
PPD1	I have been able to laugh and see the funny side of things.	1) As much as I always could, 2) Not quite so much now, 3) Definitely not so much now, 4) Not at all
PPD2	I have looked forward to enjoyment to things.	1) As much as I ever did, 2) Rather less than I used to, 3) Definitely less than I used to, 4) Hardly at all
PPD3	Things have been getting on top of me.	1) Yes, most of the time I haven't been able to cope at all, 2) Yes, sometimes I haven't been coping as well as usual, 3) No, most of the time I have coped quite well, 4) No I have been as well as ever
PPD4	I have been so unhappy that I have had difficulty sleeping.	1) Yes, most of the time, 2) Yes, sometimes, 3) Not very often, 4) No, not at all

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PPD5	I have felt sad or miserable.	1) Yes, most of the time, 2) Yes, quite often, 3) Not very often, 4) No, not at all
PPD6	I have been so unhappy that I have been crying.	1) Yes, most of the time, 2) Yes, quite often, 3) Only occasionally, 4) No, never
PPD7	The thought of harming myself has occurred to me.	1) Yes, quite often, 2) Sometimes, 3) Hardly ever, 4) Never

**Table 4***Items Used to Measure Desire for Future Children*

Item name	Question	Response options
DFFCany	Do you wish to have additional children in the future?	1) No, 2) Yes
DFFCtime	How soon after your first child would you like to have your second child?	Numerical answer in years and months

**Table 5***Items Used to Measure Social Support*

Item name	Question	Response options
SSEf	Do you receive any emotional support from the child's father?	1) No support at all, 2) Minor support, 3) Some/occasional support, 4) Moderate support, 5) A lot of support
SSEg	Do you receive any emotional support from the child's grandparents?	1) No support at all, 2) Minor support, 3) Some/occasional support, 4) Moderate support, 5) A lot of support
SSEo	Do you receive any emotional support from other people in your life?	1) No support at all, 2) Minor support, 3) Some/occasional

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		support, 4) Moderate support, 5) A lot of support
SSPf	Do you receive any practical support in taking care of the child from the child's father?	1) No support at all, 2) Minor support, 3) Some/occasional support, 4) Moderate support, 5) A lot of support
SSPg	Do you receive any practical support in taking care of the child from the child's grandparents?	1) No support at all, 2) Minor support, 3) Some/occasional support, 4) Moderate support, 5) A lot of support
SSPo	Do you receive any practical support in taking care of the child from other people in your life?	1) No support at all, 2) Minor support, 3) Some/occasional support, 4) Moderate support, 5) A lot of support
SSFf	Do you receive any financial support from the child's father?	1) No support at all, 2) Minor support, 3) Some/occasional support, 4) Moderate support, 5) A lot of support
SSFg	Do you receive any financial support from the child's grandparents?	1) No support at all, 2) Minor support, 3) Some/occasional support, 4) Moderate support, 5) A lot of support
SSFo	Do you receive any financial support from other people in your life?	1) No support at all, 2) Minor support, 3) Some/occasional support, 4) Moderate support, 5) A lot of support

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PRESSMEDDELANDE

**Postpartumdepression har ett samband med önskan om barn i framtiden**

Pro-gradu avhandling i psykologi

Fakulteten för humaniora, psykologi och teologi, Åbo Akademi

Resultaten från en pro-gradu avhandling i psykologi vid Åbo Akademi tyder på att det finns ett samband mellan moderns grad av postpartumdepression och hennes önskan om barn i framtiden. Ju större grad av postpartumdepression, desto mindre är moderns önskan om barn i framtiden.

Avhandlingen undersökte associationer mellan spädbarns nattvaknande, moderns sömnstörningar, postpartumdepression, socialt stöd och önskan om barn i framtiden. Samplet bestod av 460 finska mödrar med endast ett biologiskt barn.

Syftet med studien var att ur ett evolutionspsykologiskt perspektiv ta reda på ifall moderns sömnstörningar, på grund av spädbarns nattvaknande, kan associeras med symtom på postpartumdepression och därav med minskad önskan om barn i framtiden, samt ifall socialt stöd kan öka önskan om barn i framtiden. Framtida forskning bör fokusera på att ytterligare undersöka de evolutionspsykologiska mekanismerna bakom mödrars sömnstörningar och önskan om barn i framtiden.

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