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# Mindfulness Based Childbirth and Parenting Program – Supporting a good beginning

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Mindfulness Based Childbirth and Parenting Program  
– Supporting a good beginning

THESIS FOR DOCTORAL DEGREE (Ph.D.)

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*You are the bows from which your children  
as living arrows are sent forth.*

Kahlil Gibran

*to my mother and father  
and to all mothers and fathers  
to my sons and daughters  
and to all sons and daughters*



## ABSTRACT

**Introduction** Considering the scale of population mental health problems and the risk of transmission of mental health vulnerability within families, it is urgent to find and implement efficient preventive interventions starting early in life. In line with this rationale, this thesis evaluates a Swedish version of the Mindfulness Based Childbirth and Parenting Program (MBCP). **Objectives** This thesis aims to: 1) test the short- and long-term efficacy of MBCP in reducing pregnant women's perceived stress and preventing perinatal depression; 2) evaluate effects on infant social-emotional development; and 3) explore MBCP-participants' experiences of the program. **Methods** Pregnant women ( $n = 193$ ) at risk for perinatal depression were randomized to MBCP or an active control condition (a Lamaze childbirth class). Self-reported data on perceived stress, depressive symptoms, positive states of mind, and levels of mindfulness were provided by the women at baseline, postintervention and at three, nine, and twelve months postpartum. At three months postpartum, the mothers also reported estimates of their infants' social-emotional development. At the same timepoint, 16 in-depth interviews were carried out with mothers and fathers who had participated in the MBCP program. **Results** From pre- to postintervention, the women who were randomized to MBCP reported significantly larger reductions in perceived stress and depressive symptoms and larger increases of positive states of mind and level of mindfulness compared to the women randomized to the control condition. The treatment effects of MBCP on perceived stress, depressive symptoms, and positive states of mind seemed to be mediated by increased levels of mindfulness. These initial effects were not sustained at longer-term follow-up assessments during the first year postpartum. However, the mothers in the MBCP-arm, who continued to practice mindfulness during the follow-up period retained the intervention-effects to a higher degree than the mothers in the MBCP-arm who did not continue to practice. At three months, mothers in the MBCP-arm perceived that they could understand their infants' cues to a higher degree and that their infant had a better capacity to self-regulate, compared with mothers in the Lamaze-arm. Mothers and fathers who were interviewed, experienced that participating in the MBCP program increased their capacity to cope with stress, anxiety, pain, and distress. A number of parents also experienced becoming more self-compassionate, insightful, better at communicating and having a stronger sense of being present in nature and with their infant. **Conclusion** The crucial developmental phase humans go through, in the womb, in infancy, and during pregnancy and early parenting – men and women alike, gives us a window of opportunity to support a positive development in ways that can have far-reaching effects. MBCP is a promising intervention for seizing that opportunity. The intervention promotes well-being and builds resilience to deal with challenges in pregnancy, childbirth, infant-care, co-parenting and life in general.





## SUMMARY IN SWEDISH

**Bakgrund** Psykisk ohälsa är ett stort, växande folkhälsoproblem. Hos gravida kvinnor och föräldrar med psykisk ohälsa finns risk för att en sårbarhet för psykisk ohälsa förs över till deras barn. Därför är det oerhört viktigt att hitta och implementera effektiva interventioner som kan förebygga psykiska ohälsa och främja välmående. Det är också avsikten med den här avhandlingen där en mindfulness-baserad föräldrakurs (MBCP) under graviditet utvärderas. **Mål** Den här avhandlingens syften är att 1) testa den kort- och långsiktiga effekten av MBCP gällande att sänka gravida kvinnors upplevda stress och förebygga perinatal depression; 2) utvärdera effekter på spädbarnens socio-emotionella utveckling; och 3) utforska föräldrarnas upplevelser av att ha gått MBCP-kursen.

**Metoder** Gravida kvinnor (n=193) med risk för perinatal depression blev lottade till MBCP eller till en aktiv kontrollgrupp (en kurs i psykoprofylax). Frågeformulär om upplevd stress, depressiva symptom, positiva sinnesstämningar, och grad av mindfulness (medveten närvaro) fylldes i av kvinnorna före lottningen (baslinjen), efter genomgångna kurser och vid tre, nio och 12 månader efter barnets födelse. När barnet var tre månader gammalt fyllde mammorna i en enkät om deras barns socio-emotionella utveckling. Vid denna tidpunkt utfördes också 16 djupintervjuer med mammor och pappor som hade gått MBCP-kursen.

**Resultat** Mätningarna från före till efter kurs visar att de kvinnor som gått MBCP-kursen hade signifikant minskat upplevd stress och depressiva symptom och ökat positiva sinnesstämningar och grad av mindfulness, jämfört med kontrollgruppen. De här förändringarna verkar ha kommit till genom en ökad grad av mindfulness. De initiala effekterna försvagades över tid och höll inte i sig under uppföljningsperioden. Däremot, bland de mammor i MBCP-gruppen som fortsatte öva mindfulness under uppföljningsperioden, syntes en större initial effekt, som också höll i sig i högre grad, jämfört med mammor i MBCP-gruppen som inte fortsatte öva mindfulness. När barnen var tre månader, rapporterade mammorna i MBCP-gruppen att de kunde tolka sitt barns signaler i högre grad och att deras barn hade en bättre förmåga till känsloreglering, jämfört med vad mammorna i kontroll-gruppen rapporterade. De mammor och pappor som blev intervjuade upplevde att deras deltagande i MBCP-kursen hade höjt deras förmåga att hantera stress, oro, smärta och nedstämdhet. Flera föräldrar uttryckte också att de fått mer självmedkänsla, blivit mer insiktsfulla, bättre på att kommunicera och mer närvarande i exempelvis naturen eller med sin bebis.

**Slutsats** Den väsentliga utvecklingsfas som människor går igenom; i livmodern, under spädbarnstiden och även under graviditet och tidigt föräldraskap – män såväl som kvinnor – ger oss en fantastisk möjlighet att stödja utvecklingen i en positiv riktning, som kan ha långtgående konsekvenser. MBCP är en lovande intervention för att fånga den möjligheten. Interventionen främjar välmående och bygger motståndskraft för att hantera utmaningarna i graviditeten, födandet, föräldraskapet, parrelationen och livet i stort.



## LIST OF SCIENTIFIC PAPERS

- I. Effects of a Mindfulness Based Childbirth and Parenting program on pregnant women's perceived stress and risk of perinatal depression—Results from a randomized controlled trial
- II. Long-term effects of a Mindfulness Based Childbirth and Parenting Program on Maternal Stress and Risk of Perinatal Depression – a Randomized Controlled Study
- III. Maternal Positive Affect & Infant Social-emotional Development – a randomized controlled trial of the effects of Mindfulness Based Childbirth and Parenting
- IV. What is learned from Mindfulness Based Childbirth and Parenting Education?  
– Participants' experiences

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## LIST OF ABBREVIATIONS

MHC	Maternity Health Clinic
MBCP	Mindfulness Based Childbirth and Parenting
MBI	Mindfulness Based Intervention
MBSR	Mindfulness Based Stress Reduction
MBCT	Mindfulness Based Cognitive Therapy
PSS	Positive States of Mind Questionnaire
EPDS	Edinburgh Postpartum Depression Scale
PSOM	Positive States of Mind
FFMQ	Five Facets of Mindfulness Questionnaire
ASQ:SE	Ages and Stages Questionnaire: Social-emotional
LMM	Linear Mixed Model



## PREFACE

Initially, I began my higher education in a school of fine art, and continued earning my living as a graphic designer. Then, two days before the millennium-shift, Dec 29 1999, I went through the rite of passage of giving birth and entered motherhood. It was deeply empowering – a transforming experience – and it raised a calling in me. A calling to find ways of empowering pregnant women and expectant fathers so that they can be steady bows, as Kahlil Gibran writes, from which their children are sent out like living arrows, reaching far.

My newfound aim then became to somehow help bridge the cartesian split between spirit/psyche and body, that our society and healthcare system still suffers from. I studied holistic medical systems and philosophies from the east, and entered our own western culture's knowledge system through studies in social and medical anthropology, and public health science.

The work here – as a PhD-student at the biomedical stronghold Karolinska Institutet, a few steps up on the ladder of authoritative knowledge – will hopefully contribute to increased knowledge on how expectant parents can be supported and helped. Especially vulnerable parents, so that their well-being is safeguarded and they can be nurturing, loving and supportive with their little ones. Because I wish for more care, not just for fellow humans but for all of life, it's the heartfelt driving force that propels me through this work.

Moreover, it is my experience that living in this particular point in time is exciting and adventurous, as we are facing an exponential curve of risk, and at the same time, an exponential curve of possibilities. The risk is one of collapse, driven by greed, selfishness and apathy, causing loss of biodiversity, sea level rise, ocean acidity, soil depletion and wildfires. The possibilities are about making the world a much better place for life to thrive, driven by cooperation, compassion and insight, building a movement of new inventions and solutions, and raising levels of knowledge and awareness.

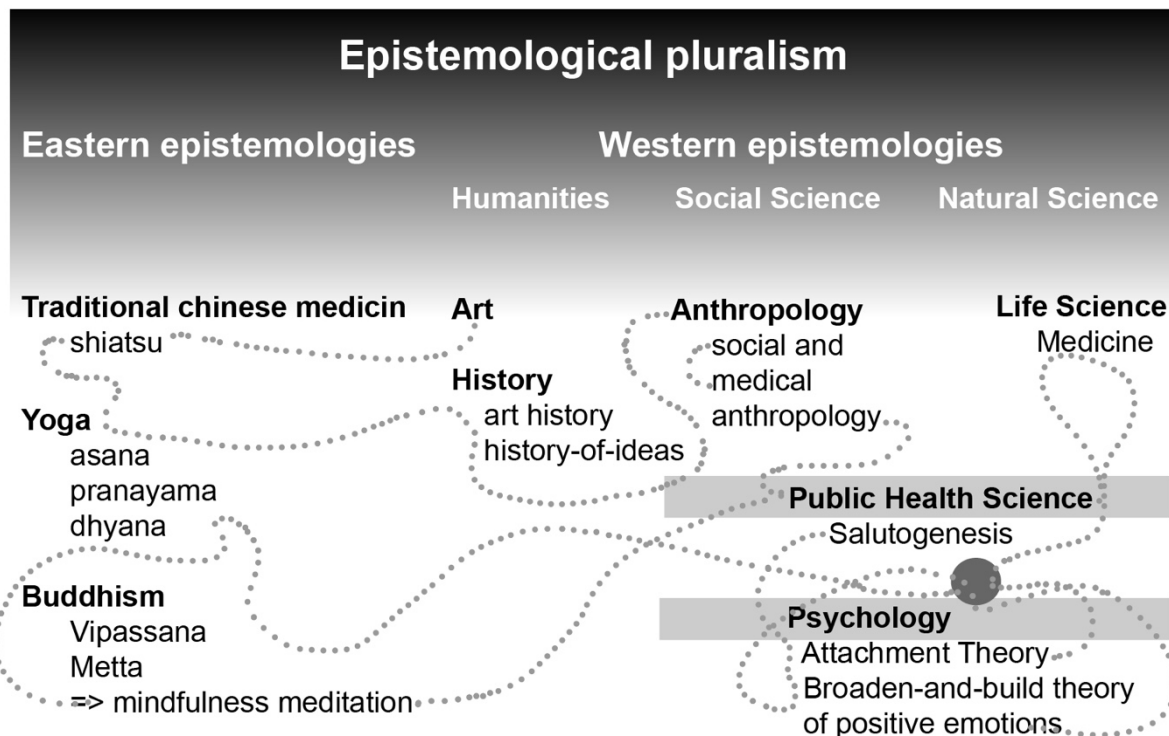
Not only do we, as a global community, need to turn destruction into regeneration. We also need to ask what we can do to support the children who will be born into this precarious and amazing time. Because I hope that children born in the third millennium will be able to clearly look at situations that can evoke outrage, grief or fear, and be strong enough to harbour such emotions without giving up in despair, turn away, or becoming numb. I hope they will align their way of living and their actions with a compass grounded in their hearts, and that they are charged with optimistic energy, embodying the potential of the possibilities. Finally, I hope this thesis will contribute in some little way to finding answers in how we can facilitate this by supporting a good beginning for them.

# INTRODUCTION

This thesis evaluates an antenatal intervention based on mindfulness for pregnant women at risk of perinatal stress and depression. The expectant fathers/co-parents have also participated. The rationale for launching this research project is outlined below with the following headings:

1. Mental health – a public health challenge
2. Maternal distress and it's intergenerational transmission
3. Parental support – intervening early is worthwhile
4. Mindfulness – the What? and the How?
5. Mindfulness-based antenatal interventions – what is known so far.

However, to begin let's touch upon our society's culture and history of ideas to broaden the perspective around these topics, as well as positioning this thesis on an epistemological map, to illustrate how it stems from epistemological pluralism, and holds different theoretical perspectives; such as salutogenesis, the broaden-and-build theory of positive emotions and attachment theory (see figure 1).



**Figure 1.** The dotted line illustrates the author's path discovering and obtaining knowledge in multiple fields, sorted under their epistemological abode. The bigger round dot shows the position of this thesis within these fields of knowledge.



## Medical anthropology as the point of entry

Anthropology helps holding these various epistemologies together. With the essentially holistic analytical approach in anthropology, social phenomena can be comprehended within their broader sociocultural context. In the field medical anthropology, medicine is viewed as part of a cultural system, and this can shed a particular light on healthcare systems in Western societies (Sachs and Krantz, 1991). This is why medical anthropology is the point of entry.

During the seventeenth century, the philosopher and scientist Descartes was one of the leading persons paving the way for the Enlightenment. His ideas of separating the material (body) from the immaterial (mind and spirit) have immensely influenced the Western view of what a human is. In this way, medicine was able to claim autonomy from religion. That autonomy was crucial for the expansion of knowledge and gains in curing disease and injuries. It also implied that medicine came to focus on the physical body and it was established that the body was separated from the mind. (Sachs, 1996)

Since the industrial revolution, mechanical metaphors about bodily functions became frequent. This further separated the understandings of mind and body and valorized medical techniques that could locate and fix or replace the part of the “machinery” that was failing, treating only that part. The importance of technology in biomedicine was emphasized, and with it, the dependence of the use of machinery to fix machinery. Healing relationships that rely on personal contact, trust and spirituality were devalued. (Lupton, 1994)

With the industrial revolution, there was also a dramatic shift in maternity care and birthing practices, a shift that further intensified with the development of what medical anthropologist Davis Floyd calls technocratic societies (Davis-Floyd, 2001). In some places, and time-periods, it went so far that maternity care was dehumanized and the alienation of childbirth was complete. A narrative by author Margaret Coombs, describing her experience of childbirth at an expensive hospital in London in the early seventies, serves as an example:

“[the nurses] swoop on me, one from each side, pull my legs apart and hoist them into stirrups. The catches that lock my legs in the stirrups click shut like handcuffs. You are under arrest! You can’t escape now! You’re guilty! We’re going to PUNISH you! ... I lie, strapped down on this table-bed, my legs strapped apart in the air while he towers over my vulnerable body, all his attention focused on the space between my legs. ... He issues instructions to the nurses in a deadpan voice that, despite its upper-class English accent, reminds me of the voice of mission control at Cape Canaveral. It is a voice that won’t falter if the moon falls out of the sky, a voice completely stripped of emotion. When he uses that voice, I know I am just a piece of machinery to him, that his disinterest in my feelings is complete. (Coombs, 1988)

Not only does this quote illustrate a lack of humanity, it also points to the gap in authority, power, knowledge and agency between patient and staff (Lupton, 1994). In Sweden, the dehumanization in maternity care never went as far as it did in many other parts of the world, thanks to a strong professional midwifery tradition that safeguarded more humanistic ways (Öberg, 1996). Yet, there are still remnants of the cartesian mind-body split in current

maternity health care in Sweden: Even though the guidelines in the Stockholm Region state that the physical *and* the psychological health of pregnant women shall be assessed at each visit to the maternal health clinic (Mödrahälsovårdsenheten, 2019), a report from 2018 shows that there are women who suffer from poor mental health, who pass by unnoticed and do not receive adequate care (Mödrahälsovårdsenheten, 2019).

All though mind-body dualism is deeply entrenched in the Western experience, efforts are being made to transcend this dualism and there is an increasing trend toward using a biopsychosocial model for human health. As Davis-Floyd puts it, we need to replace the “high tech/low touch” mode of care in the technocratic paradigm with a “high tech/high touch” mode of care, through a paradigm that is humanistic and with further development also holistic (see table 1) (Davis-Floyd, 2001). The development toward more humanism and holism is also a profound incentive for this thesis.

**Table 1.** The three paradigms/models as explained by Davis-Floyd (2001)

“high tech/low touch” → → → → “high tech/high touch”		
Technocratic model	Humanistic model	Holistic model
1. Mind/body separation	1. Mind–body connection	1. Oneness of body-mind-spirit
2. The body as a machine	2. The body as an organism	2. The body as an energy system interlinked with other energy systems
3. The patient as object	3. The patient as relational subject	3. Healing the whole person in whole-life context
4. Death as defeat	4. Death as an acceptable outcome	4. Death as a step in a process
5. Supervaluation of science and technology	5. Science and technology counterbalanced with humanism	5. Science and technology placed at the service of the individual
6. Intolerance of other modalities	6. Open-mindedness toward other modalities	6. Embrace of multiple healing modalities

From this entry-point through medical anthropology, the main theoretical perspectives used in this thesis are briefly explained below, before this research project’s rationale is outlined.

**Salutogenesis:** In 1979 the medical sociologist, Antonovsky proposed that in order to create health, it is more valuable to focus on peoples’ capacities and resources, instead of focusing on risks and ill health. A key concept in his theory is ‘sense of coherence’; which has to do with a person’s view of life and the person’s capacity to respond in challenging situations. Sense of coherence is built by manageability, comprehensibility and meaningfulness. The

Salutogenetic framework is also about being able to deal with the uncertainties in life, which simply cannot be controlled. Antonovsky highlighted the value of an interdisciplinary approach, with coherence between disciplines, as well as the importance to consider living conditions and the interaction between people and societal structures. (Lindström and Eriksson, 2005)

**The broaden-and-build theory of positive emotion:** The importance of positive emotions has been emphasized in the broaden-and-build theory of positive emotions (Fredrickson, 2001) which gives a theoretical explanation regarding positive affect and skillful behavior. Fredrickson's theory states that positive affect such as love, joy, pride and contentment broadens a person's repertoire of thoughts and actions in the moment, and this makes it easier to choose wise actions. It also builds long-term resources and resilience. In contrast, in moments of distress, a person's repertoire of thoughts and actions are narrowed, making it more difficult to discern the best action in the moment.

**Attachment theory:** The psychologist Bowlby pioneered the attachment theory, by emphasizing that the earliest bonds formed by children with their caregivers are of tremendous importance throughout life, and that responsiveness and care shape attachment (Bowlby, 1988). Bowlby's work was taken further by the research of Ainsworth, which corroborated the profound effects of attachment on behavior: Caregivers' sensitivity and responsiveness toward the child, constitute the essential foundation of a secure attachment – which builds self-esteem, self-reliance and well-being in the child (Ainsworth, 1982).

### **Mental health – a public health challenge**

Worldwide, the burden of depression and other mental health conditions is on the rise. In fact, depression has become a leading cause of disability and by 2017, 264 million people were affected with either chronic depression or major depressive disorder (James et al., 2018; WHO, 2019a). The World Health Organization's Mental Health Action Plan 2013-2020 stresses the importance of prevention and calls for implementation of strategies for prevention as well as for research in this area (WHO, 2013). Mental Health is also considered critical to the achievement of the 2030 Sustainable Development Goals (UN, 2018).

Narrowing the scope from global to local – to Sweden and the Stockholm County – a recently published health report showed that in 2018 about 27 percent of the women and 20 percent of the men reported mental ill-health. There are big differences depending on age, with higher prevalence of self-reported mental ill-health in adolescents and young adults. Furthermore, between 2006 and 2018, the proportion of adults that have received care for diagnosed depression or anxiety has doubled, and the prevalence is twice as high in women (13%) compared with men (6%). (Bartelink and Lager, 2019)

Pregnant women, new mothers and fathers are not exempt from this widespread public health problem. Indeed, pregnancy is regarded as a particularly vulnerable phase in life. Globally, the prevalence of pregnant women who suffer from a mental disorder, most often depression, is 10 percent. The rate of women who suffer from depression after having given birth, i.e., postpartum depression, is 13 percent. (WHO, 2019b)

Postpartum depression has multiple causal factors. A history of depression, prenatal anxiety, domestic violence, and other stressful life events, as well as low levels of social support, are all predictors of subsequent postpartum depression (Howard et al., 2014; Robertson et al., 2004). Early life adversity can also be added to this list, since high levels of early life adversity are associated with elevated levels of anxiety during pregnancy (Agrati et al., 2015). Current stressors like partner conflict and work-related stress are also predictors of depression in any period of a woman's life, including pregnancy, and if the stressor is related to the fetus it is associated with prenatal depression (Dayan et al., 2010).

### **Maternal distress and its intergenerational transmission**

Beyond effects on the mother alone, a growing body of evidence shows that maternal stress and depression can have far reaching negative effects on the child's health, behavior and cognition (Buss et al., 2011; Glover and Connor, 2002; Stein et al., 2014). This transmission of vulnerability occurs both through physiological pathways in utero and psychosocial pathways in the earliest years. Stress and depressive symptoms during pregnancy increase the risk of preterm birth and low birth weight (Fransson et al., 2011; Schetter and Tanner, 2012). Maternal stress can alter immune and hypothalamic-pituitary-adrenal axis functions in the infant and further on in life (Coe and Lubach, 2005; Entringer et al., 2010; Merlot et al., 2008). Prenatal stress in the mother is associated with later psychological and psychiatric problems in the child, such as anxiety, impulsivity and lower cognitive performance (Glover, 2008). Similarly, Robinson and colleagues show that multiple stressful events experienced during pregnancy are associated with subsequent behavioral morbidity, such as internalizing or externalizing behavior, in children and adolescents (Robinson et al., 2011).

Regarding the psychosocial pathways, mother-infant attachment disorders are much more common in the presence of postpartum depression (Kumar, 1997). A depressed mother is impaired in the capability to be alert to her baby's signals, which is necessary for appropriate infant-mother attachment to occur, and the cumulative effect of impaired bonding is a "depressed dyad" of mother and infant (Edhborg et al., 2003). Long-term effects of impaired mother-infant attachment include insecure attachment at 18 months, learning deficits, decreased heart rate variability, as well as in extreme cases child abuse and child neglect (Chase-Brand, 2008). A key message from the Lancet series on perinatal mental health 2014 is that evaluations of the effectiveness of interventions, aiming to relieve suffering in affected mothers and reduce the risks of transmission of negative health effects to children, should be prioritized (Stein et al., 2014).

This warrants the development of effective health promoting prenatal interventions. If expectant parents, who are at risk of poor mental health have access to treatment and are given support – and thereby become more resilient – their children will stand a better chance for good mental health throughout their lives. Here, there may be a potential for improving mental health in the population, and this is also in line with Swedish public health policy (see below).

## Swedish parental support – intervening early is worthwhile

In 2004 the Swedish National Institute of Public Health stressed that the mental health of the population can be improved through health promoting interventions for parents and that it is important that such interventions are provided early in life (Bremberg, 2004). The same year, the National Board of Health and Welfare pointed out that health promoting interventions early in life can decrease the need for more costly interventions later on, and are therefore favorable from a national economic perspective (Socialstyrelsen, 2004). In order to develop parental support, a national strategy was adopted 2009 (Socialdepartementet, 2009), and the last update was made in 2018 (Socialdepartementet, 2018). Its overall aim is that all parents shall be offered parental support from the period around pregnancy to when the child turns 18 years of age. In this document, parental support is defined as “an activity that gives parents knowledge about child health, emotional, cognitive and social development, and/or strengthens parents’ social network”. The history of publicly financed professional parental support dates back to 1978, when parental support specifically around childbirth was introduced (Barnomsorgsgruppen, 1978). Since then, several governmental investigations have emphasized the importance of early parental support to strengthen parents in their parenting role (Föräldrastödsutredningen, 2008; föräldrautbildning, 1997; Socialstyrelsen, 1984).

Professional parental support during pregnancy is mainly provided by the Maternity Healthcare Clinics (MHC’s). The aim for MHC’s parental support is “to promote children’s health and development and to strengthen parents’ ability to meet the expected and the newborn child, as well as physical and psychological preparation for childbirth” (SFOG, Published 2008, updated online version 2016). Besides individual meetings and cooperation with other agencies of importance for the families, the MHC’s have offered parental support in the form of parental groups. The format and content of these groups has changed over time. In the 1980’s both nulliparous and multiparous women and their partners were invited to attend the group meetings, and the recommended number of sessions was eight to ten (Barnomsorgsgruppen, 1978). An inventory in 2013, shows that there is more variety in what the MHC’s offer and the trend is to offer less than previously, and in more cost-effective ways (SFOG, Published 2008, updated online version 2016). This inventory shows that only some MHC’s offer the traditional parental programs, and those that do, only invite nulliparous couples, and the number of meetings is reduced to four or five. Other MHC’s offer lectures for large groups, focusing only on childbirth and postpartum care, whilst others have groups of more than 16 people meeting on a few occasions. The inventory also shows that some MHC’s offer group based maternal health care, groups only for fathers and targeted parental groups, for example young parents, disabled parents, other language groups, parents of twins and those with problems related to pregnancy or childbirth (SFOG, Published 2008, updated webbversion 2016).

This trend to offer less support in the form of parental groups is unfortunate, since expectant parents are often overwhelmingly positive toward participating in parental groups (Ahldén et

al., 2012). Furthermore, Norling-Gustafsson et al. confirm the need for parental groups, pointing at expectant parents' strong need to meet others in the same situation, being motivated to receive information and discuss relevant topics with peers (Norling-Gustafsson et al., 2011). Moreover, Widarsson and colleagues report that existing health-care services may fail to meet expectant parents' need for support and that midwives need additional professional development training in order to provide such support (Widarsson et al., 2012).

Considering the scale of population mental health-problems and the risk of transmission of vulnerability within families, it is urgent – and in line with our national strategy – to find and implement efficient interventions. In the search for such interventions, mindfulness seems to be a promising avenue.

### **Mindfulness – the What? and the How?**

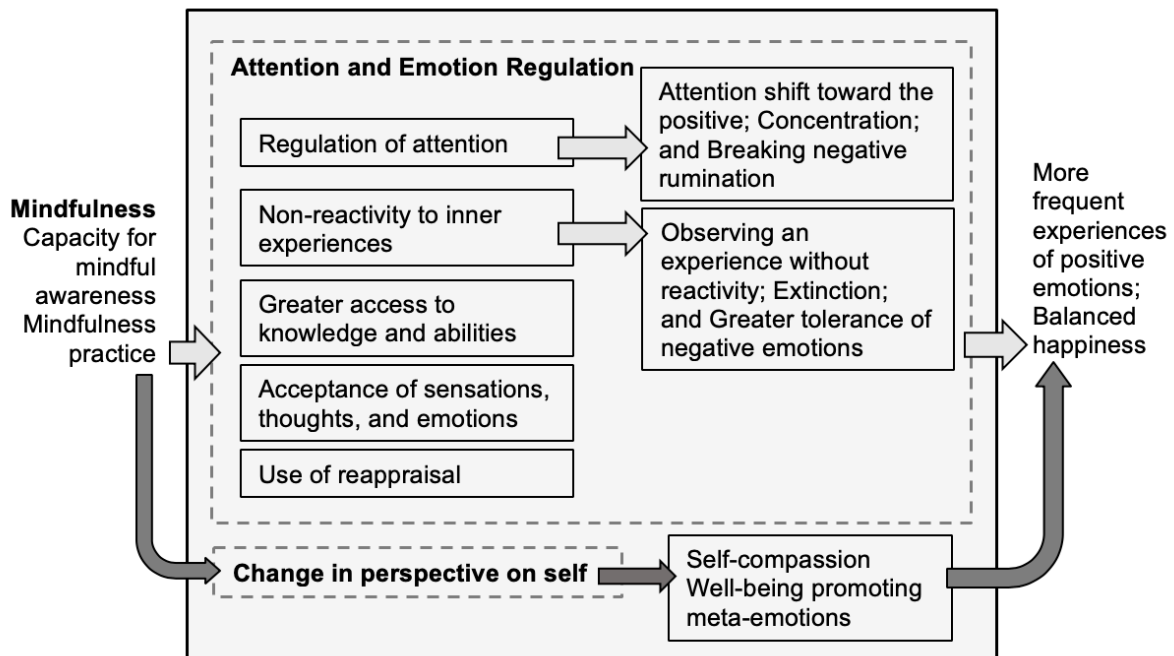
The term mindfulness is not easily defined. As a translation of the word *sati* from Pali – a language spoken in India around the time of the Buddha – it can connote many possible meanings. *Sati* has also been translated as 'memory', 'attention' and 'self-possession'. In medical science, the most common definition of mindfulness is: "the awareness arising from paying attention in a particular way: on purpose, in the present moment, and non-judgmentally" (Kabat-Zinn, 2005). Buddhist scholars Kang and Whittingham describe mindfulness as a state of less identification with self as a separate entity, and more identification with awareness itself, and with a state of equanimity (Kang and Whittingham, 2010). Interestingly, their definition also includes the potential for this state; that mindfulness helps to wisely direct awareness and behaviour according to genuine truth, virtue and happiness.

In a nutshell, the practice of mindfulness consists of two parts. One is to train the capacity to direct one's attention to something that is experienced in the present moment, for example the physical sensations of breathing. The other part is to cultivate an approach of patience, acceptance and of stepping back from judgements. It's not about giving up, but rather about the willingness to see clearly how things are in the moment, and in order to do so, it helps to take a stance of a neutral witness for a moment. Common misconceptions about mindfulness are that it is about relaxation (although, this is sometimes a nice side-effect), as well as having an 'empty mind' or making affirmations. The translation of the word 'sati' to 'memory' can imply a number of things: it can imply remembering to consciously choose where one wants to direct the attention and to embody the approach of acceptance, patience and non-judging. It can also imply remembering one's intentions, wishes and hopes in life at large, so that one can act and prioritize accordingly. It can imply remembering not to take things for granted in life, as this can give rise to enjoyable feelings of gratitude and awe. It can also imply remembering existential perspectives of the human condition, such as impermanence. Regardless of what the remembering is about, the practice of mindfulness helps us to clearly comprehend and discern things. Furthermore, in the practice of mindfulness, the cultivation of compassion goes hand in hand with the cultivation of clear comprehension, which is why

the word *sati* just as well could have been translated to *heartfulness* instead of mindfulness. (Personal Communication; Mark Williams August 2007, Florence Meleo-Meyer July 2008, June 2016 and May 2018, Yanai Postelnik & Catherine McGee May 2016 & May 2017, Christoph Köck September 2018)

In the last decades, the number of scientific studies on Mindfulness Based Interventions (MBIs) has increased exponentially and the use of MBIs has spread in clinical practice as well as in society at large. The aim of these interventions is to reduce suffering and promote well-being by improving metacognitive skills and self-regulation of attention and emotions (Bishop et al., 2004; Sze et al., 2010). Mindfulness Based Stress Reduction (MBSR) (Kabat-Zinn, 1991) and Mindfulness Based Cognitive Therapy (MBCT) (Williams et al., 2002) are the two most common programs offered in clinical settings, and have the most research support. According to a recent meta-analysis, the strongest evidence supporting the use of mindfulness is for treating depression, and there is also support for pain conditions and addictive disorders (Goldberg et al., 2018). MBCT significantly reduces the risk of relapse in recurrent major depressive disorder, being most effective for participants with three or more previous episodes and being at least as effective as maintenance antidepressant medication (Piet and Hougaard, 2011). Consistent with these findings, another meta-analysis by Khoury et al. concludes that MBCT and MBSR are effective for a variety of psychological problems, especially for reducing anxiety, depression, and stress (Khoury et al., 2013).

The psychological mechanisms that have been associated with the clinical benefits of MBSR and MBCT include enhanced emotional regulation strategies, higher self-compassion levels and meta-awareness, decreased rumination and worry, and decreased experiential avoidance (Chiesa et al., 2014; Gu et al., 2015; van Der Velden et al., 2015). These mechanisms are further outlined in the theoretical framework by Bränström and Duncan (2014), which illustrates that the practice of mindfulness helps increasing one's tolerance of negative emotions. It also promotes stronger and more frequent experiences of positive emotions (see figure 2) (Bränström and Duncan, 2014).



**Figure 2** Framework explaining the relation between mindfulness and positive emotions by Bränström & Duncan (2014).

Consequently, a person’s well-being benefits from high levels of mindfulness. Moreover, mindfulness seems to have intergenerational effects. Van Den Heuvel and colleagues found that higher levels of mindfulness in pregnant women is associated with less infant self-regulation problems and negative affect (van Den Heuvel et al., 2015). Likewise, it is associated with better social-emotional development and more adaptive changes in the infant’s autonomic nervous system at age 4 months (Braeken et al., 2017). Furthermore, mindfulness in expectant parents has been found to buffer the effects of depression on prenatal bonding (Hicks et al., 2018). Accordingly, it is worthwhile to take a closer look at the field of antenatal MBIs – interventions that through the practice of mindfulness may have the potential to increase mindfulness and as a result also reduce stress and depressive symptoms and increase well-being.

### **Antenatal mindfulness-based interventions – what is known so far**

Presented here are studies of antenatal MBIs that are similar to MBSR and MBCT with regard to number of group meetings, mindfulness practices and home assignments. MBSR and MBCT have 9 and 8 weekly group meetings respectively. The main practices are body-scan, mindful yoga and sitting meditation as well as informal practice of mindfulness in everyday life. Home assignments are given with audio-recorded guided practices and participants are encouraged to practice 6 days a week.

Mindfulness Based Childbirth and Parenting Program (MBCP) is one of the earliest antenatal MBIs and it is tailored for expectant couples. A pilot-study documented reduced pregnancy anxiety and stress from baseline to postintervention (Duncan and Bardacke, 2010). The



participants in that study – 27 pregnant women – were self-selected and as many as 92,6% of them had prior experience of yoga or meditation. Also, a briefer version of MBCP has been developed, encompassing 4 sessions instead of 9, and has been proven to be well accepted and feasible, pointing to improvements in stress and depressive symptoms (Warriner et al., 2018).

The antenatal MBI called the MindBabyBody program developed in Australia has also been found to be feasible and indicated improvements in psychological distress (Woolhouse et al., 2014). Similarly, yet another version called Mindfulness-Based Childbirth Education (MBCE) showed a trend toward reduced depression and anxiety although these outcomes were underpowered—the sample size was 12 pregnant women (Byrne et al., 2014). MBCE has also been evaluated qualitatively by Fisher et al. who report that both mothers and partners experienced that it gave them a sense of empowerment and community (Fisher et al., 2012). Meyer and colleagues further illustrate that an antenatal MBI can be perceived as contributing to well-being and promoting resilience (Meyer et al., 2017).

Another Australian pilot-trial of MBCT for pregnant women resulted in that 75 percent of the intervention participants experienced a clinically reliable decrease in stress symptoms from baseline to post-treatment. The control group's outcome scores showed very little changes. Notably, nine out of the ten participants in the intervention reported a history of anxiety or depression, while none of the participants in the control group did so. This trial also reports that participants perceived that they had found new ways of responding to everyday stressors and difficulties in their relationships, they felt more aware of the present moment, more capable of accepting things, and they also valued the peer support. (Dunn et al., 2012).

Furthermore, the Australian team Townshend and colleagues found lowered perinatal depression, anxiety and stress after an eight week MBI for pregnant women at risk of psychological distress (Townshend et al., 2018). They also suggest that antenatal MBIs promote skill development in self-kindness, observing and acting with awareness, and associate these change processes with a reduction in perinatal depression (Townshend et al., 2018).

Vieten and Astin developed an intervention called Mindful Motherhood, and recruited pregnant women who answered “yes” to the question “Have you had a history of mood concerns for which you sought some form of treatment, such as psychotherapy, counseling, or medication?” Thirty-four women were randomized to intervention or wait-list control. Their result showed decreases in state anxiety and negative affect in the mindfulness group compared with controls, postintervention. (Vieten and Astin, 2008)

Dimidjian et al have tested MBCT for the prevention of perinatal depressive relapse/recurrence, calling the intervention MBCT-PD. Forty-nine pregnant women with a history of depression were recruited, and results show improvements in depression symptom levels (Dimidjian et al., 2015). The same team has also reported the findings from a pilot RCT of MBCT-PD, showing that the intervention was well accepted; participants rated

satisfaction with services higher than the control group who were provided treatment as usual. They also reported improved depressive outcomes compared with the control group, providing evidence that relapse of depression can be prevented among pregnant women (Dimidjian et al., 2016). In the same manner, decreased levels of depressive symptoms were sustained 6 months postintervention in Miklowitz et al.'s study, which evaluated the effects of MBCT for perinatal women with recurrent major depressive disorder or bipolar spectrum disorder (Miklowitz et al., 2015).

CALM Pregnancy is an adapted version of MBCT for perinatal anxiety. In a pilot with 24 pregnant women with generalized anxiety disorder Goodman et al. showed feasibility and acceptability of the intervention, as well as clinically significant improvements in anxiety, depression, self-compassion and levels of mindfulness (Goodman et al., 2014). These improvements were maintained or even further improved when a follow-up study was made three months postpartum (Luberto et al., 2018).

Yet another pilot RCT testing an MBI for pregnant women with high levels of pregnancy anxiety and perceived stress shows decreased anxiety from pre-to postintervention, but no sustained effects in a six-week postintervention follow-up. (Guardino et al., 2014)

So far, most of the studies are pilots with variations in study-designs; selecting 'at risk' groups of participants or being universal, inviting partners to participate or being offered only for pregnant women, being randomized or not. However, taken together they show that antenatal MBIs are feasible and appreciated. Furthermore, there are five systematic reviews of the effects of antenatal MBIs concluding that there is insufficient evidence. Nonetheless, the limited positive findings support adequately powered, longitudinal RCT's with active controls. (Badker and Misri, 2017; Dhillon et al., 2017; Hall et al., 2016; Matvienko-Sikar et al., 2016; Shi and MacBeth, 2017)

## **AIM**

The overall aim of this thesis was to study a Swedish version of the Mindfulness Based Childbirth and Parenting Program and evaluate its effects on parents' well-being and children's social-emotional development.

### **Specific aims of the studies**

**Study I** – to test the efficacy of MBCP in reducing pregnant women's perceived stress and preventing perinatal depression, as well as to explore possible mechanisms and the role of home-practice of mindfulness.

**Study II** – to evaluate the long-term effects of MBCP on mother's perceived stress and risk of depression during the first year postpartum, and explore the role of continued practice of mindfulness.

**Study III** – to compare infants' social-emotional development between the MBCP-group and active control group and investigate possible correlations between infants' social-emotional development score and mothers' psychological outcome measures.

**Study IV** – to explore the MBCP-participants' experiences of the program.



# RESEARCH APPROACH

## STUDY DESIGN

Study I, II and III report results from a randomized controlled trial (RCT) with intention-to-treat (I and II) as well as per-protocol (III) analysis. Study II is also a longitudinal study. Before the full RCT was launched, a pilot-study was conducted to test feasibility. Finally, study IV is a qualitative study exploring narratives.

**Table 2.** An overview of the four studies.

Study	Design	Participants	Analysis	Outcomes
I	RCT	Pregnant women at risk of perinatal depression, n=193	Intention-to-treat	Pregnant women's psychological well-being
II	Longitudinal RCT	Same as above, followed during the first year as a mother, n=193	Intention-to-treat	Mothers' psychological well-being
III	RCT	A subsample of above, mothers of infants at three months of age; n=88	Per protocol	Infant's social-emotional development
IV	Qualitative	10 mothers and 6 fathers from the intervention-arm in the RCT	Thematic Analysis	Parents' experiences of MBCP

## SETTING AND PARTICIPANTS

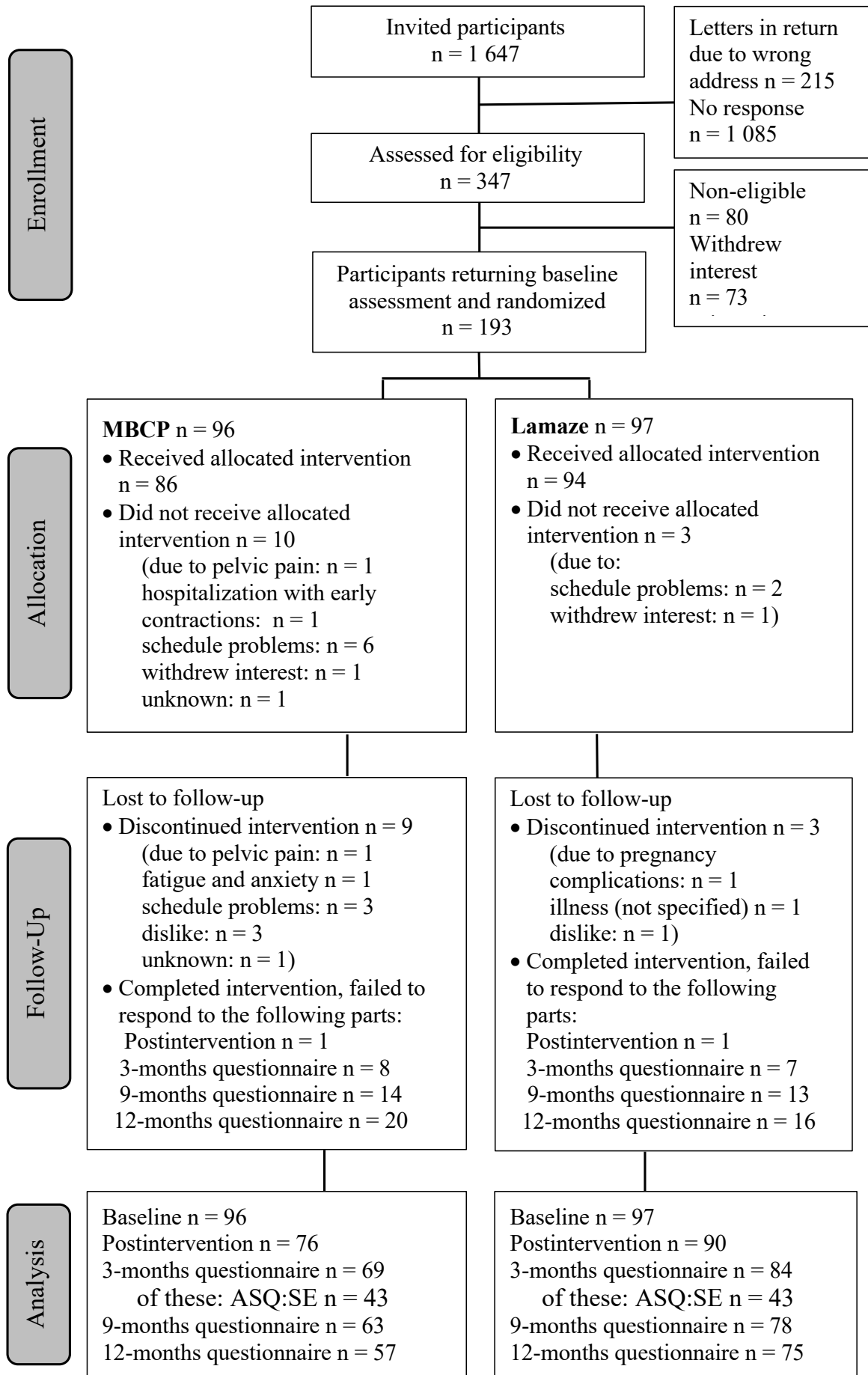
The participants were recruited through eight MHC's in the Stockholm region (three large centers in the inner-city and several smaller centers in northwestern suburbs; Kista, Bromma, Solna, Märsta and Jakobsberg) and consisted of first-time pregnant women at risk of perinatal stress or depression. The pilot study was initiated in autumn 2014 and it took some months to build an infrastructure and collaboration with MHC's in order to enable a sufficient flow of participants to fill the antenatal classes and for the RCT to run smooth. Timing was crucial, since prospective participants could not be asked to participate too early or too late in their pregnancy. In the pilot, the inclusion criteria had been high levels of perceived stress. However, since a history of depression, as well as childhood adversity also are risk factors for perinatal depression, and possible to screen for, we (the research team) also included these as

inclusion criteria when we continued with the RCT. This made the sample somewhat more heterogenous in terms of their vulnerabilities. An advantage was that it made the recruitment more feasible, due to the larger influx of participants that resulted from broader inclusion criteria. The following criteria defined eligibility:

- a) scoring six points or more on the 4-item Perceived Stress Scale (Cohen et al., 1983)
- b) having a history of mental health problems for which they had been seeking health care (yes/no, if yes then they were asked to describe when and for what)
- c) previous experience of depression or anxiety (yes/no)
- d) scoring six points or higher on three items from the Childhood Trauma Questionnaire (Bernstein et al., 2003) using a 5-point scale from 0 to 4 (a high score indicates early life adversity)
- e) fluent in Swedish
- f) no previous experience of mindfulness training or meditation (yes/no)
- g) no current major depressive episode or psychotic symptoms
- h) minimum 18 years of age.

All first-time pregnant women enlisted at participating MHC's received a letter of invitation to the study around gestational week 15–22 (in total 1647 letters). We explicitly invited women who would like some extra support in case they felt stressed or worried. 347 women responded and were screened for eligibility through a brief online questionnaire. Of these, 193 agreed to participate and met the inclusion criteria (see flowchart; figure 3). As the measure of infant social-emotional development (ASQ:SE) was added at a later stage in the study, the number of participants for study III is 88. Consecutive sampling was used for the qualitative study (IV). The first ten couples who participated in MBCP were asked to be interviewed three months postpartum. All mothers, and six of the fathers agreed. The majority of the participants in our study were highly educated, born in Sweden and were married or co-living with their partner (see table 2 in study I for socio-economic background characteristics of all participants).

We chose to only include first time pregnant women in order to have a more homogenous sample than if we mixed first time pregnant with those who already had children.



**Figure 4** Flowchart of participants, CONSORT figure (Schulz et al., 2010).

## **PROCEDURE AND DATA COLLECTION**

The research team contacted eligible participants by phone and scheduled an appointment for other outcome measures not included in this thesis. Eligible participants were informed about the study in the letter, by phone and during the meeting, during which they signed informed consent. After completion of the baseline questionnaires, which were filled in online, participants were randomized by an external administrator, in blocks of 10 generated in SPSS. The two conditions were MBCP and Lamaze, described more in detail below. Unfortunately, it was not possible to keep the participants blinded to the condition they were randomized to. However, they were blinded to the study hypotheses.

### **Intervention condition – Mindfulness-Based Childbirth and Parenting Program (MBCP)**

The MBCP program which builds on MBSR, was developed by Nancy Bardacke in the USA (Bardacke, 2012). The curriculum encompasses nine weekly sessions, each three hours long, a full day retreat and a reunion after the birth of the infants. However, since there is good evidence for the efficacy of MBCT, which in its original form consists of eight two-hour long group sessions that are held once per week, we decided to shorten our version of MBCP to be more similar to MBCT in regards to time. This was mainly to make it more feasible for busy participants as well as more cost-effective for future implementation. Our version had eight weekly sessions that were 2 hours and 15 minutes long. There was no retreat day, but a postpartum reunion was provided. We also considered cultural differences between the USA and Sweden in our adaptation, which are described in more detail in study I. Furthermore, informed by Ina May Gaskin (Gaskin, 2003), in the fourth session we added information about the intimate connection between feeling safe, loved, and possibly even sexually aroused and the capacity of the vagina as it is engorged, to stretch – not tear – during childbirth. After consultation with Mats Berggren, an expert on father-groups from the NGO “Men for Equality” we also added an exercise to help participants reflect and discuss gender roles and their expectations on co-parenting, in session five. Allowing for adaptations to the local setting, instead of strict fidelity to the original curriculum, is recommended in order to make interventions work better (Skivington et al., 2018).

Throughout the eight group meetings, antenatal education was interwoven with the practice of mindfulness, and during the sessions there was a 15 minutes snack break, to facilitate peer support and networking in the groups. Between sessions, the participants were asked to do formal mindfulness practices for 30 minutes per day, as well as informal mindfulness practices during various daily activities and whenever they felt fetal movements. They received an informative text after each session and had access to audio files with guided meditations online. See Table 1 in study I for a more detailed description of the program.

Three MBCP-teachers delivered the intervention. They had all had long experience of meditation and could embody the teachings. This is important to consider, so that rather than



just being a cognitive skills training or a technique for stress reduction, the program offered a retraining of awareness, embedded in a gentle approach of kindness.

### **Active control condition – Lamaze childbirth class**

When we planned this project, we had lengthy discussions regarding study arms and conditions. The advantages of having an active control group include the possibility to control for the effects of peer support in a small group intervention, and of psychoeducation regarding childbirth, breastfeeding and the care of a newborn, as these likely also contribute to increases in well-being for the expectant parents. Having an active control condition as opposed to e.g. waitlist control or treatment as usual, also aimed to prevent any nocebo response, which may have been experienced by participants, and inflated effect size (Furukawa et al., 2014). This also made the study more ethically sound, since we were targeting a group at risk. A disadvantage was the extra cost added from having an active control condition, compared with having a treatment as usual control.

However, it was not possible for us to organize a control condition with the same amount of time spent in the group sessions, even though that would have been optimal. For feasibility reasons we chose a Lamaze childbirth class (Frisk, 2018) as the active control condition. This class is popular in Stockholm, and available for expectant parents that have the means to pay for it themselves. The possibility of accessing such a class free of charge, was likely also a good strategy for making prospective participants interested in the study. Usually, the Lamaze childbirth class provided in Stockholm has two sessions. For our participants we had one more session added. In total, the group met three times, each three hours long. The focus was on coping with stress and pain during labor through breathing and relaxation techniques and mental strategies. Breastfeeding, care of a newborn and the couple relationship were also addressed (described in more detail in study I).

When comparing these two conditions, both have elements of psychoeducation to prepare becoming parents. The Lamaze condition has in total nine hours of information and practices, the MBCP condition has in total 18 hours. However, about half of the time spent during the sessions in MBCP is used for information and practices regarding parenting preparation and the other half is used for the practice of mindfulness and discussions and feedback on these practices. Taken together, this means that both conditions equal to the same hours of parenting preparation. The differences between the two conditions is that the pedagogics have different approaches, and the intervention group gets the extra hours of mindfulness practice.

**Table 3.** Timeline over data collection.

Pregnancy		Childbirth	Postpartum		
Baseline	Post-intervention		3 months	9 months	1 year
PSS-14	PSS-14		PSS-14	PSS-14	PSS-14
EPDS	EPDS		EPDS	EPDS	EPDS
PSOM	PSOM		PSOM	PSOM	PSOM
FFMQ	FFMQ		FFMQ	FFMQ	FFMQ
	Adherence		Cont. practice	Cont. practice	Cont. practice
		Obstetric data			
		Skin to skin care	ASQ:SE		
		Breast-feeding	Breastfeeding	Breastfeeding	Breastfeeding
			In-depth interview		

PSS-14 Perceived Stress Scale 14-item. EPDS Edinburgh Postnatal Depression Scale. PSOM Positive States of Mind. FFMQ Five Facets of Mindfulness Questionnaire. Adherence Amount of mindfulness practice in between sessions and attendance at sessions. Cont. practice Amount of continued mindfulness practice during follow-up period. ASQ:SE Ages & Stages Questionnaire–Social Emotional.

### Procedure and outcome measures

Within two weeks after the baseline assessment, the MBCP class started, and after a few more weeks the Lamaze class started. Ten to twelve weeks after the baseline measure, the postintervention measure was carried out, also with an online questionnaire. The participants were given a paper questionnaire regarding skin-to-skin care of the newborn, which they were asked to bring to the delivery to be filled out by the father/co-parent/support person shortly after childbirth. Data was also collected from the medical records of the birth and aftercare. Three, nine and twelve months postpartum the parents were asked to fill in questionnaires again and the in-depth interviews were carried out three to four months postpartum. See table 3 for a timeline over the data collection.

When choosing questionnaires, we aimed to use instruments that were translated to Swedish and validated in the Swedish setting, and commonly used in studies with pregnant women. The main outcome measures were stress and depression measured with **Perceived Stress Scale 14 items (PSS)** (Cohen, 1983; Eklund et al., 2014) and **Edinburgh Postpartum Depression Scale (EPDS)** (Cox et al., 1987; Rubertsson et al., 2011). Moreover, we also wanted to measure positive affect which is why we added **Positive States of Mind (PSOM)** (Adler et al., 1998; Horowitz, 1988). Furthermore, in our attempt to measure level of

mindfulness, we selected the **Five Facets of Mindfulness Questionnaire (FFMQ)** (Baer et al., 2006; Lilja et al., 2011) since it conceptualizes mindfulness as a multifaceted construct. In study I and II these questionnaires are described in more detail. All measures were used as scales. However, for the EPDS a cut-off set at 11/12 for detection of depressive symptoms, was also used (Wickberg and Hwang, 1996).

Regarding child social-emotional development and parent-child relation, the initial plan was to measure this only at one point-in-time when the child was 12-15 months old with Parent Child Early Relationship Assessment (PCERA) (which is not part of this thesis). However, when the project was up and running, we discussed if potential intervention effects may have washed out after such a long time, and thought it would be good to get a measure at an earlier stage as well. It was easy and with no extra cost involved, to add the **Ages and Stages Questionnaire–Social Emotional (ASQ:SE)** (Gollenberg et al., 2010; Squires et al., 1997), to the battery of questionnaires that the mothers filled in three months postpartum. This is why we only have data from 88 of the 193 participants on this measure. This measure is described in more detail in study III.

**Adherence to the MBCP program:** Attendance was tracked and during each session, the MBCP-participants filled in a form regarding home practice; how often and for how long they had been practicing formal and informal mindfulness meditation during the week.

**Continued practice of mindfulness:** In the follow-ups at three, nine and twelve months postpartum, the MBCP-participants responded to questions regarding if they had continued to practice mindfulness, formal as well as informal, how often and for how long.

**Adverse events:** In the case of adverse events among the MBCP-participants, the instructors reported these to the research team. An important aspect, since unpleasant experiences related to meditation have been reported (Britton, 2019).

**Contamination across groups:** At the three months follow-up questionnaire, the mothers were asked if they had attended any other birthing or parenting class during pregnancy, and if so, they were asked describe what kind.

**Obstetric data:** From the medical records we collected data on mode of delivery and obstetric interventions.

**Skin-to-skin care of newborn:** From the questionnaire filled in at the delivery we gathered data on skin-to-skin care during the first hours, if it had been immediate at birth, and if delayed, for how long time and for what reason. We also asked if the skin-to-skin care had been interrupted or not, and if the newborn had suckled and fallen asleep before interruptions.

**Breastfeeding:** From the medical records we gathered data on infant suckling behavior during the first hour and breastfeeding rates at discharge from hospital. In the postpartum questionnaires, mothers responded to questions regarding extent of breastfeeding and duration of exclusive and partial breastfeeding during the first year.

**In-depth interviews:** Through the in-depth interviews we obtained descriptions of MBCP-participants' experiences of the intervention and what this meant for them as they went through the transition to parenthood, as well as in everyday challenges in life in general. The interviews were individual, recorded and transcribed verbatim.

In the overarching research project, outside the scope of this thesis, several other measures were carried out as well: The Parent Child Early Relationship Assessment, biomarkers such as maternal heart rate variability and inflammatory markers in serum, childbirth self-efficacy, rating of birth experience, and the participating fathers/co-parents were also asked to fill out the questionnaires PSS, EPDS, PSOM and FFMQ.

## **STATISTICAL ANALYSIS**

Statistical power analysis was calculated based on perceived stress, measured with PSS-14 items, as main outcome in the RCT and using data from a pilot study by Duncan and colleagues (Duncan and Bardacke, 2010). Sociodemographic data on nominal level, is presented with absolute and relative frequencies and Chi-Square or Fishers exact tests were calculated. Data on interval scale level is presented with mean and either standard deviation (SD) or 95% Confidence intervals (CI). Hypotheses for study I and III were tested using Student's t-test for independent samples. Effect size was calculated using the Cohen's *d* formula, where  $d = t * \sqrt{(n1+n2)/(n1*n2)}$ . Furthermore, bivariate correlation and linear regression analysis were conducted and a collinearity diagnostic test was performed in study III.

In the intention-to-treat analysis in study I, data lost to follow-up was imputed using multiple imputation, with five iterations. Study I also included mediation analyses (Preacher and Hayes, 2008) to test the hypothesis that MBCP would be linked to a larger increase in mindfulness (measured with FFMQ) compared with Lamaze from pre- to postintervention. In turn, the larger increase in mindfulness would predict larger decreases in perceived stress and symptoms of depression and larger increases in positive states of mind. Nevertheless, one must bear in mind that the mediation analysis cannot be used to draw conclusions on causality, since a temporal component is lacking. Furthermore, in study I, linear regression analyses were used to explore if compliance with the MBCP-program was associated with the psychological outcomes. Compliance was measured as number of sessions attended and amount of mindfulness practice at home in between sessions.

In study II, Linear Mixed Model (LMM) analyses were used to assess differences between the two groups at all follow-up assessments. Advantages with LMM are that it uses all available data points and minimizes information loss due to missing data (Hesser, 2015). LMM also makes it possible to choose covariance structure and include random intercepts and slopes in the model which facilitates a more accurate representation of reality than single-level models. It was also possible to accommodate for non-linear change over time, using two time periods; first the change between baseline and postintervention, and second the change from postintervention and across the three follow-up assessments. It is often the case in study designs with pre- to postintervention measures and long-term follow-up measures, that the

rate of change over time is different in the first time period compared to the second. Further, the effect of continued practice was explored among the MBCP participants.

Since there were three teachers that taught the MBCP-program (explained more in detail in study I), LMM was used to test if there were differences in outcomes between the participants of the respective teachers.

All analyses were performed in SPSS version 25.

## **QUALITATIVE ANALYSIS**

Using qualitative methods when exploring the practice of mindfulness is recommended by Grossman, who points to several weaknesses of self-report questionnaires that attempt to measure levels of mindfulness. Further, he emphasizes the knowledge that can be derived from practical experience and encourages psychologists and researchers not to rely on rational thinking alone, but to complement this with a practical experience. (Grossman, 2008) For this reason, my personal experiences of practicing and teaching mindfulness, and participating in insight meditation retreats are also valuable when working with this thesis. In Grossman and Van Dam's words: "Enriching positivist Western psychological paradigms with a detailed and complex Buddhist phenomenology of the mind may require greater study and long-term direct practice of insight meditation than is currently common among psychologists and other scientists. Pursuit of such an approach would seem a necessary precondition for attempts to characterize and quantify mindfulness." (Grossman and Van Dam, 2011)

This is reminiscent of what the phenomenological philosopher, Merleau-Ponty, has pointed out regarding how pre-understanding can enrich the process of analysis: In the juncture where past experience is connected with present moment, new and expanded knowledge is made possible (Merleau-Ponty, 1991/1964).

For study IV, thematic analysis according to Braun and Clarke was chosen, due to its suitability for identifying, analyzing and reporting patterns in data, and its theoretical flexibility and independence. Further advantages with this method are that the results produced are generally accessible and useful for a broader audience, and it can highlight both similarities and differences across the data. (Braun and Clarke, 2006).

When 16 interviews had been carried out, sufficient information power had been reached, since the dialogue in most interviews were rich, the study aim was rather narrow and the specificity of the sample was dense (Malterud et al., 2016). In order to find patterns in meaning and significance of experiences, in a straightforward way, the analysis was inductive and had a phenomenological approach (Dahlberg, 2006). A reflexive stance was facilitated by having three researchers involved in the analysis. For more details regarding the steps in the analysis see study IV.

## **ETHICAL CONSIDERATIONS**

Ethical approval was obtained for the research project from the Stockholm Regional Ethics Committee (2012/400-31/4). Informed consent has been given by all participants. An important ethical aspect was to inform the presumptive participants that the participation was voluntary, that they could cancel their participation at any time and that they would receive care as usual. This information was given to the participants in the letter of invitation, as well as in a phone conversation, before registration.

It was important to ensure the secrecy of the participants' identities. Each participant was given a code-number and the key for connecting the individual with the code-number is kept safe. The data from questionnaires and transcripts from interviews are stored with only the code-number. The results from the data is presented in ways that does not show individual responses.

The study had minimal risks for the participants and potential positive psychological effects. One of the risks the participants were exposed to was having unpleasant meditation related experiences. These experiences seldom occur for beginners in mindfulness practice with doses of practise being as low as in the MBCP program. However, we had to bear in mind that the practice of mindfulness is not appropriate for all persons. The instructors of the intervention were aware of this and in the event that a participant experienced that the intervention did not fit them for some reason, they were supported to quit participating.

Other risks for the participants were that they may have found it hard to find the time it required to participate, both in the data-collection as well as in the antenatal programs. They also ran the risk of becoming disappointed over the randomization in case they hoped to attend one of the two programs but were allocated to the other one. Still, the active control may have minimized risk of any nocebo.

We assessed that these risks were outweighed by the benefits of conducting the randomized controlled trial, since that would add to the evidence-base regarding the efficacy of the intervention.

If a participant scored 3 points on question number 10 in EPDS (regarding self-harm) we had decided to check and make sure that the person had access to and help from psychiatric care. However, none of the participating mothers scored 3 on this question.

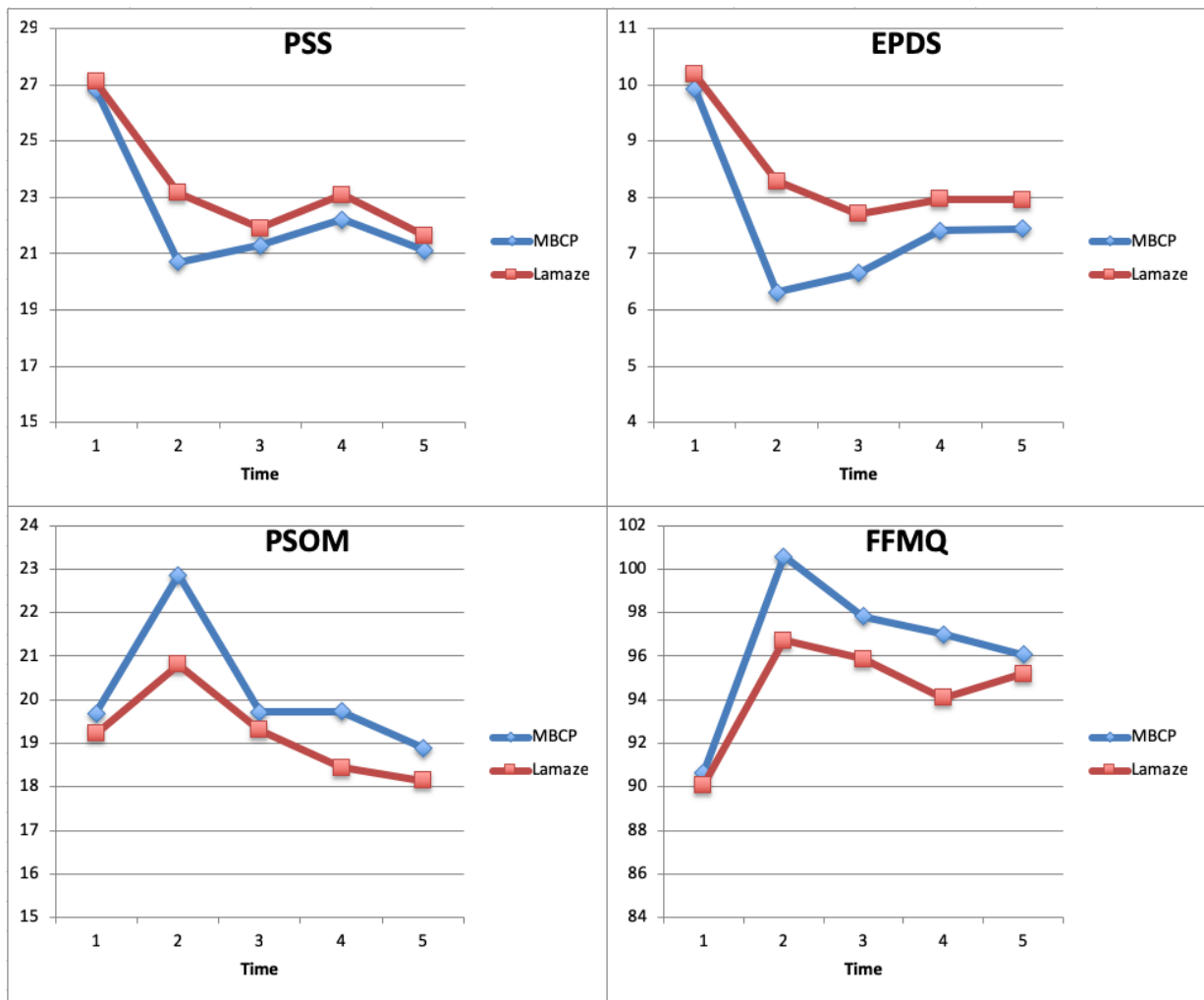
Finally, regarding potential conflict of interests, the author has been working part-time with teaching MBCP as a sole trader (enskild firma) before the start of this PhD-project.

# RESULTS

## Long and short-term effects on mothers' psychological outcomes

From baseline to postintervention, MBCP significantly reduced perceived stress ( $p = 0.038$ ,  $d = 0.30$ ) and depressive symptoms ( $p = 0.004$ ,  $d = 0.42$ ), and increased positive states of mind ( $p = 0.005$ ,  $d=0.41$ ) and levels of mindfulness ( $p=0.039$ ,  $d=0.30$ ) compared to the Lamaze program. The change in level of mindfulness possibly mediated the treatment effects of MBCP on stress, depressive symptoms, and positive states of mind. Among the five subscales in FFMQ the strongest mediating effects were found to be “non-reactivity to inner experience” and “non-judging of experience”. Furthermore, none of the measures on compliance with the MBCP program (attendance at sessions and practice of informal and formal mindfulness meditation in-between sessions) had any significant effects on the changes in PSS, EPDS, PSOM or FFMQ. (Study I)

The differences between the two groups found postintervention, gradually decreased during the follow-up period (see figure 3), and there were no statistically significant differences between the study groups in the outcome measures PSS, EPDS, PSOM or FFMQ at three, nine, and twelve months postpartum (Study II). However, a comparison between the two study-arms regarding how many of the mothers scored above the EPDS cut-off at the five points-in-time, show significant differences between the two study-arms at both the postintervention measure and 12 months postpartum measure, but not in the measures in between: At baseline, 39.6% of the MBCP-mothers and 33.0% of the Lamaze-mothers scored above the EPDS cut-off ( $p = .341$ ). The corresponding rates were; postintervention 10.7%<sub>MBCP</sub> and 23.3%<sub>Lamaze</sub> ( $p = .033$ ), three months postpartum: 14.5%<sub>MBCP</sub> and 22.6%<sub>Lamaze</sub> ( $p=.202$ ), nine months postpartum: 20.6%<sub>MBCP</sub> and 25.6%<sub>Lamaze</sub> ( $p=.485$ ), twelve months postpartum: 15.8%<sub>MBCP</sub> and 30.7%<sub>Lamaze</sub> ( $p=.048$ )

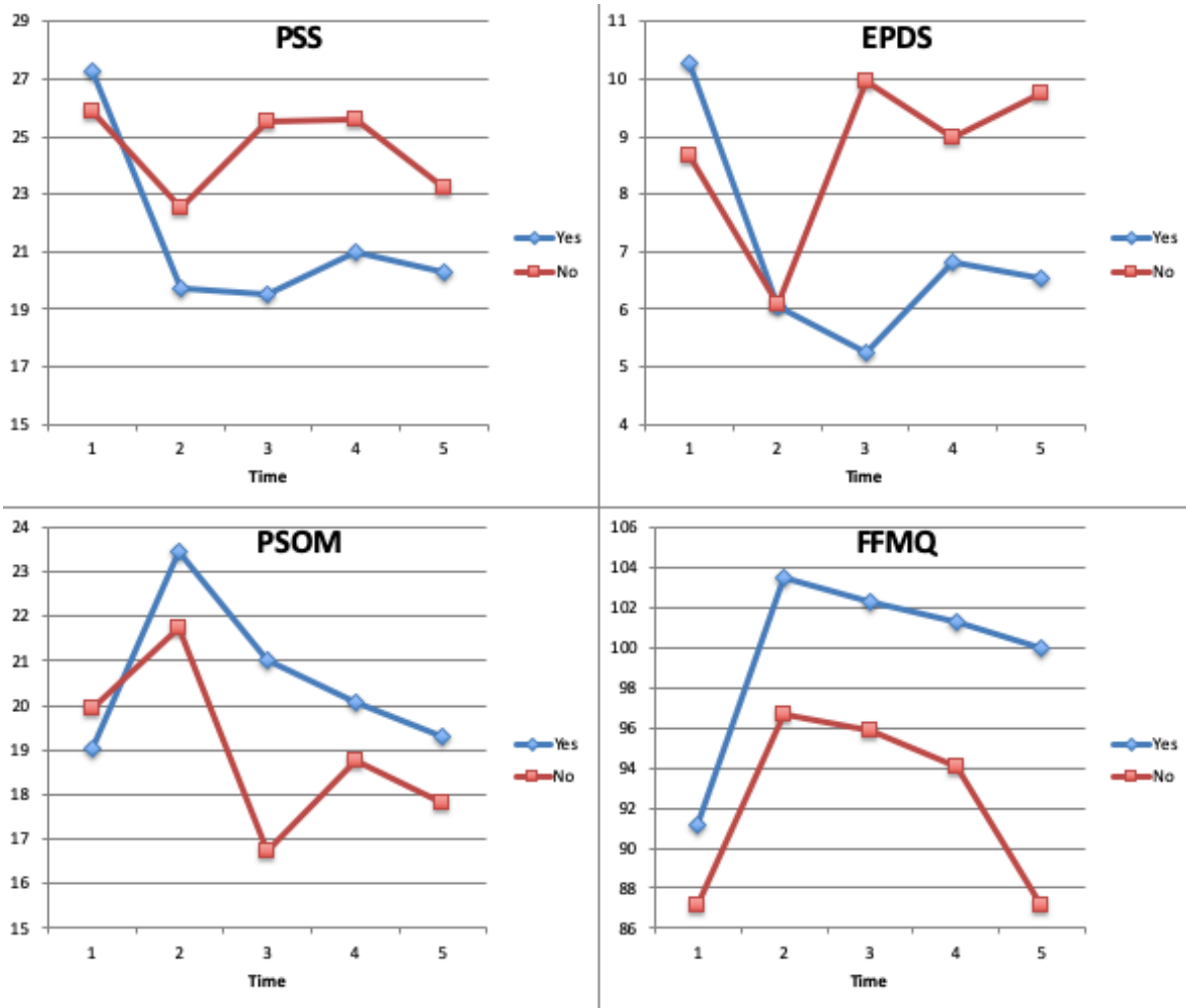


**Figure 3.** Graphs of the two groups: MBCP (Mindfulness Based Childbirth and Parenting), Lamaze (active control) illustrating the results in study I and II. Five points in time: 1=baseline, 2=postintervention, 3=three months postpartum, 4=nine months postpartum, 5=twelve months postpartum. Four measure: PSS (Perceived Stress Scale 14-items), EPDS (Edinburg Postpartum Depressive Scale), PSOM (Positive States of Mind), FFMQ (Five Facets of Mindfulness Questionnaire).

### Subgroup differences within the MBCP-condition

When restricting the analysis only to mothers in the MBCP condition, comparing mothers who continued to practice mindfulness, (n=50 “continuers”), with mothers who did not continue to practice, (n=21 “non-continuers”); from pre- to postintervention the decrease in perceived stress ( $F=6.39$ ,  $p=0.014$ ) and increase in positive states of mind ( $F=4.67$ ,  $p=0.034$ ) were larger for the “continuers”. During the follow-up period the non-continuers showed a larger increase in depressive symptoms ( $F=3.63$ ,  $p=0.014$ ) and decrease in level of mindfulness ( $F=3.32$ ,  $p=0.021$ ) compared with the “continuers”. (Study II)





**Figure 4.** Graphs of the two groups: Yes="continuers", No="non-continuers". Five points in time: 1=baseline, 2=postintervention, 3=three months postpartum, 4=nine months postpartum, 5=twelve months postpartum. Four measures: PSS (Perceived Stress Scale 14-items), EPDS (Edinburg Postpartum Depressive Scale), PSOM (Positive States of Mind), FFMQ (Five Facets of Mindfulness Questionnaire).

### Attrition, compliance, contamination, adverse events and teacher-effect

The attrition rate postintervention was 14%. At the follow-up measures post childbirth it was 21% at three-months, 27% at nine months, and finally 32% at 12-months. Compliance to the intervention with regards to attendance at the sessions is shown in table 4. For the MBCP-participants who completed the postintervention measure, the mean attendance rate was 6,81 sessions (SD = 1,202). Regarding doing mindfulness practices at home, in between sessions, the average time for this was 62,2 minutes per week (SD=46,89) of formal practice and 41,03 minutes per week (SD = 43,8) of informal practice. Regarding contamination across the groups, there were six (8,7%) of the mothers in the MBCP-arm who had also participated in a Lamaze course, and one mother (1,2%) in the Lamaze-arm who had participated in an online-mindfulness course (not MBCP). One adverse event was reported; a woman participating in MBCP experienced increased anxiety during the sessions, and therefore dropped out. When

comparing the change over time in PSS, EPDS, PSOM and FFMQ, between participants in the MBCP-arm, grouped according to who had been their teacher, no significant differences were found in the psychological outcomes.

**Table 4.** Participant intervention attendance

Number of Lamaze sessions	0	1	2-3						
Number of participants	3	6	89						
Number of MBCP sessions	0	1	2	3	4	5	6	7	8
Number of participants	10	0	1	2	0	5	16	32	24

### Infant social-emotional development

Regarding infants' social-emotional development, there was a difference in score indicating that infants in the MBCP-study arm showed a better social-emotional development compared with infants in the Lamaze-study arm ( $p=.049$   $d=.407$ ). The subscale "communication skills" differed the most between the study arms, pointing to that mothers in the MBCP-arm experienced that they could understand their infant's cues to a higher degree ( $p=.006$   $d=.606$ ) (see table 5). Moreover, the mothers' psychological measures (PSS, EPDS, PSOM and FFMQ) correlated with the score on infant social-emotional development, the strongest correlation was found with maternal positive states of mind. (Study III)

**Table 5.** Group comparison of ASQ:SE sum and subscales

Variable	MBCP (n = 43) <i>mean (SD)</i>	Lamaze (n = 45) <i>mean (SD)</i>	<i>d</i>	<i>p</i>
ASQ:SE sum	20,67 (17,16)	29,00 (23,28)	,407	,049
Self-regulation	8,79 (9,05)	12,44 (11,95)	,344	,111
Communication	,00 (,00)	1,11 (2,59)	,606	,006
Adaptive functioning	5,42 (6,98)	8,11 (9,19)	,330	,127
Affect	2,44 (3,51)	2,61 (3,53)	,048	,822
Interaction with people	1,05 (2,79)	1,56 (3,34)	,166	,441
General concerns and comments	2,57 (3,83)	3,17 (3,63)	,161	,456

### Mode of delivery, skin-to-skin care of newborn and breastfeeding

The mode of delivery was vaginal (non-instrumental) for 69,4% of the births in the MBCP-arm and 65,1% in the Lamaze-arm. The other modes of deliveries were as follows; vacuum extraction 12,5%<sub>MBCP</sub> and 11,8%<sub>Lamaze</sub>, emergency caesarean section 8,5%<sub>MBCP</sub> and 16,5%

Lamaze, planned caesarean section: 9,9%<sub>MBCP</sub> and 7,1%<sub>Lamaze</sub>. The rate of immediate skin-to-skin care at birth was 78,9% in the MBCP-arm and 77,6% in the Lamaze arm. Most of the newborns suckled during the first hours (59,7%<sub>MBCP</sub> and 60,5%<sub>Lamaze</sub>). At discharge from the hospital most of them were breastfed exclusively (69,4%<sub>MBCP</sub> and 69,5%<sub>Lamaze</sub>). When the infants were 3 months old, the rate of exclusive breastfeeding was 47,1%<sub>MBCP</sub> and 49,4%<sub>Lamaze</sub>. Finally, at 12-months of age 33,3% in the MBCP-arm and 31,1% in the Lamaze-arm were still breastfeeding. There were no statistically significant difference between the two study-arms in any of these measures.

### **Participants' experiences of MBCP**

In the qualitative study (study IV) two themes were identified from the analysis. The first theme "Acceptability" indicates that participants who were hoping to get help and also had a preconceived notion that MBCP could provide this help, experienced that they benefitted from the MBCP program. This theme also points to that high levels of skepticism can possibly block the potential to benefit from the program. A certain level of engagement and willingness to practice seems to be a prerequisite for experiencing the program as valuable.

The second theme "A new way of relating" illustrates how the participants found new helpful ways of relating to themselves and their surrounding by the practice of mindfulness. This new way of relating was perceived as giving rise to deeper self-knowledge and self-compassion. It was also found helpful for relating to one's partner and baby as well as one's environment with more presence and patience. Moreover, the new way of relating was experienced as an effective way of coping with pain (in labor or from sore nipples), as well as with stressful situations in everyday life with an infant. There were also challenges that were experienced as too overwhelming, for being able to approach them with mindfulness.

# DISCUSSION

## SUMMARY OF FINDINGS

The main finding in this thesis, is that the women who were randomized to MBCP reported larger reductions in perceived stress and depressive symptoms, compared to the women randomized to the Lamaze condition, from pre- to postintervention. They also reported larger increases in positive states of mind and level of mindfulness, compared with the control group. Extending from this main finding, results also show that the treatment effects of MBCP on perceived stress, depressive symptoms, and positive states of mind were likely mediated by the increased levels of mindfulness.

The initial effects at postintervention were not sustained at longer-term follow-up assessments during the first year postpartum. However, 70% of the mothers in the MBCP-arm continued to practice mindfulness during the follow-up period. Analysis within the MBCP-arm shows that these “continuers” had a larger treatment effect from pre- to postintervention compared with the “non-continuers”, and they retained the intervention effects. The “non-continuers”, on the other hand, did not retain the initial intervention effects.

Regarding infant’s social-emotional development, there were differences in score to the benefit of the MBCP group, and the largest effect was found in the subscale related to communication. It seems that the mothers in the MBCP-arm experienced that they could understand their infants’ cues to a higher degree, compared with mothers in the Lamaze-arm. All measures of mothers’ psychological status correlated with the score of infant social-emotional development, where the strongest (positive) correlation was with mothers’ positive state of mind.

Mothers and fathers experienced that participating in the MBCP program increased their capacity to cope with stress, anxiety, pain and distress. A number of parents also ascribed increased self-compassion, insight and communication skills to MBCP. They described that it was helpful to adopt an approach of curiosity, non-judging and acceptance and that this made it possible for them to relate in new ways to their own thoughts and emotions. Moreover, the skills they learned from MBCP were helpful during challenges related to becoming a parent, such as giving birth/supporting the one giving birth, breastfeeding, interrupted sleep, moments with a crying infant, and co-parenting.

## METHODOLOGICAL CONSIDERATIONS

### Trustworthiness of quantitative findings

**Internal validity:** The methodological strengths make the internal validity high in this thesis (Bruce, 2018). It is very likely that the documented effects can be attributed to the MBCP-intervention, since the study was experimental – using a randomized controlled design – and the groups were comparable at baseline. Experimental designs are considered the most

rigorous, when aiming to draw causal relationships. However, despite the random assignment, there may of course be differences between the groups, beyond our knowledge. For this reason, we have to rely on the idea of probability, assuming that the two groups are equivalent. Moreover, it's a limitation that the participants were not blinded – concealing mindfulness practice as intervention is a challenging task to achieve. Further, the number of sessions in the two study-arms were different (8 compared with 3 group meetings, adding up to 18 hours of MBCP, compared with 9 hours of Lamaze) which could be a confounder. Using self-report questionnaires is also a limitation, since there is a risk of reporting bias, and this is especially problematic in attempts to measure levels of mindfulness (Goldberg et al., 2015).

The power calculation was done for the main outcome in the research project (change in PSS and EPDS from pre- to postintervention, study I), and no power was calculated for long-term effects, implying that there may be a risk of type II error regarding the findings in study II – the difference that exists does not become statistically significant due to small groups.

Since the amount of home practice during the program and the amount of continued mindfulness practice during the follow-up period was tracked, it was possible to study the mediating effect of compliance with the program, and amount of mindfulness practice

Regarding the mediation analysis, it is a limitation that the mediator (level of mindfulness) and the outcomes (depressive symptoms, perceived stress and positive states of mind) were measured at the same point in time. The mediator should precede the outcome measures in order to conclude causal mechanism (Hayes, 2013). Otherwise only partial support can be given for the proposed process. Furthermore, self-compassion has been shown to have a stronger mediating effect in reducing perinatal depression than mindfulness (measured with FFMQ) (Townshend et al., 2018). Thus, including a measure of self-compassion in the self-report questionnaires would have added strength to our exploration of mechanisms.

**External validity:** Regarding the possibility to generalize the results to other populations, this is limited due to the sample being mainly urban, Swedish-speaking, highly educated women and only those pregnant with their first child. The research context, especially the allocation process, also limits generalizability. It is uncertain if the observed effects would be similar given another context, e.g. if expectant parents in routine practice would be offered and recommended the intervention.

### **Trustworthiness of qualitative findings**

The open-ended approaches in the in-depth interviews, and the thematic analysis of participants' narratives, which had a phenomenological inductive approach, allowed for valuable insights into the participants' experiences of the MBCP program. Credibility of the findings was strengthened by using researcher triangulation. Two of the three researchers conducting the study, are MBCP providers, and one of them knew the participants from having been their teacher in the MBCP program. Consequently, it was important to adopt a

reflexive attitude and question pre-understanding. Thick descriptions were provided when writing up the results, to strengthen the transferability of the findings. By reporting the step-by-step process that was carried out in the analysis, and by adding quotes from the transcripts to clarify the interpretations and exemplify the themes, dependability and confirmability was strengthened.

It is possible that with purposive rather than consecutive sample selection, for example selecting participants on both ends of an “engagement-spectrum” (specifically selecting participants with high as well as low engagement in the intervention), the narratives would have provided a richer understanding of both positive and negative experiences.

### **Triangulation of methods**

Finally considering the research approach: Applying both qualitative and quantitative methods; using a variation of descriptive and inferential tools in statistics; measuring both positive and negative aspects of maternal psychological states; and investigating mothers’ ratings of their infants’ social-emotional development, renders this thesis the strength of multiple perspectives. Especially the combination of mediation analysis with qualitative findings help build a better understanding of the psychological processes involved.

## **DISCUSSION OF RESULTS**

The short-term effects of reductions in maternal perceived stress and depressive symptoms, and increases in positive affect and levels of mindfulness, may carry benefits in their own right, since they take place during pregnancy, which is a particularly sensitive developmental period (Entringer et al., 2015; Stein et al., 2014; Van Den Bergh et al., 2017). Finding ways to increase maternal positive affect is also valuable, since maternal positive affect has been associated with reduced risk of preterm delivery and length of gestation (Voellmin et al., 2013). Following this line of reasoning, the effect sizes ought to be interpreted by their practical significance, and could even be considered larger (Cohen, 1992), since they take place during pregnancy, and may thus spill over to the fetus.

The results regarding the positive impact on psychological outcomes from pre- to postintervention, are consistent with those reported previously (Badker and Misri, 2017; Cavanagh et al., 2016; Hall et al., 2016; Matvienko-Sikar et al., 2016). Similarly, the mediation analysis, suggesting that MBCP influences psychological well-being through increases in levels of mindfulness, are in line with findings among other populations (Bränström et al., 2010), as well as with pregnant populations (Townshend et al., 2018). Moreover, the qualitative findings are consistent with previous findings regarding antenatal MBIs (Dunn et al., 2012; Fisher et al., 2012; Meyer et al., 2017; Woolhouse et al., 2014).

Study IV illustrates that the MBCP program provides expectant parents with satisfactory psychosocial and peer support. This is an important finding, since MHC services in Sweden sometimes fail to do so (Mödrahälsövårdsenheten, 2019; Widarsson et al., 2012). When they

studied expectant parents' need of support in the Swedish setting, Widarsson and colleagues found that support needs were well harmonized in regards to medical care received. However, the care was not harmonized to the same extent, with emotional and psychological support needs (Widarsson et al., 2012).

Since no association was found between level of attendance at group sessions or amount of home-practice and change in the outcomes, it seems valuable to participate in MBCP even if one cannot attend all sessions, and even with a low amount of mindfulness practice in between sessions. However, a small association between amount of mindfulness practice and positive outcomes has been documented in other studies (Parsons et al., 2017). Therefore, finding ways to encourage and motivate the participants to increase the level of compliance with the program, may lead to larger effects.

Although the data on long-term effects of antenatal MBI's is sparse, sustained effects on depressive symptoms and anxiety during the postpartum period have been documented in single arm studies (Luberto and Park, 2017; Miklowitz et al., 2015). In pilot-RCT's, no group differences regarding depressive symptoms or anxiety have been detected in follow-up measures (Guardino et al., 2014; Vieten and Astin, 2008). Nonetheless, these trials lacked statistical power to detect such effects, due to their small sample sizes.

In contrast to our findings of attenuated intervention effects in the follow-up period, long-term effects of MBIs for depression in non-pregnant samples are documented to be equal to evidence-based treatments and superior when compared with active control or no treatment conditions (Goldberg et al., 2018). However, non-pregnant samples do not go through the life-event of childbirth and transition to parenting, that our participants did in their follow-up period, making such comparisons less suitable. The impacts of childbirth and the transition to parenting may be of such magnitude, that they may overshadow possible long-term intervention effects. Also, for most women, stress seems to be lower postpartum compared with the pregnancy period, according to a Danish cohort study by Tegethoff and colleagues. They followed 66 203 mothers and found that stress was reported as stronger during pregnancy, compared with postpartum (Tegethoff et al., 2011). This finding is interesting to bear in mind, when considering the improvements in psychological outcomes for both study-arms postpartum. This improvement may also, in part, be explained by some changes in personality traits that have been reported to be affected by the first pregnancy and lactation (Sjögren et al., 2000). Sjögren and her team uncovered that adaptations in personality traits toward less anxiety, more calm and higher tolerance for monotony, as well as increased social interaction, seem to take place around childbirth and first weeks of breastfeeding.

### **Barriers and facilitators**

Our participants were not exempt from the common five hindrances experienced in mindfulness meditation (desire, aversion, fatigue, restlessness and doubt) (Fronsdal, 2013). Of these five, fatigue was the most common hinderance described by women and doubt was the most challenging to overcome, according to the qualitative findings. Since expectation

and belief are vital parts in any therapeutic encounter, and especially so for MBCP – being based on personal engagement in practice – the belief that MBCP can be helpful is an active ingredient in the effects of MBCP. Possibly, doubt could be easier to overcome if MBCP were offered in a different way from how it was offered in this research project, since the participants were randomized to one of two antenatal courses under study, not yet based on evidence. In future implementation, MBCP may instead be presented as an evidence-based program. This may boost expectation and lessen doubt, and as a consequence, lead to more motivation to embark on the personal engagement in practice, implied in the MBCP-program. Which possibly could lead to even better results.

### **Happy mothers – flourishing babies**

To my knowledge, the effects of an antenatal MBI on infant social-emotional development have not been studied before. Nonetheless, similar to our study, an RCT comparing parent-infant psychotherapy and treatment as usual, also found an association between maternal EPDS-ratings and ASQ:SE-score (Salomonsson and Sled, 2010). Study III extends these findings by documenting that mothers' positive affect has a stronger association with infant social-emotional development than stress or depressive symptoms do. This is in line with the finding that positive affect has a buffering effect on the relation between parenting stress and maternal sensitivity; positive affect makes mothers behave more sensitively with their child even in the presence of stress (Smith and Stephens, 2018). This also fits with the broaden-and-build theory of positive emotion (Fredrickson, 2001): When mothers feel positive states of mind, they are likely to have a broader repertoire of thoughts and actions in the moment, which could make it easier for them to interpret their infant's cues and respond with sensitivity to the infant's needs. This could in turn enhance the infant's capacity to communicate, and good circles would be spinning, within the mother-infant dyad.

In addition, Braeken et al. have documented that maternal mindfulness during pregnancy is associated with better infant social-emotional development (Braeken et al., 2017). This implies the possibility that the increased levels of mindfulness (documented in study I), mediated infant social-emotional development (found in study III). Furthermore, the correlation between PSOM and ASQ:SE is interesting in the light of a brain imaging study, showing how infant-mother neural connectivity is affected by the emotional quality of their social interaction; when mothers express positive emotions, the neural connectivity becomes stronger, which seems helpful for the infants' development (Santamaria et al., 2019).

### **Metacognition, Reflective function and Mindful parenting**

Regarding the interpretation of effects of MBCP on infant social-emotional development, the concepts of metacognition and reflective function may be of use. Teasdale has linked mindfulness practice, as it is taught in MBCT as well as in MBSR and MBCP, with increased capacity for metacognitive insight (Teasdale, 1999). Metacognitive insight is defined by Teasdale as “*experiencing thoughts as events in the field of awareness, rather than as direct readouts on reality*”. Though they stem from different theoretical backgrounds, there are



similarities between the concept of metacognitive insight and reflective function: Reflective function is the capacity to bring awareness to one's own and others' state of mind. In regard to maternal reflective function, this implies particularly the mother's ability to keep her child's mind in her own mind, and this has a strong association with secure attachment of the infant (Fonagy and Target, 1997). Moreover, as expressed in the introduction, secure attachment is of utmost importance for infant social-emotional development (Ainsworth, 1982; Bowlby, 1988).

Moreover, Duncan et al.'s model of mindful parenting elucidates that the practice of mindfulness makes it easier for parents to discern the child's cues and choose appropriate responses, as well as appreciating the child's traits and being responsive to his or hers needs and emotions (Duncan et al., 2009). Duncan's team has also found an association between high scores on self-reported mindful parenting and more positive mother-child interactions (Duncan et al., 2015). Both the quantitative and qualitative findings in this thesis are consistent with the model of mindful parenting, and may be explained by increased metacognitive insight and reflective function in the mothers.

### **Salutogenesis and the cultivation of wisdom**

Interestingly, findings in study IV regarding participants' descriptions of their cultivation of mindfulness, fit well with the MORE Life Experience Model (Glück and Bluck, 2013). This model stipulates that wisdom is cultivated through the resources of empathy, emotion regulation, reflectivity, openness and a sense of mastery. The last resource – 'a sense of mastery' – entails self-efficacy for life's challenges as well as both being aware of and accepting the inherent uncertainties in life. This is also in line with Antonovsky's salutogenic framework, which elucidates that the insight into the fact that there is a lot in life we cannot control, as well as the capacity to deal with uncertainties, promote well-being (Lindström and Eriksson, 2010).

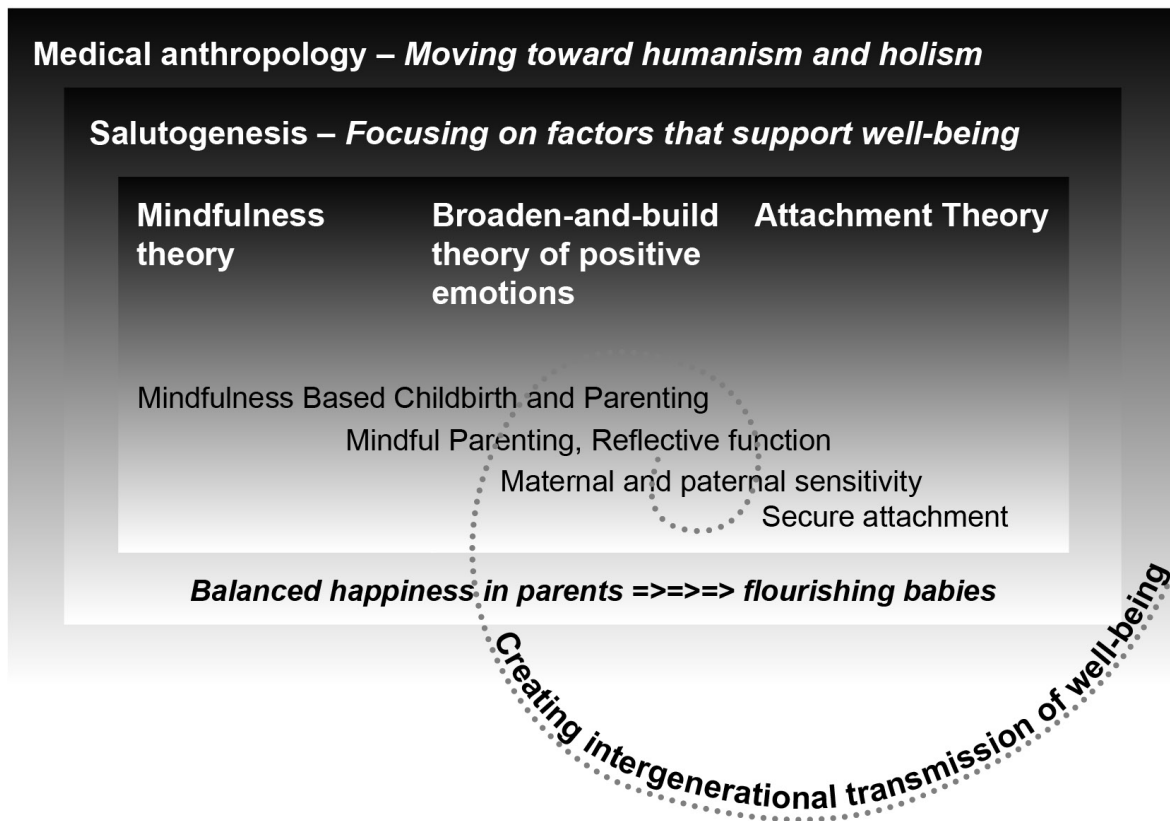
### **Widening perspectives with a socio-ecological model**

When discussing if and for whom MBCP could be suitable it may be helpful to use Bronfenbrenner's socio-ecological model (Bronfenbrenner, 1977). This model positions an individual within her context of widening circles; family, community, society, environment and time, and reminds us of how the well-being of an individual is affected by, and embedded in a web of systemic effects. For instance, Zhang and Emory have tested an antenatal MBI for urban, low-income African American women, since this population has nonoptimal perinatal outcomes and high rates of depression (Zhang and Emory, 2015). However, due to very high attrition rates in their study, comparisons between groups (intervention and treatment-as-usual) were not statistically meaningful. I dare to speculate that the poor perinatal outcomes and prevalence of depression among low-income African Americans, is not necessarily caused by low levels of mindfulness, but rather determinants of social and political character (Marmot, 2013). These determinants have to be considered so that the broader causes of individual suffering are addressed. Attempts to alleviate distress by merely providing a

mindfulness intervention, to populations that are exposed to challenges such as poverty or racism, borders mockery in my opinion. Indeed, extensive critique of ‘the mindfulness movement’ has been voiced, pointing out the risks of using mindfulness to reinforce unhealthy societal structures (Purser R and Loy D, 2013; Williams and Kabat-Zinn, 2011). Certainly, the barriers to individual change must be confronted, before emphasizing individuals’ responsibility for their health.

Furthermore, as expressed by Ina May Gaskin: “A society that places a low value on its mothers and the process of birth will suffer an array of negative repercussions for doing so” (Gaskin, 2011). This reminds us that patriarchal structures that undermine the well-being of humans, are still part of the societal web, despite century-long efforts to dismantle these (Backlund and Hayman, 2011). As we aim toward a society with more gender equality (UN, 2016), women’s embodied specialness – being able bear and breastfeed children – should not be denied, due to fear of not gaining influence in society. Rather it deserves to be highly recognized and embraced.

Finally, a synthesis of the epistemologies and theories presented in the background, and the discussion of the results above, creates a helpful platform for envisioning a future direction (see figure 6).



**Figure 6.** Illustrating a synthesis of theoretical perspectives, and a vision of turning intergenerational transmission of poor mental health into intergenerational transmission of well-being.

## **CONCLUSION**

- MBCP prevents maternal depression and stress, and promotes well-being.
- The timing of the beneficial effects – during pregnancy – makes them highly valuable.
- The effects are mediated by increased levels of mindfulness.
- MBCP may promote infant social-emotional development.
- Mothers' positive affect positively correlates with infant social-emotional development.
- There are variations in individuals' susceptibility to MBCP.
- MBCP is experienced as a valuable preparation for childbirth and parenting.
- MBCP can build inner resources that may facilitate the cultivation of wisdom.

In conclusion, this thesis increases the knowledge base about efficient interventions to prevent perinatal stress and depression, and promote mental well-being, among parents and their infants.

## **CLINICAL IMPLICATIONS**

Mindfulness-based antenatal support should be available for parents-to-be as a preparatory course for the challenges of parenthood. The need expectant parents have for such preparation has been pointed out by Berlin and colleagues, who advise that preparation for parenting ought to be added to the antenatal course curriculum (Berlin et al., 2018). MBCP can be implemented both as a universal intervention, or a targeted intervention for expectant parents who suffer from, or are at risk for poor mental health.

## **FUTURE PERSPECTIVES**

### **Suggestions for further development of MBCP**

In order to prolong the intervention effects, it is advisable to create a continuum of support from pre- to postpartum, by adding booster sessions for parent-infant dyads. For the development of booster sessions, the program 'Mindful with Your Baby' is likely useful to learn from (Potharst et al., 2017). This program is adapted for having babies in the room, and have themes that are relevant when caring for an infant.

Furthermore, in this research project the participants were recruited from a large geographic area, and consequently they seldom lived in the same neighborhood. However, it may be helpful to strengthen the element of peer support among the expectant parents, by offering the intervention in expectant parents' local community. This could facilitate for the parents to form friendships during their maternal or paternal leave and help build local networks of supportive connections that last.

## Future studies

Using a third person evaluation of mother-infant interaction, such as the Parent Child Early Relationship Assessment, is recommended. Further it would be advisable to conduct an implementation study, designed as a cluster randomized controlled trial (or alternatively a step-wedge design) with the following areas of investigation:

- Explore barriers and facilitators in the implementation phase.
- Assess if the effects observed in the present study can be replicated in routine practice.
- Test the effectiveness of MBCP to reduce risk of preterm delivery and promote spontaneous onset of labor.
- Evaluate extent and length of breastfeeding.
- Evaluate long-term effects on child health and development.
- Study to what extent MBCP may strengthen the couple relationship.
- Study if adding yogic breathing techniques (pranayama) to the practices in MBCP, could alleviate feelings of restlessness or anxiety experienced by some participants (Henje Blom et al., 2014; Schmalzl et al., 2015).
- Perform an economic evaluation in order to test the Antenatal Investment Hypothesis (Doyle et al., 2009), and to make the results more useful for decision-makers. (Skivington et al., 2018)

This would inform detailed and explicit recommendations for health promoting, parental support far upstream – in the very beginning of parenthood.

• • •



Photo by Maria Bengtsson

*“Good beginnings make a positive difference in the world,  
so it is worth our while to provide the best possible care for mothers and babies (and fathers)  
throughout this extraordinarily influential part of life.”*

Ina May Gaskin (2011)

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### *Tack*

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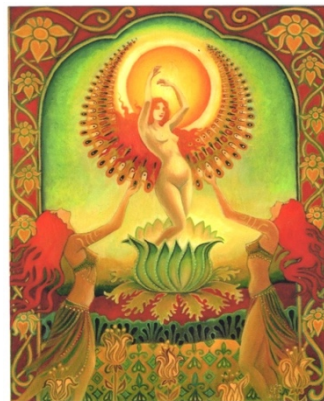
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On the cover:

“Mother-goddess Isis celebrating solstice” painting by **Emily Balivet**

Below:

One of my kids on a midsummer, also celebrating solstice!







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