

THESIS

WHAT PREDICTS DAY-TO-DAY MINDFULNESS OF
EXPECTANT MOTHERS AND FATHERS?

Submitted by

Caitlyn Russell

Department of Human Development and Family Studies

In partial fulfillment of the requirements

For the Degree of Master of Science

Colorado State University

Fort Collins, Colorado

Summer 2017

Master's Committee:

Advisor: Zeynep Biringen

Rachel Lucas-Thompson
Lee Rosen

Copyright by Caitlyn Russell 2017

All Rights Reserved

ABSTRACT

WHAT PREDICTS DAY-TO-DAY MINDFULNESS OF EXPECTANT MOTHERS AND FATHERS?

Mindfulness has been shown to correlate with attachment security, as well as aspects of mental health—however, little is known about these factors during pregnancy for both mothers and fathers. The current study tested associations between day-to-day mindfulness, adult attachment anxiety and avoidance, prenatal attachment, and functional mental health (i.e., measures of stress, anxiety, and depression) in expecting couples. Secondary data was analyzed from the pre-intervention portion of an emotional availability study. Each partner completed questionnaires, and zero order correlations and Hierarchical Multiple Regressions (HMRs) were run to determine predictors of day-to-day mindfulness in mothers, fathers, and the couple. Although individual HMRs for mothers and fathers was not predicted by adult attachment in any way, adult attachment anxiety for the couple was found to be a significant predictor of couples' day-to-day mindfulness during pregnancy, suggesting that the couple as a unit reports being more mindful in their daily life if they are less anxious about their couple relationship. SES and prenatal attachment generally did not explain much of the variance in predicting day-to-day mindfulness for the mother, father, or couple, suggesting that prenatal attachment to the baby does not predict how mindful the expectant family is in their day-to-day life. However, the findings in this study clearly indicate that 'functional mental health' is predictive of day-to-day mindfulness in the mother, father, and couple; and this will be explained for by a variety of analyses and discussed in terms of implications for future research and clinical practice.

TABLE OF CONTENTS

Abstract.....	ii
Introduction.....	1
Method.....	6
Participants.....	6
Procedure.....	6
Measures.....	7
Data Analysis.....	10
Results.....	12
Preliminary analyses.....	12
Hierarchical Multiple Regression Analyses.....	13
Discussion.....	18
Clinical Implications.....	19
Strengths and Limitations.....	19
References.....	21

INTRODUCTION

Mindfulness has been an active focus of research in recent years. Mindfulness is a state in which a person maintains a nonreactive awareness of one's surroundings, thoughts, and emotions (Ryan, Brown, & Creswell, 2007). It has been investigated in relation to many aspects of well-being. For example, Mitchell and Heads (2015) found that a higher level of mindfulness was associated with greater empathy, perspective taking, and communication skills. Similarly, Bergin and Pakenham (2016) found that greater mindfulness was associated with better psychological adjustment. Additionally, Remmers, Topolinski, and Koole (2016) found that mindfulness was associated with the implicit (automatic) and explicit (effortful) regulation of mood.

Several studies have supported the finding that a greater ability to use non-judgement of self and external stimuli is associated with higher levels of self-reported mindfulness (that is, trait mindfulness) (such as, Bowlin and Baer, 2012; Brown and Ryan, 2003). Trait mindfulness indicates the mindfulness characteristics that are innate to an individual, on average, over the course of their life; whereas state mindfulness indicates the mindfulness characteristics that are experienced by an individual in a given moment (i.e., how mindful the individual is being "right now," as for example when one is engaging in a mindful exercise). It appears from these studies that reported trait mindfulness, specifically, may be associated with wellness, though the information on pregnancy is conflicting (Sawyer Cohen, 2010).

Mindfulness is a concept that is receiving much research attention. It has been associated with less negative mental health and stress symptoms in individuals (Laurent, Laurent, Hertz, Egan-Wright, & Granger, 2013; Perez-Blasco, Viguer, and Rodrigo, 2013). The current study focuses on the factors predictive of mindfulness, specifically in the context of couples during

pregnancy. Attachment (both adult attachment within the couple and prenatal attachment of expecting parents with their unborn babies) is one factor that this study examines in relation to mindfulness.

Attachment in close relationships is a topic which researchers have been studying for decades (e.g., Ainsworth, Blehar, Waters, & Wall, 1978). In more recent years, researchers have found an association between attachment and mindfulness. For instance, Goodall, Trenjnowska, and Darling (2012) found that individuals' attachment security was positively related to their dispositional mindfulness. Studies have also found that decreased levels of attachment anxiety were associated with increased levels of mindfulness (McDonald, Sherman, Petocz, Kangas, Grant, & Kasparian, 2016). This relation may illustrate that it may be difficult for individuals to remain mindful while they are feeling anxious about their relationships. Similarly, the direction of that relationship may be that mindful practice contributes to decreased relationship anxiety. However, more research is needed in regards to the role of attachment in close relationships and mindfulness. The current study examines this association within the context of expecting couples during pregnancy.

Mindfulness, Attachment in Close Relationships, and Mental Health

Several studies have explored the relationship between mindfulness, attachment in couple relationships, and aspects of mental health and stress. Davis, Morris, and Drake (2016) reported that the association between individual well-being and adult attachment anxiety was moderated by mindfulness. The study additionally suggested that individuals with insecure attachment styles are more susceptible to anxiety, stress, and depressive symptoms. The study used the Experiences in Close Relationships—Revised Questionnaire (ECR-R) scale, which is used within the current study to measure feelings of attachment within the couple relationship. Tomac

(2012) conducted a study examining individuals' mindfulness, adult attachment style, affect style, and self-esteem. The study also used the Experiences in Close Relationship (ECR-R) Scale (Fraley, Waller, & Brennan, 2000) to measure attachment in the couples, and the Mindfulness Attention Awareness (MAAS) Scale (Brown, & Ryan, 2003) to measure mindfulness in the couples. Additionally, Atkinson (2013) reviewed the literature on mindfulness and attachment in close relationships, and reported that mindfulness is associated with secure attachments in parents, both with their children and with their romantic partners. One speculation Atkinson (2013) presented for this association is that mindfulness strengthens the same neural pathways associated with secure attachments.

These associations have also been examined in new mothers. Perez-Blasco, Viguer, and Rodrigo (2013) examined mindfulness in breast-feeding mothers, and found that a higher level of mindfulness was associated with lower levels of anxiety, stress, and psychological distress in these new mothers. Corthorn and Milicic (2016) found that a higher level of self-reported mindfulness was associated with lower levels of stress and mental health as well as more mindful parenting (i.e., parenting with the use of mindful awareness strategies, such as “listening with full attention” and “non-judgmental acceptance of self and child”). The study noted that non-judgment of self (a sub-feature of mindfulness, measured through self-report) was one important factor in this association. More research is needed in regards to attachment in close relationships and mindfulness in both mothers and fathers.

In addition to attachment in the couple relationship, studies have also examined mindfulness and aspects of mental health and stress in relation to prenatal attachment (which is different from adult attachment in that it examines the attachment that a parent has formed with the unborn baby). Interestingly, Sawyer Cohen (2010) found that higher levels of maternal

mindfulness (and the closely related concept of self-compassion) was related to expectant mothers' prenatal attachment to the baby in the second and third trimesters of pregnancy. Further, expectant mothers' prenatal attachment to the baby was associated with postpartum attachment at three to eight months. The study used the Five Facet Mindfulness Questionnaire (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006) as a measure of mindfulness, and the Prenatal Attachment Inventory (Muller, 1993) and Maternal Attachment Inventory (Muller, 1994) as measures of attachment to the baby. However, maternal prenatal mindfulness was not associated with lower depressive and anxiety symptoms in this study, suggesting that there is some conflicting evidence on mindfulness being a protective influence during pregnancy.

Current Study

Research has indicated that the first several years after the birth of a child are difficult for parents, with parents often reporting lower levels of marital satisfaction and higher levels of anxiety and depressive symptoms (Feeney, Alexander, Noller, & Hohaus, 2003; Lewis, 1989). Considering that pregnancy is such a critical time in a woman's—and in a couple's—life, it is worth examining the relationship that these individuals have with mindfulness during pregnancy. The current study examines whether individuals' levels of mindfulness can be predicted from their close relationships (perceived attachment to the partner and to their unborn baby) and from mental health issues. This study hypothesizes that healthier feelings of attachment in the couple relationship and with the unborn baby predict more healthy levels of day-to-day (or trait) mindfulness during pregnancy, a quality that has been linked to positive and mindful parenting after pregnancy.

The current research question is important because it will add to the growing literature on mindfulness, and especially on what predicts mindfulness. After controlling for socioeconomic

class, we explore whether relationship quality (from an attachment perspective) and a composite measure of mental health (anxiety, depression, and stress—which is referred to as ‘functional mental health’ in this study) is predictive of day-to-day mindfulness. There is little prior research that has focused on both expectant mothers as well as expectant fathers. Additionally, the present study will be one of the first to examine the association between mindfulness and healthy relationships (i.e., couple attachment and prenatal attachment) for both expectant mothers and fathers.

METHOD

Participants

The study consisted of 17 heterosexual couples who were expecting a baby (i.e., a total of $n=34$ participants; $n=17$ males and $n=17$ females). Participants ranged from 21 to 38 years of age ($X = 30$). Participants were married ($n=14$ couples) or cohabitating ($n=3$ couples). Participants in this sample were mainly Caucasian ($n=32$), with two participants reporting their ethnicity to be Hispanic/white or multi-racial. Participants' education levels averaged at a Bachelor's degree ($n=3$ "high school," $n=9$ "some college," $n=1$ "Associate's degree," $n=13$ "Bachelor's degree," and $n=8$ "Graduate degree or higher"). In terms of household income, participants' incomes averaged at \$60-80,000 ($n=1$ couple "\$0-20,000," $n=1$ couple "\$20-40,000," $n=3$ couples "\$40-60,000," $n=7$ couples "\$60-80,000," $n=2$ couples "\$80-100,000," and $n=3$ couples "more than \$100,000").

Procedure

Data were collected in the context of a pilot intervention studying the effects of an emotional availability intervention on attachment (prenatal attachment to the baby and adult attachment in the couple relationship) and mindfulness. Participants were recruited using flyers at the Women's Clinic in Fort Collins and at child birth classes, an advertisement in the SOURCE (a Colorado State University e-newsletter), an article in the Coloradoan (a Colorado e-news website), paid Facebook advertisements, and flyers. Participants contacted the research team via e-mail, where further information was given to the participants. Inclusion criteria were that women be in the third trimester of their pregnancy and that both were parents able to participate.

Participants completed a number of self-report assessments at baseline, at the end of the 4-week intervention program, and then 6-8 weeks postpartum. However, the assessments used in this study were from baseline only. After completion of the baseline assessments, participants were randomly assigned, by a coin flip, to either an intervention group (where researchers taught participants about mindfulness and emotional availability) or a control group that only received a brief intervention (on the same) after collection of final assessments.

In order to ensure participant confidentiality, all participant data were locked away in a secure location. Only the research team had access to these physical files, as well as to the secured electronic data files. Participants signed a study disclosure form and consent for further contact. During data entry, researchers entering the data were blind to the participants' identities. Participants were given \$5 Target or Whole Foods gift cards for attending each session.

Measures

Participants completed the assessments described below. For these assessments, participants were given hard copies of the questionnaires, and were asked to complete them at home prior to the start of the intervention. To the researchers' knowledge, mothers and fathers each completed the packets separately.

Mindfulness. The Mindfulness Attention Awareness Scale (Day to Day Experiences) is a 15-item measure, and assesses individuals' current levels of mindfulness, attention, and awareness. The measure uses a 6-point Likert scale (from 1 = almost always to 6 = almost never). The measure lists statements such as, "I find it difficult to stay focused on what's happening in the present," and "I do jobs or tasks automatically, without being aware of what I'm doing." These scores are averaged to create one total score. On this scale, higher scores

indicate higher levels of mindfulness. The measure has been demonstrated to be well-validated and reliable measure of mindfulness in adult populations (Brown & Ryan, 2003).

Perceived Attachment in the Couple Relationship. The Experiences of Close Relationships Scale (ECR-S) is an adapted short version of the 36-item Experiences of Close Relationships (ECR) questionnaire. The ECR-S assesses the participant's feelings of attachment with their romantic partner. The ECR-S uses a 7-point Likert scale (from 1 = strongly disagree to 7 = strongly agree). The measure lists statements such as, "I want to get close to my partner, but I keep pulling back," "I get frustrated if romantic partners are not available when I need them," and "I do not often worry about being abandoned." Certain items were reverse-scored. The questions are summed into two totals; these totals represent the participant's anxiety and avoidance. The ECR-S has shown to be highly reliable and valid as compared to the long form (Wei, Russell, Mallinckrodt, & Vogel, 2007).

Maternal and Paternal Prenatal Attachment. The Maternal Antenatal Attachment Scale is a 19-item measure which assesses mothers' prenatal attachment with their unborn child. This is done by measuring the mother's feelings of tenderness towards or distance from her unborn baby, and the amount and intensity of time the mother spends thinking about and talking to the unborn baby. These items are measured on a 5-point Likert scale, with specific endpoints differing for each question. The measure lists statements such as, "Over the past two weeks I have found myself talking to my baby when I am alone: not at all, occasionally, frequently, very frequently, or almost all the time I am alone" and "Over the past two weeks when I think about the baby inside me I get feelings which are: very sad, moderately sad, a mixture of happiness and sadness, moderately happy, or very happy." Both categories of questions are summed to create

two separate scores, as well as a total score. The Maternal Antenatal Attachment Scale has shown to have high levels of reliability and validity (Condon, 1993).

The Paternal Antenatal Attachment Scale is a 16-item measure which assesses fathers' prenatal attachment with their unborn child. This is done by measuring the same variables as described above with the Maternal Antenatal Attachment Scale. These items are also measured on a 5-point Likert scale, which differs for each question. The measure lists statements such as, "Over the past two weeks I have thought about, or been preoccupied with the developing baby: almost all the time, very frequently, frequently, occasionally, or not at all" and "When the baby is born I would like to hold the baby: immediately, after it has been wrapped in a blanket, after it has been washed, after a few hours for things to settle down, or the next day." Certain items were reverse-scored; then both categories of questions are summed to create two separate scores, as well as a total score. The Paternal Antenatal Attachment Scale has shown to have acceptable reliability and validity for fathers' antenatal attachment (Condon, 1993).

Functional Mental Health. A composite score was created from participants' scores on the below scales measuring anxiety, depression, and stress, in order to combine the following measures of mental health and stress into one 'functional mental health' score.

The Self-Trait Anxiety Inventory (STAI) is a 40-item measure that assesses state anxiety symptoms (i.e., temporary symptoms; 20 items) and trait anxiety symptoms (i.e., stable symptoms; 20 items). This study is interested in the trait anxiety scores, because they will be more representative of the average level of anxiety experienced by the individual. The STA uses a 4-point Likert scale (from 1 = not at all to 4 = very much so). The measure lists statements such as, "I feel calm," "I feel tense," "I feel satisfied," and "I wish I could be as happy as other seem to be." Many of the items for this measure were reverse-scored, and then summed to create a

total score. Higher scores reflect higher anxiety. The STA is a valid and reliable measure of state-trait anxiety (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983).

The Center for Epidemiologic Stress Depression Scale Revised (CESD-R) is a 20-item self-report measure that assesses depressive symptoms, dysphoria, anhedonia, suicidal ideation, and psychomotor retardation and agitation. The CESD-R uses a 4-point scale [from rarely or none of the time (less than 1 day) to all of the time (5-7 days)]. The measure lists statements such as “I was bothered by things that don’t usually bother me,” “my sleep was restless,” and “I felt hopeful about the future.” Certain items were reverse-scored, and then the items were summed to create a total score. A total score of 16 or higher indicates that the participant is depressed. The CESD-R shows high internal consistency, as well as acceptable convergent and divergent validity (Van Dam & Earleywine, 2011).

The Perceived Stress Scale (PSS) is a 14-item self-report measure that assesses global perceived stress. The PSS uses a 5-point Likert scale (from 0 = never to 4 = very often). The measure asks questions such as, “In the last month, how often have you felt that you were unable to control the important things in your life?” and “In the last month, how often have you felt that things were going your way?” Certain items were reverse-scored, and then the items were summed to create a total score. The PSS has shown to be reliable and well-validated (Cohen, Kamarck, & Mermelstein, 1983).

Data Analysis

Correlational and Hierarchical Multiple Regression (HMR) analyses were used to test hypotheses. Socioeconomic status (SES; a composite score representing participants’ reported education and income) was controlled for in the analyses. Other demographic variables (i.e., age and ethnicity) were not controlled for. Ethnicity was not controlled for due to a lack of

correlation with outcome variables; however, correlations *were* found between age and the outcome and demographic variables. This study controlled for SES due to high inter-correlations, in an effort to reduce type I error rate. Given the small sample size, however, this study made the decision not to create a composite control variable for age.

RESULTS

Preliminary Analyses

As preliminary analyses, zero order correlations were conducted. Essentially, mindfulness of mothers and fathers was found to be related to the couple measures of mindfulness, and this is not surprising given that the couple measure is a composite of the mother and father individual measures of mindfulness. Adult attachment avoidance of mothers and fathers was also correlated with the adult attachment avoidance in couples; again, this pattern was found for prenatal attachment. Other significance found during the correlational analyses were that fathers' adult attachment anxiety was found to be significantly related to the couples' measures of adult attachment anxiety. These are expected, for the same reason as above. And lastly, mothers' adult attachment anxiety was found to significantly and positively correlate with fathers' prenatal attachment, a finding that is less meaningful and likely a spurious correlation.

Demographic variables showed correlations with adult attachment anxiety and adult attachment avoidance. Couples' attachment anxiety was significantly correlated with mothers' SES ($r = .74, p < .01$), and with couples' SES ($r = .67, p < .05$). Fathers' attachment avoidance was significantly associated with SES in mothers ($r = -.54, p < .05$), fathers ($r = -.54, p < .05$), and couples ($r = -.61, p < .05$). The same was found with couple's attachment avoidance and SES in mothers ($r = -.61, p < .01$), fathers ($r = -.54, p < .05$), and couples ($r = -.65, p < .01$). In regards to age (which was not controlled for in the analyses), mothers' age was significantly correlated with mothers' mindfulness ($r = .50, p < .05$), adult attachment avoidance ($r = -.50, p < .05$), functional mental health ($r = -.64, p < .01$), and SES ($r = .56, p < .05$), as well as with couples'

functional mental health ($r = -.63, p < .01$). Fathers' age was significantly correlated with mothers' mindfulness ($r = .51, p < .05$), with functional mental health in mothers ($r = -.56, p < .05$) and in couples ($r = -.55, p < .05$), and with mothers' SES ($r = .56, p < .05$).

Correlations between outcome measures indicated that mothers' mindfulness was significantly correlated with FMH in mothers, fathers, and couples, as well as with fathers' SES. Similarly, fathers' mindfulness was significantly correlated with fathers' FMH. Additionally, couples' mindfulness was significantly correlated with FMH in both fathers and couples. See Table 1.

Hierarchical Multiple Regression Analyses

Hierarchical Multiple Regressions (HMRs) were conducted to predict mindfulness from several predictor variables. Socioeconomic status (SES) was entered at the first step, attachment measures (attachment anxiety/avoidance) were entered at the second step, and functional mental health was entered at the third and final step.

For the mother, HMRs indicated that maternal attachment anxiety/avoidance did not predict mothers' mindfulness after accounting for SES. However, functional mental health (FMH) was found to be a significant predictor of mothers' mindfulness, after accounting for adult attachment anxiety/avoidance as well as SES. However, for the father, SES, adult attachment anxiety/avoidance, and FMH did not significantly predict fathers' mindfulness. With respect to the prediction of couple mindfulness, adult attachment anxiety was found to be a significant predictor, even after controlling for SES. Furthermore, FMH was a significant predictor of couples' mindfulness, even after accounting for SES and adult attachment anxiety/avoidance. These analyses suggest that, generally speaking, it is mental health that

predicts mindfulness, rather than social class or attachment relationships, but that adult attachments do play some role. See Table 2.

With respect to the prediction of mindfulness from SES (entered at step 1), prenatal attachment (entered at step 2), and FMH (entered at step 3), a similar pattern was seen. For the mother, the father, and for the couple, SES and prenatal attachment generally did not explain much of the variance in predicting mother mindfulness (although it was significant at the .10 level), father mindfulness, or couple mindfulness during pregnancy. However, functional mental health did predict mindfulness, after accounting for SES and prenatal attachment in each group. See Table 3.

Table 1

Bivariate Correlations among Day-to-Day Mindfulness, Adult Attachment Anxiety, Adult Attachment Avoidance, and Prenatal Attachment in Expectant Mothers, Fathers, and Couples

	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
Day-to-Day Mindfulness														
1. Mothers	.36	.83**	.04	-.44	-.27	-.35	-.31	-.42	.38	-.07	.28	-.65**	-.65**	-.68**
2. Fathers	X	.82**	-.18	-.31	-.40	.29	.19	.28	.11	-.15	-.03	-.08	-.56*	-.30
3. Couples		X	-.03	-.46	-.40	-.05	-.08	-.12	.34	-.13	.26	-.41	-.73**	-.54*
Adult Attachment Anxiety														
4. Mothers			X	.10	.48	.10	-.10	-.07	-.08	.53*	.35	.34	.01	.27
5. Fathers				X	.70*	-.10	.12	.04	-.30	-.15	-.32	.15	.28	.22
6. Couples					X	.12	.09	.15	.36	.04	-.27	.13	.13	.14
Adult Attachment Avoidance														
7. Mothers						X	.27	.71**	-.01	.32	.11	.47	.14	.36
8. Fathers							X	.87**	.23	-.21	.03	.27	-.15	.12
9. Couples								X	.09	.01	-.04	.41	-.04	.22
Prenatal Attachment														
10. Mothers									X	-.02	.74**	-.25	-.04	-.13
11. Fathers										X	.68**	.38	.28	.38
12. Couples											X	.11	.16	.22
Functional Mental Health														
13. Mothers												X	.58*	.93**
14. Fathers													X	.84**
15. Couples														X

+ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 2

Hierarchical Regressions Predicting Day-to-Day Mindfulness based on Adult Attachment Anxiety and Adult Attachment Avoidance in Mothers, Fathers, and Couples

	Mothers' Day-to-Day Mindfulness				Fathers' Day-to-Day Mindfulness				Couples' Day-to-Day Mindfulness			
	β	ΔR^2	Adj R^2	F	β	ΔR^2	Adj R^2	F	β	ΔR^2	Adj R^2	F
Step 1												
Socioeconomic Status	.23	.041	.041	1.68	.08	-.063	-.063	.11	.12	-.082	-.082	.17
Step 2												
Adult Attachment Anxiety	.00				-.04					-.23**		
Adult Attachment Avoidance	-.07				.07					.17		
Statistics for step	-.077	-.036	.82		.084	.021	1.11		.537*	.455*	4.06	
Step 3												
Functional Mental Health	-.05**	.394*	.358*	3.23	-.04	.121	.142	1.62	-.04*	.199*	.654*	6.21
+ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$ Adj R^2 indicates Total Adjusted R^2												

Table 3

Hierarchical Regressions Predicting Day-to-Day Mindfulness based on Prenatal Attachment in Mothers, Fathers, and Couples

	Mothers' Day-to-Day Mindfulness				Fathers' Day-to-Day Mindfulness				Couples' Day-to-Day Mindfulness			
	β	ΔR^2	Adj R^2	F	β	ΔR^2	Adj R^2	F	β	ΔR^2	Adj R^2	F
Step 1												
Socioeconomic Status	.23	.041	.041	1.68	.08	-.063	-.063	.11	.19	.000	.000	.99
Step 2												
Prenatal Attachment	.04*	.178+	.219+	3.24	-.02	-.052	-.115	.22	.02	.004	.004	1.04
Step 3												
Functional Mental Health	-.03+	.137*	.356*	3.95	-.04*	.251	.136	1.79	-.04*	.322*	.326*	3.58
+ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$ Adj R^2 indicates Total Adjusted R^2												

DISCUSSION

Mindfulness was examined in this study because greater day-to-day mindfulness is linked to more positive parenting styles (Coatsworth & Duncan, 2015). Given that pregnancy is a time of transition for the family, greater mindfulness in the expectant family is likely to be a good thing for family formation. However, what predicts a healthier level of mindfulness in the family?

Interestingly, this study found that functional mental health (FMH; a composite of stress, anxiety, and depressive symptoms) was a significant predictor of daily mindfulness in mothers, fathers, and couples, after accounting for socioeconomic status and attachment variables (adult attachment styles in the relationship with one's partner and/or prenatal attachment). This finding aligns well with past research on mental health and mindfulness (see, for example: Laurent et al., 2013; Perez-Blasco et al., 2013). This finding indicates that FMH is a better predictor of mindfulness (in mothers, fathers, and couples) than adult attachment in the couple relationship or prenatal attachment to the baby. However, it is also important to acknowledge that, while correlations between mindfulness and adult and prenatal attachment were not significant, they approached significance. It may be that the study's small sample size created an inability to detect such effects. This is important for prevention programming—perhaps rather than targeting the relational style with one's partner or even with one's unborn baby, efforts should be directed at decreasing stress and depression in the expectant family; this is a finding that should be explored further in future studies. This makes sense because mental health issues may be strongly linked with one's ability to be present and in the moment (hallmarks of day-to-day mindfulness) and likely has implications for how one will be as a new parent.

Clinical Implications

This study aimed to determine which factors are predictive of mindfulness specifically during pregnancy. This is important as pregnancy is such a critical period in family formation, both for the couple relationship and for the emerging parent-child relationships.

Past research has indicated that mindfulness is related to fewer signs of mental health problems (such as anxiety and depression) and lower cortisol levels (Laurent et al., 2013; Perez-Blasco et al., 2013). The current findings also suggest that individuals who have higher levels of stress, anxiety, and depression are likely to have lower levels of mindfulness. Findings from the current study additionally suggest that individuals with insecure attachment (in regards to prenatal and adult attachment) are likely to have lower levels of mindfulness.

Knowing which qualities are likely to predict or “go with” healthy levels of mindfulness can guide clinical and intervention efforts during pregnancy. Although causality should never be inferred from correlational studies such as this, future work might focus on enhancing mindfulness during pregnancy as a way to increase attachment security in the couple relationship as well as with one’s unborn baby, and to decrease mental health symptoms, in mothers and fathers. Alternatively, it is possible that mental health education and relationship support during family formation may enhance mindfulness, a peaceful quality that the couple may need as they move forward into the early postnatal months.

Strengths and Limitations

A clear strength of this study is the focus on the pregnancy period, a time when day-to-day mindfulness may be especially important as the couple prepare for family formation. Also important is the inclusion of fathers as well as mothers, with no prior studies including both during pregnancy. A limitation is its small sample size. Also, the sample was not very diverse

demographically (i.e., 94% of the sample self-identified as white, and all participants lived in Northeastern Colorado). Another limitation is the pencil-and-paper nature of all the measures (e.g., mindfulness, prenatal attachment, and adult attachment). What the current study findings suggest is that future research on pregnancy should focus on education and strengthening mental health (reducing stress, anxiety, and depression) of both mothers and fathers prepare to become new parents. Such strengthening will predict the capacity of the expectant mom and dad as well as the couple to live in a relaxed, mindful way and to prepare to welcome their new baby into a healthier emotional climate.

REFERENCES

- Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. N. (2015). *Patterns of attachment: A psychological study of the strange situation*. Psychology Press.
- Atkinson, B. J. (2013). Mindfulness training and the cultivation of secure, satisfying couple relationships. *Couple and Family Psychology: Research and Practice*, 2, 73-94. doi: 10.1037/cfp0000002
- Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment*, 13(1), 27-45.
- Bergin, A.J. & Pakenham, K.I. (2016). The stress-buffering role of mindfulness in the relationship between perceived stress and psychological adjustment. *Mindfulness*, 7, 928-939. doi: 10.1007/s12671-016-0532-x
- Bowlin, S.L. & Baer, R.A. (2012). Relationships between mindfulness, self-control, and psychological functioning. *Personality and Individual Differences*, 52, 411-415. doi: 10.1016/j.paid.2011.10.050
- Brown, K.W. & Ryan, R.M. (2003). The benefits of being present: The role of mindfulness in psychological well-being. *Journal of Personal and Social Psychology*, 84(4), 822-848. doi: 10.1037/0022-3514.84.4.822
- Coatsworth, J.D. & Duncan, L.G. (2015). Integrating mindfulness with parent training: Effects of the mindfulness-enhanced strengthening families program. *Developmental Psychology*, 51(1), 26-35. doi: 10.1037/a0038212

- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24(4), 385-396. URL: <http://www.jstor.org/stable/2136404>
- Condon, J.T. (1993). The assessment of antenatal emotional attachment: Development of a questionnaire instrument. *British Journal of Medical Psychology*, 66(2), 167-183. doi: 10.1111/j.2044-8341.1993.tb01739.x
- Corthorn, C. & Milicic, N. (2016). Mindfulness and parenting: A correlational study of non-meditating mothers of preschool children. *Journal of Child and Family Studies*, 25(5), 1672. doi: 10.1007/s10826-015-0319-z
- Davis, T. J., Morris, M., & Drake, M. M. (2016). The moderation effect of mindfulness on the relationship between adult attachment and wellbeing. *Personality and Individual Differences*, 96, 115-121.
- Feeney, J., Alexander, R., Noller, P., & Hohaus, L. (2003). Attachment insecurity, depression, and the transition to parenthood. *Personal Relationships*, 10(4), 475-493. doi:10.1046/j.1475-6811.2003.00061.x
- Fraley, R. C., Waller, N. G., & Brennan, K. A. (2000). An item-response theory analysis of self-report measures of adult attachment. *Journal of Personality and Social Psychology*, 78, 350–365.
- Goodall, K., Trenjnowska, A., & Darling, S. (2012). The relationship between dispositional mindfulness, attachment security and emotion regulation. *Personality and Individual Differences*, 52, 622-626.
- Laurent, H., Laurent, S., Hertz, R., Egan-Wright, D., & Granger, D. A. (2013). Sex-specific effects of mindfulness on romantic partners' cortisol responses to conflict and relations

- with psychological adjustment. *Psychoneuroendocrinology*, 38(12), 2905-2913.
doi:10.1016/j.psyneuen.2013.07.018
- Lewis, J. M. (1989). *The birth of the family: An empirical inquiry*. Philadelphia, PA, US: Brunner/Mazel.
- McDonald, H. M., Sherman, K. A., Petocz, P., Kangas, M., Grant, K-A, & Kasparian, N. A. (2016). Mindfulness and the experience of psychological distress: The mediating effects of emotion regulation and attachment anxiety. *Mindfulness*, 7, 799-808. doi: 10.1007/s12671-016-0517-9
- Mitchell, M., & Heads, G. (2015). Staying well: A follow up of a 5-week mindfulness based stress reduction programme for a range of psychological issues. *Community Mental Health Journal*, 51, 897-902. doi: 10.1007/s10597-014-9825-5
- Muller, M. E. (1993). Development of the prenatal attachment inventory. *Western Journal of Nursing Research*, 15(2), 199-215.
- Muller, M. E. (1994). A Questionnaire to Measure Mother-to-Infant Attachment. *Journal of Nursing Measurement*, 2(2), 129-141.
- Perez-Blasco, J., Viguer, P., & Rodrigo, M.F. (2013). Effects of a mindfulness-based intervention on psychological distress, well-being, and maternal self-efficacy in breast-feeding mothers: Results of a pilot study. *Archives of Women's Mental Health*, 16, 227-236. doi: 10.1007/s00737-013-0337-z
- Remmers, C., Topolinski, S., & Koole, S.L. (2016). Why being mindful may have more benefits than you realize: Mindfulness improves both explicit and implicit mood regulation. *Mindfulness*, 7, 829-837. doi: 10.1007/s12671-016-0520-1

- Ryan, R.M., Brown, K.W., & Creswell, J.D. (2007). How integrative is attachment theory? Unpacking the meaning and significance of felt security. *Psychological Inquiry*, 18(3), 177-182. doi: 10.1080/10478400701512778
- Sawyer Cohen, J. (2010). *Mindfulness and self-compassion in the transition to motherhood: A prospective study of postnatal mood and attachment* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses. (Accession Order No. UMI 3447974)
- Spielberger, C.D., Gorsuch, R.L, Lushene, R., Vagg, P.R., & Jacobs, G.A. (1983). *Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press.
- Tomac, M. M. (2012). The influence of mindfulness on resilience in context of attachment style, affect regulation, and self-esteem. *Dissertation Abstracts International*, 72, 7077.
- Van Dam, N.T., Earleywine, M. (2011). Validation of the Center for Epidemiologic Studies Depression Scale—revised (CESD-R): Pragmatic depression assessment in the general population. *Psychiatry Research*, 186, 128-132.
- Wei, M., Russell, D.W., Mallinckrodt, B., & Vogel, D.L. (2007). The experiences in close relationship scale ECR-Short form: Reliability, validity, and factor structure. *Journal of Personal Assessment*, 88(2), 187-204.