

INFLUENCE OF ACT BASED BIRTHING CLASS ON
PARENTING STRESS AND DEPRESSIVE SYMPTOMS

by

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A THESIS

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The present study will examine the question(s) does participation in ACT-based birthing classes, Birth Your Way, effect maternal (1) parenting stress and (2) depressive symptoms at 1 month postpartum. Participants (41 low-income mothers) were randomly assigned to either the treatment (those who received the Birth Your Way class) or control (those who did not receive the Birth Your Way class) conditions. Maternal reports of stress/anxiety as well as depression were collected prenatally and 1-month postpartum. Additionally, levels of maternal experiential avoidance were collected prenatally and 1-month postpartum. A regression analysis found that when controlling for labor/delivery risk factors, participation in Birth Your Way did not have a significant effect on depressive symptoms 1-month postpartum, however it had a marginally significant effect on postpartum parenting stress. Post-hoc analysis found that when controlling for labor/delivery risk factors, the effect that participation in the birth class had on maternal levels of experiential avoidance is marginally significant. This thesis discusses the limitations of a behavioral intervention, reasons why a marginally significant result was found, as well as further directions for research. The results of the current work have important implications for future prenatal interventions and the role that ACT-based interventions can play in improving maternal and child health.

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Introduction

This thesis incorporates data I have collected through my work with the Personal Relationship, Interpersonal Stress & Mindfulness (PRISM) Psychology Lab at the University of Oregon and the Acceptance and Commitment Therapy (ACT) for Families organization at the Oregon Research Institute. The aim of this thesis is to analyze the relationship between low-income mothers' participation in ACT based birthing classes and maternal reports of parenting stress and depression at 1-month post-partum. Birth Your Way, the ACT-based intervention birthing class was pioneered by April Lightcap to address the growing rates of maternal mortality and negative birth outcomes, specifically among low-income mothers and their infants in Lane County. With the help of multiple research assistants the data displayed in this thesis was collected over the span of 1 year. This thesis will add to the growing body of literature that explores exploring the effects of prevention-based prenatal interventions targeting maternal and child health.

Challenges Facing New Families

High infant and maternal mortality rates and negative birth outcomes are critical issues in the United States. Between the years 1990 and 2013, in the United States, the maternal mortality ratio more than doubled from an estimated 12 to 28 maternal deaths per 100,000 births (Agrawal, 2015). Although commonly considered a problem that is limited to the developing world, the United States now has a higher ratio than most high-income countries, including Islamic Republic of Iran, Libya and Turkey (Agrawal, 2015). A systematic review of infant mortality rates and birth outcomes in the United States and Western Europe revealed two important intermediate factors that contribute

to negative birth outcomes: 1) health behaviors (e.g., nutrition, physical activity, sleep, and alcohol/tobacco use) and 2) stress/psychological factors (e.g., parental stress, parental depressive symptoms and the interpersonal relationship between mother and child) (Kim & Saada, 2013).

1. Health Behaviors.

Decades of research have established the important connection between psychological well being and physiological health. During human pregnancy, a mother and her fetus are experiencing a unique set of opportunities and challenges. The health of the maternal-child dyad both pre- and postnatal is associated with the well-being of the family as a whole, i.e., romantic partner, siblings, etc. Important health behaviors to the well being of a mother and her infant include factors such as tobacco use, alcohol consumption, and diet (Lobel et al., 2008). Maternal maladaptive behaviors in each of these factors has been shown through research to be associated with negative birth outcomes such as preterm delivery and low-birth weight (Lobel et al., 2008).

2. Stress/Psychological Factors.

The transition of becoming a parent is a period of human development that poses an intense set of physical and psychological challenges. According to the Stress and Coping Theory, when the challenges of the transition to parenthood are perceived as stressful and in turn are not met with adaptive coping, this can pose a risk to the health of the parent(s) and the developing child (Duncan & Bardacke, 2009; Folkman, 1997; Lazarus & Folkman, 1984). The potential for stress to compromise the health of a parent and child begins in utero, as maternal stress is associated with adverse birth outcomes (Duncan & Bardacke, 2009). More specifically, national meta-analyses reveal

increased levels of prenatal stress and depression are associated with increases in low birth weight (LBW) and pre-term birth (PTB) (Kim & Saada, 2013). Furthermore, parenting stress postpartum has been associated with many negative parenting behaviors (Duncan & Bardacke, 2009). Interventions such as Birth Your Way that target the vulnerable prenatal period for both mother and child are particularly important given the high rate maternal mortality in the U.S. as well as the multitude of risk factors, negative birth outcomes and psychological stress associated with populations of low-income mothers (Agrawal, 2015; Norbeck et al., 1989; Lu et al., 2003).

Primary Outcome Variables

This thesis will use the data collected from the first iteration of the Birth Your Way RCT study to investigate how participation in the birthing class relates to maternal levels of (1) parenting stress and (2) depressive symptoms 1-month postpartum.

Parenting Stress

Birth Your Way aims to improve the Parenting stress in particular, given the wealth of empirical research linking parenting stress to the mental and physical health of both a parent and their child (Deater-Deckard, 2004). Parenting stress is difficult to define given the breadth of experiences that it encompasses. A noted expert on parenting stress, Dr. Deater-Deckard, defined parenting stress as the subjective experiences of anxiety, distress, perceived lack of control, self-doubt and violations of what is “normal” (Deater-Deckard, 2004). It is undeniable that the distress parents feel either chronically or in acute moments of challenge, affects their behavior toward their children. Research has shown increased parenting stress to be highly correlated among abusive and neglectful parents, and it has been associated with long-term negative

health outcomes for children such as morbidity, and even mortality (Deater-Deckard, 2004; Rodriguez & Green, 1997). Additionally, Goldberg et al. (1997) found that parenting stress was the strongest predictor of children's emotional and behavioral problems at four years old. Further research has tied the stress/anxiety of the parent to child behavior outcomes as well (Watkins et al., 2013). Parenting stress builds on the concept of stress in general, which is characterized by one's resources not meeting their expectations or the demands of a particular situation. Parenting stress applies this concept directly to child rearing. The theory of parenting stress is therefore that distress occurs when parents' available resources are not sufficient in meeting the expectations they have for themselves in terms of providing for their child (Deater-Deckard, 2004). Parenting stress was chosen as a primary outcome variable because of its direct connection to the aim of the Birth Your Way curriculum. Birth Your Way employs ACT as a way to provide mothers and their partners with the tools to create psychological room in their lives for the naturally occurring stressors that accompany birth and parenthood.

Depression

Postpartum depression (PPD) is a common affective disorder experienced by mothers of newborns. PPD is similar to parenting stress in its negative influence on a parent, her child, and the entire family. Further, low-income mothers such as the sample of this study are at a greater risk for developing PPD. Mothers that experience PPD have a more difficult time noticing and appropriately responding to the cues given to them by their infants (Laurent & Ablow, 2013). Additionally, maternal depression has been suggested to significantly affect the cognitive development and behavior of the child

(Grace & Stewart, 2003) A link between PPD and parenting stress has been well established, making depression a clear choice as a second outcome variable to investigate in connection to participation in Birth Your Way (Pritchard et al., 2012; Misri et al., 2010; Leigh & Milgrom, 2008).

While foundational research establishes a link between PPD and parenting stress, there has been little research conducted on the mechanism behind this connection. This study works under the assumption that if PPD and parenting stress are linked, then there may be a connection in how mothers respond to participation in Birth Your Way in terms of both depressive symptoms and reported parenting stress.

More specifically, past research suggests that important to understanding PPD is understanding the interpersonal relationship that a mother has with her child not simply her individual mental state (Forman et al., 2007). The current work applies an intervention focused on not only the mother as an individual but on the interpersonal relationship between a mother and her future child. Birth Your Way applies mindfulness techniques. Because we have collected a measurement of depression using the Edinburgh Postpartum Depression Scale (EPDS) at both time point one and time point two, it creates a clearer way to analyze the change that may have occurred due to participation in Birth Your Way.

Intervention Structure

Acceptance and Commitment Therapy (ACT)

ACT is an empirically based psychological intervention that employs acceptance and mindfulness strategies to increase psychological flexibility and decrease experiential avoidance. Experiential avoidance can be defined as the inability to make room for unpleasant thoughts, feelings or experiences. Experiential avoidance is a phenomenon that occurs when a person is unable to acknowledge the presence of particular unpleasant experiences. ACT takes the perspective that rather than avoid or fight to change these difficult thoughts and feelings it is more powerful to develop psychological flexibility. Psychological flexibility includes alternative ways to view a problem or an unpleasant emotion, and is achieved using acceptance, mindfulness, cognitive defusion, identifying one's values and committed action, psychological flexibility can be achieved. ACT is linked to the contextual behavioral approach to language Relational Frame Theory (Hayes et al., 2006). Relational Frame Theory focuses on the empirical study of human cognition and language (Hayes, 2004). Relational Frame Theory takes the perspective that the foundation of how humans ingest and understand information is based in language and the associations that we are able to form between verbal stimuli due to the power of language (Hayes, 2004). ACT shares this grounding in cognition and language. Building on the foundation of Relational Frame Theory, ACT focuses on using aspects of cognition and language to work toward a meaningful life and an acceptance of the challenges that come with that (Harris, 2009). ACT focuses on six core therapeutic processes: contacting the present moment, defusion, acceptance, self-as-context, identification of values, and committed

action toward these values (Harris, 2009). The process of contacting the present moment encourages patients to be present and engaged in whatever is happening around them (Harris, 2009). Defusion encourages objectivity when it comes to their thoughts, emotions and memories. Acceptance refers to making room for one's painful thoughts, feelings, sensations and emotions. Rather than struggling with the negative aspects of one's life, acceptance encourages the patient to let them be. Self-as-context refers to the perspective from which a patient can observe their internal and external experience. Identifying one's values is a process in which the patient is able to recognize what is important to him/her, and what sorts of goals and behaviors they would like to work towards and maintain. Lastly, the process of committed action supports the patient in making choices toward the values that they identified in the previous process. Experiential avoidance, or the conscious avoiding of negative thoughts, feelings and sensations, is the maladaptive opposite of psychological flexibility. These six therapeutic processes work cohesively to achieve psychological flexibility and in turn to reduce experiential avoidance.

ACT For Families

ACT for Families is an organization under the administrative umbrella of the Oregon Research Institute. Founded in 1957, this organization provides programs to help families approach parenting with positive and effective methods. ACT for Families currently administers three perinatal interventions to low-income families in Lane County. Each of these interventions provides parents and families with support and important resources from the time of pregnancy through the first year postpartum. ACT

for Families employs empirical research in the development and delivery of each of their interventions.

ACT and Birth Your Way

Birth Your Way is a prenatal intervention based in Acceptance and Commitment Therapy. Birth Your Way was created and delivered by doctoral level student April Lightcap. The primary aim of Birth Your Way is to improve cognitive, emotional and behavioral functioning by targeting the six core therapeutic processes of ACT. More specifically, Birth Your Way aims to increase mindful awareness, identify the personal values of each family and subsequently support committed actions aligned with those values. Over the six weeks of this prenatal intervention course, expectant mothers and their support system work through the process of birthing their baby. Each week mothers gain tools to better cope with the emotions, experiences and struggles that come with pregnancy, birth and parenting. More specifically, women and their partners increase their psychological flexibility through three core elements: 1.) curriculum-embedded mindfulness practices, 2.) values directed behavior change, and 3.) group cohesion activities.

The goal of this thesis is to evaluate the impact that participation in ACT-based intervention, Birth Your Way, has on postpartum levels of parenting stress and depression. To investigate the effect that Birth Your Way has on postpartum parenting stress and depression, the participants in the study were randomly assigned to the Birth Your Way treatment group and the control group. To properly assess the influence that Birth Your Way it is important to ensure that the participants assigned to the treatment and control groups are equivalent in their characteristics. Random assignment is the first

step to ensuring that the two groups are similar, additionally it is important to assess the characteristics of the two groups after the results have been collected.

Covariate Definitions

In exploring the data collected in this study, two composite risk scores were created to better understand how the randomly assigned treatment group compared to the randomly assigned control group. These two composite risk scores allowed us to determine whether there were statistically significant pre-existing differences in the treatment and control groups. Random assignment into either the control or the treatment group is meant to ensure that there are no significant differences between the two groups, however these composite scores allow us to confirm that. Further, these composite scores allow us to learn more about the characteristics of the sample we are studying as well as the challenges that they are facing.

Demographic Risk Composite Score

Based on examination of previous studies and the exploratory analysis of the demographic data of this sample, demographic risk factors were identified. These demographic risk factors included age, race, marital status, household income, unplanned pregnancy, any non-biological children living in the home, any alcohol use during pregnancy, any tobacco use during pregnancy, pre-existing depression, pre-eclampsia, and gestational diabetes. These factors were summed into a composite risk score. Maternal race was coded into two categories, minority and white Non-Hispanic, minority was coded as one for risk and white non-Hispanic was coded as a zero (risk present in 21.95%). Maternal age under 20 and over 35 were coded as a risk (risk present in 24.4%). Marital status was coded as currently married or not currently

married (risk present in 78.04%). Annual household income below 20,000 dollars was coded as a risk (risk present in 85.4%). An unplanned pregnancy was coded as a risk (risk present in 31.7%). Maternal education was defined as a college degree or equivalent (risk present in 82.9%). Alcohol (risk present in 5%) and tobacco use (risk present in 41.5%) was coded as any use of alcohol or tobacco at any point during pregnancy. Experiencing either pre-eclampsia (risk present in 3%) or gestational diabetes (risk present in 9%) were coded as a risk.

Table 1. Demographic Risk Score

This table presents demographic characteristics displaying the sample level risk present.

Risk-score item	Mean	SD	Range	Risk Present (%)	Criterion for risk being considered present	Chi-Square	t-test
Age	-	-	-	21.95	Under 20, over 35	0.087	-
Race	-	-	-	24.4	Minority	0.008	-
Marital status	-	-	-	78.04	Not married	0.087	-
Maternal Education	-	-	-	82.9	Less than a college education	0.236	-
Household Income	-	-	-	85.4	Less than 20,000	0.9	-
Unplanned Pregnancy	-	-	-	31.7	Pregnancy was unplanned	0.811	-
Non-Biological Child in Household	-	-	-	19.5	Any non biological children living in the home	0.506	-
Alcohol Use During Pregnancy	-	-	-	5	Any self reported alcohol use during pregnancy	0.005	-
Tobacco Use During Pregnancy	-	-	-	41.5	Any self reported tobacco use during pregnancy	0.672	-
Pre-eclampsia	-	-	-	3.00	-	1.096	-
Gestational diabetes	-	-	-	9	-	0.303	-
Demographic Risk Composite	4.22	1.49	0-11	-	-	-	0.774

Labor and Delivery Risk Score

A second risk score was developed based on four birth complications. Each of the four following birth complications were coded as a 1 if they occurred and a 0 if they did not: (1) Baby went to the neonatal intensive care unit (NICU) (risk present in 9.09%), (2) Cesarean Delivery (risk present in 24.24%), (3) Premature Delivery (risk present in 6%), and (4) Confined to intravenous (IV) during labor (risk present in 42.42%). Each woman was given a risk score based on a sum of these coded variables.

Table 2. Labor and Delivery Risk Composite

This table presents the sample level labor and delivery risk present in the study.

Risk-score item	Mean	SD	Range	Risk Present (%)	Chi-Square	t-test
Baby Went to the NICU	-	-	-	9.09	3.106*	-
Cesarean Delivery	-	-	-	24.24	0.01	-
Premature Delivery	-	-	-	6	2.004	-
Confined to IV During Labor	-	-	-	42.42	1.588	-
Composite Labor and Delivery Risk Score	0.3939	0.556	0-4	-	-	0.25 4

Current Thesis Design

This study analyzed data collected from the participants in the pilot of this intervention class. The curriculum for this particular iteration of the Birth Your Way class was designed to target maternal postpartum depression. The curriculum differed from other Birth Your Way classes in that it focused on a reduction in postpartum depressive symptoms, so the curriculum had not yet been adapted to include the additional focus on health behaviors that the current class incorporates. The focus of the curriculum of this earlier iteration of the class motivated this study to pursue a hypothesis centered on psychological outcomes rather than physiological or birth related outcomes.

Past research has established that ACT can be effective in reducing depression (Kohtala, Muotka, & Lappalainen, 2017). Kohtala et al. (2017) investigated the long-term effects of a four-session ACT intervention on depressive symptoms. This short ACT intervention was delivered by student therapists, Kohtala et al. (2017) assessed clients' depressive symptoms both six months and five years after the intervention.

Results of this study showed that 40% of the participants reported minimal to no depressive symptoms at both six month and five year follow-up measurements. The first iteration of the Birth Your Way class investigated in this thesis was designed to build on research such as that conducted by Kohtala et al. (2017), expanding to a new population of at-risk expectant mothers.

In addition to positive outcomes when it comes to depression, ACT-based therapies have been shown to improve symptoms of anxiety (Ritzer et al., 2016). Ritzer et al. (2016) examined the influence of an ACT self-help workbook on anxiety in an international sample. The treatment condition in this study yielded significant

improvements in levels of anxiety relative to the waitlist. These improvements were maintained at twelve weeks, six months and nine months post-treatment.

Building from a foundation of empirical research, the current work examines the relationship among Birth Your Way, a prenatal ACT-based intervention and postpartum parenting stress and depressive symptoms. This study explores the data collected through completion of the first randomized control trial (RCT) Birth Your Way study. More specifically, this study hypothesized that through regression analysis; participation in Birth Your Way would be correlated with reduced parenting stress and depressive symptoms. Researchers were hopeful that these results could provide quantitative and qualitative support for the implementation of ACT-based interventions for low-income mothers and families. Further, it is the hope that this study can mitigate the effects that the disproportionately high levels of prenatal stress that low-income mothers experience has on negative birth outcomes. Considering the high rates of maternal mortality in the U.S., interventions such as Birth Your Way are vital to ensure maternal and child health.

Lower parenting stress and depressive symptoms can have important implications for pre and post-natal maternal and child health (Lobel et al., 2008). This thesis will investigate the potential connection between participation in ACT-based prenatal intervention classes (Birth Your Way) and level of parenting stress and depressive symptoms one month postpartum. Additionally, experiential avoidance is explored in a post-hoc analysis of the data.

Hypotheses

The current work hypothesizes that 1) participation in Birth Your Way will predict levels of parenting stress one month postpartum such that participation in the class will show lower rates of parenting stress, and 2) participation in Birth Your Way will predict levels of maternal depression one month postpartum such that participation in the class will show lower levels of maternal depression.

Method

Participants

Forty-one low-income mothers entering their third trimester were recruited from the Lane County Women, Infants, and Children Center (WIC) supplemental nutrition program. Inclusion criteria were 1) the mother being 18 years or older, 2) this being the mother's first pregnancy (this does not include past miscarriages), and 3) the mother being eligible for WIC services (thus being below a certain income bracket). The majority of the sample (77.2%) was Caucasian, with 9% Latina, 4.5% African American, 6.8% Asian American and 2.3% Native American. A small minority (4%) had completed "less than a high school degree," 20.5% had completed up to a high school degree, 2.3% had a two year technical degree, 52.3% had completed "some college," 11.4% had up to an undergraduate degree, and 4.5% had a master's degree. Over two-thirds of mothers (70.5%) reported their pregnancies as unplanned. Additionally, 85% of mother's annual household income was below 20,000.

Procedure

The Institutional Review Board approved all study procedures, and informed consent was obtained from all participants. Following recruitment, research assistants met with each participant individually to administer a battery of questionnaires (T1). Participants were then randomly assigned to either the control group or the treatment group. Treatment group participants were enrolled in the six-week Birth Your Way intervention. Control group participants were offered an ACT-based parenting class upon study completion. Research assistants met with each participant again at one

month postpartum to administer the second battery of questionnaires (T2). All participants received \$15.00 for completing the T1 battery of questionnaires and \$25.00 for completing the T2 battery of questionnaires. Treatment group participants who attended at least five of the six Birth Your Way classes were entered into a drawing to receive an additional \$40.00. Eight participants were lost due to attrition between the administration of the T1 and the T2 surveys. Thirty-three mothers completed the T2 survey a month after their infant was born. In conducting an intervention study such as this, a small sample size is typical. Thirty-three mothers was a smaller sample than we had hoped for but was not a surprise given the at risk nature of our participant group and the many challenges they were facing as they transitioned into parenthood.

Adherence

Due to a multitude of reasons (see table in appendix for detailed description of absences) 14 mothers were unable to attend one or more classes. Because of the eligibility criteria, multiple mothers were ineligible for the study but chose to attend the class. These women did not participate in the T1 and T2 surveys. Among all involved participants, the average attendance was 3.34 out of the 6 sessions. There was 25% attrition of participants from the administration of T1 to the completion of T2 surveys (8 participants did not complete the set of T2 surveys).

Measures

Participants complete two sets of surveys, at T1 (during third trimester of their pregnancy) and T2 (one month postpartum). Participants completed the set of T1 questionnaires which includes the following measures: demographics; pregnancy history; Acceptance and Action Questionnaire (AAQ-II) measuring experiential

avoidance (Bond et al., 2011); Edinburgh Postnatal Depression Scale (EPDS) quantifying participants' postpartum depressive symptoms (Cox, Holden & Sagovsky, 1987); a Five Facet Mindfulness questionnaire measuring the five facets of mindfulness (observing, describing, acting with awareness, non-judging of inner experience, and non-reactivity to inner experience) (Baer, Smith & Lykins, 2008), Automatic Thoughts Questionnaire (ATQ) measuring the frequency of automatic negative statements about the self (Sahin, 1992); Cognitive Fusion Questionnaire which quantifies the participants' ability to create psychological distance from their thoughts (Gillanders & Bolderston, 2013); and a health behavior questionnaire.

Participants in the treatment group completed weekly surveys. Fathers as well as support people (mothers, sisters etc.) that attend the classes along with the participant mothers also completed the weekly surveys. One month postpartum, all participants (both the control and treatment groups) completed the set of T2 questionnaires, which includes the following measures: demographics; pregnancy and birth history; acceptance and action questionnaire (AAQ-II); childbirth experience questionnaire; five-facet mindfulness questionnaire; EPDS; consumer satisfaction; automatic thoughts questionnaire; cognitive fusion questionnaire; IMP; Parental Stress Scale (PSS); health behavior questionnaire; Center for Epidemiologic Studies Depression Scale (CESD) and a questionnaire about being a parent.

Rationale for Choosing Measures

The AAQ-II is an important measure to quantify the level of a participant's experiential avoidance at both T1 and T2. This measure establishes an initial value of experiential avoidance and a subsequent value for experiential avoidance after participation in the

Birth Your Way class. Thus, the AAQ-II reveals the difference in tendency toward experiential avoidance that has occurred while taking the class in comparison to not participating in the class. Because the control group takes this same measure, confounding effects can be controlled for in analysis.

The EPDS was chosen because of its ability to detect postnatal depression. While other measures such as the Center for Epidemiologic Studies Depression Scale (CES-D) are reliable measures of depressive symptoms, the EPDS was chosen as an outcome variable because of its specific applicability to pregnancy. It has been proven effective in detecting depressive symptoms, specifically in the context of pregnant and postnatal women. This study used the EPDS to quantify the differences in depressive symptoms postpartum between participants that take the class and those who don't. Because this measure was administered at both T1 and T2, participants' initial depressive tendencies were controlled for in the study's analysis. This measure has been included because participation in the Birth Your Way class is predicted to be associated with decreased depressive symptoms one month postpartum.

The five-facet mindfulness questionnaire was included in the analysis because participation in the Birth Your Way class is hypothesized to be associated with increased mindfulness.

The ATQ was included in the analysis because the Birth Your Way class aims to decrease the frequency of negative statements made in regard to one's self. This survey helps to quantify the magnitude and number of negative automatic thoughts participants had about themselves.

The cognitive fusion questionnaire is important to include as the Birth Your Way class aims to reduce cognitive fusion and encourage participants to create psychological distance from their thoughts. This questionnaire looks at how fused or attached participants are to the negative and stressful thoughts/feelings that they experience. The health behavior questionnaire was chosen to track the change in the participants' health behaviors while taking the class as well as between those who took the Birth Your Way class and the control group that did not. This questionnaire will be important when investigating more specifically how Birth Your Way impacts health behaviors among participants.

Lastly, there are measures unique to the T2 set of questionnaires; the childbirth questionnaire, parental stress questionnaire, and being a parent. These are questionnaires that were not applicable at T1 as the participants in the study had not yet experienced childbirth and were not yet parents.

Dosage

Dosage was created as a variable to include in the main analyses of each outcome variable to control for how many classes each of the participants attended. It is important when considering an intervention treatment such as Birth Your Way to include whether participants assigned to the treatment group attended the class and therefor truly received the treatment.

Primary Outcome Measures

Based on past empirical research, levels of reliability, and applicability to the Birth Your Way curriculum, the Parenting Stress Scale (PSS) and Edinburgh Depression Scale (EPDS) were chosen as measures of the two primary outcome variables.

Parenting Stress--Parental Stress Scale (PSS) (Berry & Jones, 1995)

The PSS consists of 18 questions (e.g. I am happy in my role as a parent, there is little or nothing I wouldn't do for my child(ren) if it were necessary, caring for my child(ren) sometimes takes more time and energy than I have to give, etc.), each scored on a five-point Likert scale. The PSS has been determined to reliably measure parenting stress in parents of children with and without developmental and behavioral problems (Berry & Jones, 1995). (See Appendix for complete questionnaire)

Experiential Avoidance--Acceptance and Action Questionnaire (AAQ-II) (Bond et al., 2011)

The AAQ-II consists of seven questions (e.g., My painful experiences and memories make it difficult for me to live a life that I would value, I am afraid of my feelings, I worry about not being able to control my worries and feelings, etc.) and each scored on a seven-point Likert scale. The AAQ-II has been determined to be a reliable measure of acceptance, experiential avoidance and psychological inflexibility (Bond et al., 2011). (See Appendix for complete questionnaire)

Depression—Edinburgh Postnatal Depression Scale (EPDS) (Cox, Holden & Sagovsky, 1987)

The EPDS consists of ten questions in which mothers are asked to recall and report any depressive symptoms that they have experienced (e.g. I have looked forward with enjoyment to things, I have been able to laugh and see the funny side of things etc.). Each of the ten questions is rated on a five point Likert scale, and it has been determined to be a reliable measure of postpartum depressive symptoms in clinical and research settings (Cox et al., 1996). (See *Appendix* for complete questionnaire)

Birth Your Way Curriculum

The Birth Your Way class met once per week for six weeks. The Birth Your Way curriculum aims to reduce experiential avoidance and improve birth satisfaction. Each week focused on one of the six therapeutic processes of ACT, delivered via psychoeducation, as well as on one of the stages in the labor process. The flow of the six classes reflected the flow of the birth journey, focusing on topics in the following order: early labor, active labor, transition (from active labor to pushing), pushing, the parent/child relationship, and family cohesion. Additionally, the curriculum strives to give women understanding about the biological stress responses that human beings are prone to during childbirth as well as constructive tools to ease these responses.

The structure of each class centered on experiential ACT exercises, activities that support values-directed behavioral change and group cohesion activities through which a sense of community is constructed. In the first week of the class the expectant mothers and their support persons engaged in an experiential exercise that targets the core ACT process of “identification of values” in which the instructor led participants to transform a brainstorm of negative thoughts, feelings and expectations about birth into a broader list of values (i.e. global qualities of ongoing action) from which expectant mothers may begin to expand their behavioral repertoire. This experiential activity is the first of many ACT exercises embedded in the class to support women in values-directed behavior change.

In addition to these values-directed exercises, structured experiential exercises were used to help mothers and their support system connect with what is most important to them, as well as notice and make room for difficult thoughts, feelings, and physiological

sensations. For example, the core process of defusion was highlighted using a closed-eye exercise whereby women were asked to imagine that they are at an ultrasound appointment.

In this closed-eye exercise, the following narration was provided: “There are two ultrasound-technicians in the room. They look at the monitor and begin to whisper. When you ask if there is something wrong, they say that you will need to wait until Monday morning when your doctor is back in the office to have your questions answered.” Women are then asked to write down the first thought and/or emotion that they experience in this scenario. Typical emotional reactions are anger, fear, and confusion, and typical thoughts are, “is there something wrong?” The class helped students to identify a common theme in their reactions and through a process of defusion notice that uncomfortable thoughts and emotions are normal and natural. Next, the class is told to imagine that they are driving a bus in their valued direction, and these uncomfortable thoughts and feelings are unruly passengers riding on that bus. The core ACT process of acceptance is targeted by having participants imagine what would happen to their bus if they were try to struggle with those unruly passengers. The common answer is that their bus would swerve or crash. It would no longer be heading in their valued direction. Making room on the bus for unruly passengers is a metaphor for accepting one’s uncomfortable thoughts and emotions as opposed to avoiding or struggling with them.

Through a series of structured experiential exercises like this, the class curriculum has a goal of providing women and their support systems with the tools to navigate moments of stress by making room for difficult thoughts, feelings and physical sensations.

Results

Preliminary Analysis

Standard descriptive statistics were used to explore the means and standard deviations of the data. The means and standard deviations of the variables of interest, condition (treatment=1 and control=0), demographic risk score, labor and delivery risk score, pre-stress score, PSS2, EPDS1, EPDS2, AAQ1 and AAQ2 are displayed in Table 3.

This analysis of the means and standard deviations of the main variables allows us to explore whether levels of any of these factors were elevated in the sample at a population level. The labor and delivery risk score ranges from 0-4, the average score is a 0.81 suggesting that the risk was not elevated in this sample. However, the standard deviation is 4.391 suggesting that there was a large range of scores that deviated from the mean of 0.81. The average Parenting Stress Scale score for this sample is 30.66. The scores for the Parenting Stress Scale range from 18-90. Both the average pre and post depression scores were below the cut-off for elevated depression of 10 (7.03 for pre-existing levels of depression and 5.7 for levels of depression of taken at time point two). An independent t-test was conducted on each variable, contrasting the levels of each main variable in regard to the control and the treatment group. The only variable that displayed a statistically significant difference were pre-existing levels of depression, $t=2.76, p=.034$

Table 3. Descriptive Statistics of Main Variables

Variable	Mean	Standard Deviation	t-value
Condition	0.48	5.45	-
Demographic Risk Composite	4.09	1.588	1.58
Labor and Delivery Risk Score	0.8182	4.391	2.21
Dosage	1.71	2.32	-

Pre-Stress Score	17.1724	5.148	-0.98
PSS2	30.66	7.692	-1.59
EPDS1	7.03	0.68	-2.76*
EPDS2	5.7	3.71	-0.45
AAQ1	13.39	5.244	-2.14
AAQ2	12.21	5.92	0.197

* $p < .05$

Note: Parenting Stress Scale (PSS2), Edinburgh Postpartum Depression Scale (EPDS1) taken at time point one, Edinburgh Postpartum Depression Scale (EPDS2) taken at time point two, Acceptance and Action Questionnaire (AAQ1) taken at time point one, Acceptance and Action Questionnaire (AAQ2) taken at time point two.

Pearson bivariate correlations were used to explore the associations among the main variables used in the study. The relation between each of these variables appears in Table 4. The treatment condition was positively correlated with demographic risk score, negatively correlated with labor and delivery risk, positively correlated with postpartum parenting stress, positively correlated with pre-existing depression, and positively correlated with pre-existing levels of experiential avoidance. Additionally, the demographic risk score was positively correlated with preexisting stress and initial levels of experiential avoidance. Pre-existing stress levels were positively correlated with postpartum parenting stress, initial levels of experiential avoidance and postpartum levels of experiential avoidance. Pre-existing depression levels were positively correlated with depression levels postpartum, pre-existing levels of experiential avoidance and postpartum levels of experiential avoidance. Levels of depression postpartum were positively correlated with pre-existing levels of experiential avoidance and levels of experiential avoidance postpartum. Lastly, pre-existing experiential avoidance was positively correlated with experiential avoidance postpartum.

Table 4. Correlations of Main Variables

	1	2	3	4	5	6	7	8	9
1. Treatment Condition	-								
2. Demographic Risk Composite	0.25*	-							
3. Labor and Delivery Risk Score	-0.37*	0.073	-						
4. Pre-Stress Score	0.19	0.32*	0.018	-					
5. PSS2	0.28*	0.10	0.01	0.04	-				
6. EPDS1	0.40*	0.31*	-0.019	0.63**	0.13	-			
7. EPDS2	0.08	-0.02	-0.059	0.36*	0.34*	0.54*	-		
8. AAQ1	0.32*	0.2*	0.117	0.24*	0.20	0.82**	0.32*	-	
9. AAQ2	-0.035	0.184	-0.091	0.64**	0.14	0.56**	0.66**	0.33*	
10. Dosage	.72**	0.17	-0.25	0.39*	0.08	0.27	.17	.09	.4

* $p < 0.05$, ** $p < .001$

Regression Analysis: Parenting Stress

An initial multivariate regression model was used to investigate the relation between participation in Birth Your Way and parenting stress. A linear regression was used to test the main effect of participation (treatment vs. control) on parenting stress (assessed at 1-month postpartum using the PSS). The overall model for this regression analysis did not reach statistical significance, $F = .944$, $p = .455$. However, contrary to prediction, women in the treatment condition showed marginally higher levels of parenting stress postpartum (95% CI [23.32, -.715], $\beta = .745$, $p = 0.066$, $F(1,28) = .768$).

Table 5. Regression Table Parenting Stress

		Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	24.761	5.869		4.219	.000	12.648	36.874
	LaborandDeliveryRiskScorenoSAF	1.386	2.213	.128	.626	.537	-3.182	5.954
	Prestress1	.178	.314	.119	.566	.577	-.471	.827
	Condition	9.433	4.892	.624	1.928	.066	-.663	19.530
	Dosage2	-1.694	1.112	-.503	-1.523	.141	-3.989	.601

Note: “LaborandDeliveryRiskScorenoSAF” refers to the Labor and Delivery Risk Score Composite variable, “Prestress1” refers to the pre-existing stress levels of participants, “Condition” refers to whether participants were placed in the control or treatment group, “Dosage2” refers to how many of the classes the treatment group attended.

Regression Analysis: Depression

A second linear regression was used to test the main effect of participation (treatment vs. control) on women’s self-reports of depression symptoms. A linear regression was used to test the main effect of condition (treatment vs. control) on depression, assessed at 1-month postpartum using the EPDS. While the overall model for this regression analysis was significant, $F=3.11$, $p=.031$, this was primarily due to the variance accounted for by depressive symptoms at time point 1. The effect of treatment condition on depressive symptoms was not significant ($\beta=-.006$, $p=0.984$).

Table 6. Regression Table Depression

		Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	3.060	1.501		2.039	.051	-.014	6.135
	EPDS1	.486	.148	.574	3.278	.003	.182	.790
	LaborandDeliveryRiskScorenoSAF	-.482	.927	-.088	-.520	.607	-2.381	1.418
	Condition	-.745	2.018	-.102	-.369	.715	-4.878	3.388
	Dosage2	-.015	.439	-.010	-.035	.972	-.915	.885

Note: “LaborandDeliveryRiskScorenoSAF” refers to the Labor and Delivery Risk Score Composite variable, “EPDS1” refers to the pre-existing depression levels of participants, “Condition” refers to whether participants were placed in the control or treatment group, “Dosage2” refers to how many of the classes the treatment group attended.

Post-Hoc Analysis

Regression Analysis: Experiential Avoidance

Given the marginally significant results of participation (treatment vs. control) on parenting stress, a linear regression was used to test the main effect of condition (treatment vs. control) on experiential avoidance. An analyses exploring experiential avoidance could uncover if participation in Birth Your Way is associated with a reduction in experiential avoidance. While the overall model for this regression analysis was not significant, $F=2.08$, $p=.110$, the effect of treatment condition was marginally significant, $\beta=-.560$, $p=0.093$. Specifically, women in the treatment group reported lower levels of experiential avoidance than the control.

Table 7. Regression Table Experiential Avoidance

Model		Coefficients ^a					95.0% Confidence Interval for B	
		Unstandardized B	Std. Error	Standardized Coefficients Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)	9.106	2.993		3.042	.005	2.974	15.238
	LaborandDeliveryRiskScorenoSAF	-1.925	1.583	-.222	-1.216	.234	-5.167	1.318
	Condition	-6.403	3.396	-.549	-1.885	.070	-13.359	.553
	AAQ1	.426	.194	.378	2.197	.036	.029	.824
	Dosage2	1.140	.692	.458	1.648	.111	-.277	2.557

Note: “LaborandDeliveryRiskScorenoSAF” refers to the Labor and Delivery Risk Score Composite variable, “AAQ1” refers to the pre-existing experiential avoidance levels of participants, “Condition” refers to whether participants were placed in the control or treatment group, “Dosage2” refers to how many of the classes the treatment group attended.

Discussion

While the analysis of the relationship between participation in Birth Your Way and postpartum parenting stress as well as depressive symptoms postpartum, did not yield a statistically significant result, the findings of this analysis are an important contribution to understanding what new mothers and their babies need in terms of psychological support. This study provides a valuable preliminary look at what women face in terms of challenges, when it comes to the transition into parenthood, as well as how we can adapt prenatal and parenting interventions based on women's specific needs.

The data from this thesis comes from the first iteration of Birth Your Way, which was designed to target a mother's depression postpartum through ACT. The current study hypothesized that participation in this ACT based birthing class would be correlated with a reduction in parenting distress, more specifically, a reduction in levels of parenting stress as well as depressive symptoms. While the results of this analysis were statistically insignificant, it is important to understand why the results for the regression of parenting stress and experiential avoidance were approaching significance.

The insignificant result found in the analysis of this preliminary data could be due to a number of confounding factors. The first of these possible confounds is the lack of statistical power that a sample population of 41 (33 in terms of outcome variables) has. Birth Your Way could be effective in reducing parenting stress postpartum, however, the study may have lacked the statistical power necessary to detect this effect.

Intervention science studies such as this thesis can have a wide variety of sample sizes with a minimum of about 15 participants. Because of the challenges inherent in the design of an intervention study (in which attendance is particularly important) as well as

the sample population (facing a major life transition as well as social and economic challenges) it was expected that the sample size would be small.

A second possible confounding variable is that participation in Birth Your Way may have increased participants' awareness and acknowledgment of stress, therefore resulting in increased self-reported levels of parenting stress. This phenomenon of increased reporting of symptoms following mindfulness-based interventions has been described in the literature (Masuda, 2009). Previous research studies investigating participation in an ACT intervention and stress/anxiety levels have suggested decreased levels of stress. However, one study conducted by Thomason et al. (2014) found similar results to this thesis in terms of inconsistency of the direction of parenting stress levels and depression. Thomason et al. (2014) investigated the relationship between depressive symptoms and three specific areas of parenting stress: parental distress, difficult child stress, and parent-child dysfunctional interaction. The results of the study conducted by Thomason et al. (2014) found that there were different patterns between postpartum depressive symptoms and different types of parenting stress. That study suggests a possible explanation for the results found in this thesis; in that parenting stress may be complex, such that it interacts with other domains such as those examined by Thomason et al. (2014), depression or experiential avoidance may surface in unexpected ways. When trying to understand the results found in this study it is important to consider that while Birth Your Way may target stress during the prenatal period, these statistically insignificant results could indicate that families need continued support through out the first year postpartum in order to impact maternal levels of distress. The results of this

thesis can further inform the future iterations of Birth Your Way as well as the other interventions that ACT For Families provides to the community.

Regression Analysis Discussion

Birth Your Way aims to reduce mother's levels of experiential avoidance through the six core therapeutic processes of ACT. Regression analyses of participation in Birth Your Way in regards to both levels of parenting stress and experiential avoidance was marginally significant, however not in the expected direction. This study hypothesized that participation in Birth Your Way would be correlated with decreased levels of parenting stress post-partum. In contrast, trending toward significance ($p < .06$), the regression analysis found that the treatment group had a higher level of parenting stress than the control group. Additionally, also trending toward significance ($p < .07$) the post-hoc analysis revealed a correlation between reduced levels of experiential avoidance and participation in Birth Your Way.

The correlations described above between increased parenting stress and reduced experiential avoidance could be the product of the curriculum of the Birth Your Way class. It could be that participation in Birth Your Way classes, makes mothers more aware of and comfortable with admitting to themselves and to an outsider that they are stressed. Parenting is an inherently challenging process, and being able to recognize and make room for this stress is an ability intrinsic to reducing maternal levels of experiential avoidance. Mothers who participated in Birth Your Way could be reporting higher levels of parenting stress due to their lower levels of avoidance when it comes to the stressors present in their life.

These results are important to consider more extensively in the analysis of future iterations of Birth Your Way. It may be that the Birth Your Way curriculum is achieving what it sets out to do but the influence that it has on parenting stress has not yet taken effect. It could be that at one month postpartum mothers who have participated in the class are more aware of their stressors and are just beginning to implement what they have learned in the class. A reduction in stress levels may not be seen until later time points when new mothers feel more confident in their abilities to apply what they have learned in Birth Your Way not only to the birth process but to their interactions with their child and their growing family.

Limitations

One limitation in our ability to assess the influence that participation in Birth Your Way has on maternal levels of parenting stress is in the somewhat unreliable pre-stress measure created as a proximal measurement for pre-existing stress levels of mothers in the study. While the measurement used for quantifying pre-existing stress comes from the Beck Anxiety Inventory, this measure was not created originally as a pre-test of parenting stress specifically (Beck et al., 1988). This measure was originally created to assess anxiety levels in the general population and was adapted to assess levels of anxiety in pregnant women for this study. We were able to create the pre-stress variable using a portion of the Beck anxiety scale; however, it was not an exact pre-test as it is a measure of somatic stress symptoms, rather than cognitive stress symptoms within the context of parenting. Further, upon analysis of the results, there was found to be no correlation between the results of stress levels collected at time point one and stress levels collected at time point two.

It is important to note that there is a large significant difference between women's scores of parenting stress and pre-stress such that they are not statistically correlated, as displayed in *Table 4*. A lack of association between these two measures of stress suggests one of two possibilities. The first is that these two measures are quantifying two slightly different aspects of a women's psychosocial stress. The second explanation is that women's levels of parenting stress changed so drastically between the two time points that they are no longer correlated. Future research should attempt to quantify pre-existing stress levels in a more accurate way, thus getting a better overall picture of how this intervention may have impacted levels of parenting stress postpartum.

Finally, the measures of parenting stress postpartum could not all be taken at exactly one month postpartum. Given the immense changes that occur during the transition of becoming a parent there could be a difference in the stressors and their severity depending on the age of the infant. The different time periods (ranging from one month postpartum to four months postpartum) could be a confounding variable in our measurement of parenting stress.

Challenges in Recruitment, Attendance and Adherence

In understating why insignificant results were found in this study, it is important to consider what influence a small sample size can have on a study's lack of the statistical power. The small sample size present in this study is primarily the product of challenges in recruitment, attendance, and adherence. Additionally, it is important to consider what specific challenges participant mothers face in participating in, attending, and completing the demands of this study.

It is important to note the challenges that these women face in simply getting to the Birth Your Way class. Of the 21 women assigned to the treatment group, 18 women faced challenges in attending the class. Barriers to attendance cited by the participants included financial challenges, more specifically issues in paying for transportation or the inability to take time off of work due to maintaining a full-time job throughout the duration of their pregnancies. Lack of transportation, specifically being without a car, makes it so that the only option for many women is riding the bus. Public transportation creates several additional challenges for a woman in her third trimester of pregnancy including safety, walking long distances and waiting for extended periods of time for the bus.

Classes Missed	Reasons for missing class
3	Work Conflict
3	Work
6	I never had money to come
3	Transportation
1	I was sick
4	My baby was born early
5	We moved

Table 8. Self-Reported Number of Classes Missed and Reason for Missing Class

This table provides insight on to some of the reasons that women were not able to attend the Birth Your Way classes; this represents only a fraction of the women who had difficulty attending. Included in this table are only women who gave self-report reasons as to why they could not attend.

It is imperative to prenatal intervention research that we acknowledge and focus on these logistical challenges, facing the women for whom we design an intervention. The insignificant results found in this study may be a by-product of a lack of an effective sample size. This small sample may have been significantly influenced by the

challenges addressed above. Further, it is important that any future interventions are sensitive to these challenges and work to create interventions that are accessible to the women they are trying to target. These challenges in attendance may have had a notable influence on the significance of our results. In the statistical analysis, we were able to account for some of this by adding dosage as a variable we controlled for however it was rare that in our sample a women was able to attend all 6 of the classes. This lack of attendance may have had detrimental effects on a women's ability to benefit from the class curriculum.

Due to the transitional nature of the prenatal time period as well as the risks of our sample, initial recruitment and subsequent retention can be difficult to maintain. While neither of the main analyses of this particular study yielded significant results, the third model run in post-hoc analysis was shown to be approaching significance. This analysis in particular could have been influenced by a lack of power due to the small sample size.

Qualitative Data

Along with the quantitative results analyzed above, it is important to include the qualitative data collected when forming the conclusions of this study. Every woman who attended the class gave a brief description of specifically what she found helpful in the class, responding to two prompts (which requested short free-form answers) as follows: (1) "What did you like about the Birth Your Way class series?" and (2) "What was the most important thing you learned in the Birth Your Way class series?".

Birth Your Way aims to improve prenatal health behaviors and birth outcomes through three main elements: (1) curriculum-embedded mindfulness practice, (2) values-

directed behavior change exercises and (3) group cohesion activities. The responses to the two questions indicated above are included in a table below displaying that every answer given by participants in the study reflects at least one of these three core curriculum elements, if not multiple elements.

Although the results of this study did not yield statistically significant results, the fact that the women taking this class were able to identify these three themes as the things that they felt most applicable to their lives, as well as the birthing of their baby and in their role as a parent, is promising for the strength of the curriculum of the Birth Your Way class. The table below displays some sample verbatim from the qualitative questionnaire administered at the conclusion of the study:

Key Curriculum Elements	What did you like about the Birth Your Way class series?	What was the most important thing you learned in the Birth Your Way class series?
Curriculum-embedded mindfulness practices	"The teacher and other "students". Approach to stress relief. More of a mental class than about physical aspects", "The whole thing was great", "Different techniques and tips", "The experience and what I learned", "the practices on mindfulness and breathing"	"Tree breathing, values of my birth plan and how to let things go.", "Stop, listen and then deal with uncomfortable experiences", "Imagery can be helpful", "How to breathe for baby and I", "to make room for my pain", "How to block out everything when you're about to give birth and focus on you focal point", "The different breathing and relaxing exercises", "How to make room for unhappy feelings and be okay with their presence", "to stay relaxed don't panic and breath", "I don't know yet", "to breath and if things don't go as planned move to plan b", "How to find a solution to my problems"
Values-directed behavior change exercises	"The graphs and handouts. How approachable the teacher was. The stages of pregnancy being laid out not just the birth section", "Just all of the general information, helpful hints and support. I cam in to this with not a lot of any of those	"The things to do during labor.", "To know that no matter what as long as you have your support and tried the best you could, you are never a bad parent.", "We have a choice of how we want to give

	things and felt so much better about myself afterwards”, “It gave me confidence”, “I was able to decide how I wanted to give birth”, “the information received”, “That I got to learn new interesting things on what to do when you are in active labor”, “It was very informative”, “It gave me a way to cope and communicate my needs and wants”,	birth", "to plan what you want", "Pay attention to your needs during labor", "to make sure and take care of myself as well",
Group cohesion activities	"All the support and positive environment", "Friendly", "Relaxed, and the instructor was nice.", “Getting a chance to talk with other women who were also pregnant”, “Being with other moms and feeling a sense of camaraderie”, “The camaraderie with other women going through the same thing”	

Table 9. Qualitative Responses

This table describes qualitative data collected that reflects the three core elements of the Birth Your Way curriculum.

Further Support for Mothers and Families

As mentioned above, the results of this study could also suggest that families need continued support through out the parenting process. The stressors that mothers and families are experiencing during the prenatal period can be intensified postpartum. While this iteration of Birth Your Way primarily targets the prenatal period, the tools learned within the class are applicable during birth as well as parenting. However, the results of this study may indicate that the in-person sessions of Birth Your Way exclusively during pregnancy may not be sufficient in supporting mothers and their families through this life transition. With this need for further support in mind ACT for Families has developed two additional interventions: Babyworks and Babies on the Move. Babyworks supports mothers and their infants during the ages of 0-6 months,

while Babies on the Move supports mothers and their children during the ages of 6-12 months. An important avenue for future research would be to follow participants through each of these interventions to identify exactly what level of support is most beneficial.

Ongoing/Future Research

The data collected from this investigation will be important for understanding how ACT-based interventions such as the Birth Your Way class can be effective in providing women with a more positive birth experience and improving their interpersonal relationships with their new children. Birth Your Way's grounding in the implementation science approach enables it to be constantly adapting to better meet the needs of the community.

While the data for my thesis comes from the original Birth Your Way series, the current format of the Birth Your Way classes is called Birth Your Way+Health. While this adaptation of the Birth Your Way program focuses on the same goals of supporting psychological flexibility and reducing experiential avoidance, it is already being adapted based on the results of the current study and feedback from the participant mothers in each previous iteration of the class. In addition to supporting psychological flexibility and reducing experiential avoidance, Birth Your Way+Health targets health behavior determinants of negative birth outcomes such as infant mortality, maternal mortality and low birth rates.

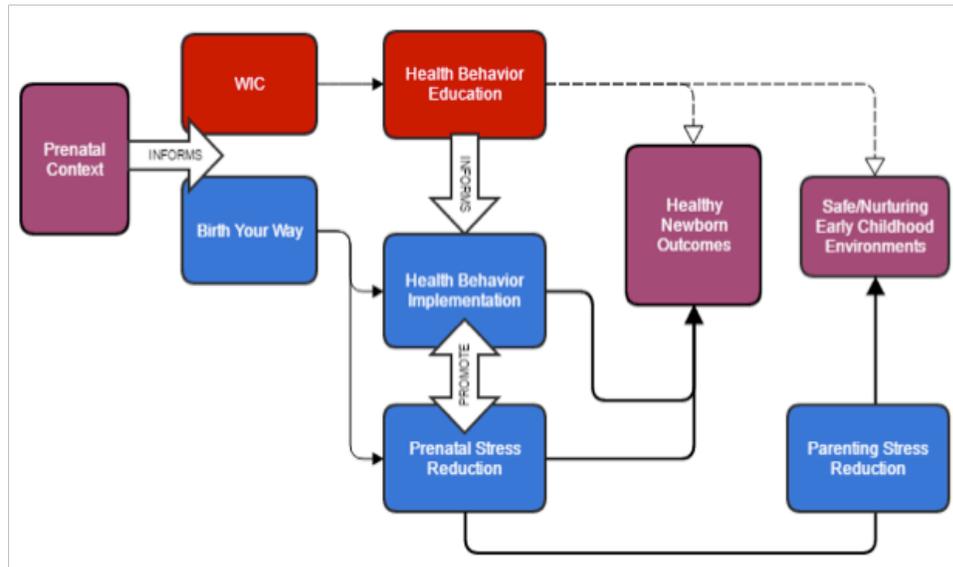


Figure 1. Conceptual Model for Birth Your Way+Health

This figure depicts the relationship between the contexts of women who enter the study, how that informs the work that both WIC and Birth Your Way do, and how health behaviors work in connection with reduced parenting stress to promote healthy birth outcomes and safe/nurturing childhood environments.

This second version of Birth Your Way was created in response to the needs of low-income women in Lane County. As a contextually dependent intervention, Birth Your Way and the resources that ACT For Families provides will continue to reflect on the empirical results of research to respond to the needs of the Lane County community. Moving forward, while the quantitative results of the current study were only marginally significant, it is important to consider the contribution that these results, in conjunction with study's the qualitative results, can impact future iterations of Birth Your Way. More specifically, it will be important in each iteration of Birth Your Way to consider the feedback collected from women on what they found helpful or not helpful about the class as well as how they felt about the class while they were birthing

their babies. Additionally, it will be important to investigate further the connections between the Birth Your Way curriculum, levels of parenting stress, depressive symptoms and levels of experiential avoidance further.

Additionally, the results of this study suggest that a prenatal intervention may not be sufficient in impacting a mother's level of parenting stress. These results suggest that there may be an unexpected connection between the Birth Your Way curriculum, increased awareness of parenting stress and decreased experiential avoidance. Further study of all three of the outcome variables (depression, parenting stress and experiential avoidance) will be important in uncovering the impact that Birth Your Way has on maternal and child health.

The results of this thesis have important implications when it comes to further interventions that target maternal and child health. Currently, ACT for Families has developed two interventions that target parenting stress specifically: BabyWorks supports families with infants 0-6 months and Babies on the Move that targets families with toddlers 6-12 months. The strategy of these interventions is to use the same three core elements (1) curriculum-embedded mindfulness practice, (2) values-directed behavior change exercises, and (3) group cohesion activities to support mothers and their families in the parenting process. These interventions aim to lessen parenting stress by directly supporting mothers during the first year of their child's life. The postpartum interventions provided will continue to be adapted based on the findings of the current study.

While Birth Your way is an important way for ACT For Families to impact proximal outcomes such as those described above in Table 9, the results of this thesis confirm the

need for continued intervention like those offered by that BabyWorks and Babies on the Move. An important avenue for future research is the analysis and comparison of the levels of parenting stress, experiential avoidance and depression for those who have participated in these postpartum interventions to the results of this study.

In an analysis of the surveys completed by the participants in this study there are specific areas in which it seems parenting stress is the most intense specifically in regard to finances and transportation. While Birth Your Way offers a class that gives women the tools they need to combat parenting stress, this class may not address other things that are influencing a women's stress after they have had their children and are no longer taking the class.

Ultimately, the work completed in this thesis has important implications when it comes to maternal child health particularly in the development of pre and postnatal interventions. This thesis suggests multiple avenues for future research; primarily exploring the connection between participation in ACT based interventions and subsequent levels of parenting stress and experiential avoidance. Additionally, it is imperative to future research that the general support provided to at-risk mothers is adequate. Studies such as this one highlight the immense need that is present during the transition into motherhood for low-income women. Given the extremely high rates of both maternal mortality and negative birth outcomes nationally in the United States as well as locally in Lane County, dedication to the improvement of maternal and child health is essential.

Appendix

Pre-Stress Score:

The following is an abbreviated version of the survey used in the study but it was what was coded to create the Pre-Stress score used in the analysis for this thesis. This is a four-option likert scale consisting of the following possible answers: (Not at all, slightly, moderately, severely,)

1. During pregnancy, how much bothered by heart pounding or racing
2. During pregnancy how much bothered by feeling terrified
3. During pregnancy, how much bothered by feeling shaky
4. During pregnancy, how much bothered by being scared
5. During pregnancy how much bothered by the fear of the worst happening
6. During pregnancy, how much bothered by unsteadiness
7. During pregnancy, how much bothered by nervousness
8. During pregnancy, how much bothered by hands shaking
9. During pregnancy, how much bothered by fear of losing control
10. During pregnancy, how much bothered by difficulty breathing

Parental Stress Scale (PSS):

The following statements describe feelings and perceptions about the experience of being a parent. Think of each of the items in terms of how your relationship with your child or children typically is. Please indicate the degree to which you agree or disagree with the following items.

1. I am happy in my role as a parent.
2. There is little or nothing I wouldn't do for my child(ren) if it were necessary.
3. Caring for my child(ren) sometimes takes more time and energy than I have to give.

4. I sometimes worry whether I am doing enough for my child(ren)
5. I feel close to my child(ren)
6. I enjoy spending time with my child(ren)
7. My child(ren) is an important source of affection for me.
8. Having child(ren) gives me a more certain and optimistic view for the future.
9. The major source of stress in my life is my child(ren)
10. Having child(ren) leaves little time and flexibility in my life.
11. Having child(ren) has been a financial burden.
12. It is difficult to balance responsibilities because of my child(ren).
13. The behavior of my child(ren) is often embarrassing and stressful to me.
14. If I had to do it over again, I might decide not to have child(ren).
15. I feel overwhelmed by the responsibility of being a parent.
16. Having child(ren) has meant having too few choices and too little control over my life.
17. I am satisfied as a parent.
18. I find my child(ren) enjoyable.

Edinburgh Postnatal Depression Scale (EPDS):

As you are pregnant or have recently had a baby, we would like to know how you are feeling. Please check the answer that comes closest to how you have felt **IN THE PAST 7 DAYS**, not just how you feel today.

Here is an example, already completed.

I have felt happy:

- Yes, all the time
- Yes, most of the time This would mean: "I have felt happy most of the time" during the past week.
- No, not very often Please complete the other questions in the same way.
- No, not at all

In the past 7 days:

- | | |
|--|--|
| <p>1. I have been able to laugh and see the funny side of things</p> <ul style="list-style-type: none"><input type="checkbox"/> As much as I always could<input type="checkbox"/> Not quite so much now<input type="checkbox"/> Definitely not so much now<input type="checkbox"/> Not at all <p>2. I have looked forward with enjoyment to things</p> <ul style="list-style-type: none"><input type="checkbox"/> As much as I ever did<input type="checkbox"/> Rather less than I used to<input type="checkbox"/> Definitely less than I used to<input type="checkbox"/> Hardly at all <p>*3. I have blamed myself unnecessarily when things went wrong</p> <ul style="list-style-type: none"><input type="checkbox"/> Yes, most of the time<input type="checkbox"/> Yes, some of the time<input type="checkbox"/> Not very often<input type="checkbox"/> No, never <p>4. I have been anxious or worried for no good reason</p> <ul style="list-style-type: none"><input type="checkbox"/> No, not at all<input type="checkbox"/> Hardly ever<input type="checkbox"/> Yes, sometimes<input type="checkbox"/> Yes, very often <p>*5. I have felt scared or panicky for no very good reason</p> <ul style="list-style-type: none"><input type="checkbox"/> Yes, quite a lot<input type="checkbox"/> Yes, sometimes<input type="checkbox"/> No, not much<input type="checkbox"/> No, not at all | <p>*6. Things have been getting on top of me</p> <ul style="list-style-type: none"><input type="checkbox"/> Yes, most of the time I haven't been able to cope at all<input type="checkbox"/> Yes, sometimes I haven't been coping as well as usual<input type="checkbox"/> No, most of the time I have coped quite well<input type="checkbox"/> No, I have been coping as well as ever <p>*7. I have been so unhappy that I have had difficulty sleeping</p> <ul style="list-style-type: none"><input type="checkbox"/> Yes, most of the time<input type="checkbox"/> Yes, sometimes<input type="checkbox"/> Not very often<input type="checkbox"/> No, not at all <p>*8. I have felt sad or miserable</p> <ul style="list-style-type: none"><input type="checkbox"/> Yes, most of the time<input type="checkbox"/> Yes, quite often<input type="checkbox"/> Not very often<input type="checkbox"/> No, not at all <p>*9. I have been so unhappy that I have been crying</p> <ul style="list-style-type: none"><input type="checkbox"/> Yes, most of the time<input type="checkbox"/> Yes, quite often<input type="checkbox"/> Only occasionally<input type="checkbox"/> No, never <p>*10. The thought of harming myself has occurred to me</p> <ul style="list-style-type: none"><input type="checkbox"/> Yes, quite often<input type="checkbox"/> Sometimes<input type="checkbox"/> Hardly ever<input type="checkbox"/> Never |
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Acceptance and Action Questionnaire (AAQ-II):

Below you will find a list of statements. Please rate how true each statement is for you.

Use the scale below to make your choice.

1. My painful experiences and memories make it difficult for me to live a life that I would value.
2. I am afraid of my feelings
3. I worry about not being able to control my worries and feelings.
4. My painful memories prevent me from having a fulfilling life.
5. Emotions cause problems in my life.
6. It seems like most people are handling their lives better than I am.
7. Worries get in the way of my success.

Bibliography

- Abramowitz, J. S., Tolin, D. F., & Street, G. P. (2001). Paradoxical effects of thought suppression: a meta-analysis of controlled studies. *Clinical Psychology Review, 21*(5), 683-703.
- Beck, A. T., Epstein, N., Brown, G., Steer, R. A. (1988). An inventory for measuring clinical anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology, 56*, 893-897.
- Berry, J. O., & Jones, W. H. (1995). The Parental Stress Scale: Initial Psychometric Evidence. *Journal of Social and Personal Relationships, 12*(3), 463-472.
- Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., . . . Zettle, R. D. (2011) Preliminary Psychometric Properties of the Acceptance and Action Questionnaire-II: A Revised Measure of Psychological Inflexibility and Experiential Avoidance. *Behavior Therapy, 42*(4), 676-688.
- Bricker, J. B., Mull, K. E., Kientz, J. A., Vilardaga, R., Mercer, L. D., Akioka, K. J., & Heffner, J. L. (2014). *Drug and Alcohol Dependence, 15*, 64-68.
- Chawla, N., & Ostafin B. (2007). Experiential Avoidance as a Functional Dimensional Approach to Psychopathology: An Empirical Review. *Journal of Clinical Psychology, 63*(9), 871-890.
- Cox, J. L., Holden, J. M., & Sagovsky, R. (1987). Edinburgh Postnatal Depression Scale. *PsycTESTS Dataset*. doi:10.1037/t01756-000
- Deater-Deckard, K. (2004). *Parenting Stress: Current Perspectives in Psychology*.
- Forman, E. M., et al. (2013) Comparison of Acceptance-Based Versus Standard Behavioral Treatment for Obesity in Adults. *Eating Behaviors, 14*(1), 64-68.
- Forman, D. R., O'Hara, M. W., Stuart, S., Gorman, L. L., Larsen, K. E., & Coy, K. C. (2007). Effective treatment for postpartum depression is not sufficient to improve the developing mother-child relationship. *Dev Psychopathol, 19*(2), 585-602. doi: 10.1017/s0954579407070289
- Grace, S. L., Evindar, A., & Stewart, D. E. (2003). The effect of postpartum depression on child cognitive development and behavior: A review and critical analysis of the literature. *Archives of Women's Mental Health, 6*(4), 263-274. doi: 10.1007/s00737-003-0024-6
- Harris, R. (2009). *ACT Made Simple*. Oakland, CA: New Harbinger Publications Inc.
- Hayes, S. C., & Wilson, K. G. (1994). *Acceptance and Commitment Therapy*

- Hayes, S. C., Strosahl, K., Wilson, K. G., Bissett, R. T., Pistorello, J., Toarmino, D., . . . McCurry, S. M. (2004). Measuring Experiential Avoidance: A Preliminary Test of a Working Model. *The Psychological Record, 54*, 553-578.
- Kim, D. and A. Saada, *The Social Determinants of Infant Mortality and Birth Outcomes in Western Developed Nations: A Cross-Country Systematic Review* International Journal of Environmental Research and Public Health, Jun 2013. **10**(6).
- Kohtala, A., Muotka, J., & Lappalainen, R. (2017). What happens after five years?: The long-term effects of a four-session Acceptance and Commitment Therapy delivered by student therapists for depressive symptoms. *Journal of Contextual Behavioral Science*, 1-9. doi:10.1016/j.jcbs.2017.03.003
- Leigh, B., & Milgrom, J. (2008). Risk Factors for Antenatal Depression, Postnatal Depression and Parenting Stress. *BMC Psychiatry, 8*, 24.
- Lobel, M., Cannella, D. L., Graham, J. E., Devincent, C., Schneider, J., & Meyer, B. A. (2008). Pregnancy-specific stress, prenatal health behaviors, and birth outcomes. *Health Psychology, 27*(5), 604-615. doi:10.1037/a0013242
- Lu, M.C. & Halfon, N. *Matern Child Health J* (2003) 7: 13. doi:10.1023/A:1022537516969
- Misri, S., Kendrick, K., Oberlander, T., Norris, S., Tomfohr, L., Zhang, H., & Grunau, R. (2010). Antenatal Depression and Anxiety Affect Postpartum Parenting Stress: A Longitudinal, Prospective Study. *Canadian Journal Of Psychiatry- Revue Canadienne De Psychiatrie, 55*(4), 222-228.
- Norbeck, J. S., & Anderson, N. J. (1989). Psychosocial Predictors of Pregnancy Outcomes in Low-Income Black, Hispanic, and White Women. *Nursing Research, 38*(4). doi:10.1097/00006199-198907000-00004
- Pritchard, M. A., Colditz, P. B., Cartwright, D., Gray, P. H., Tudehope, D., & Beller, E. (2012). Six-week postnatal depression predicts parenting stress profiles in mothers of preterm children. *Journal of Reproductive and Infant Psychology, 30*(3), 303-311. doi: 10.1080/02646838.2012.710832
- Rodriguez, C. M., & Green, A. J. (1997). Parenting stress and anger expression as predictors of child abuse potential. *Child Abuse & Neglect, 21*(4), 367-377. doi: [http://dx.doi.org/10.1016/S0145-2134\(96\)00177-9](http://dx.doi.org/10.1016/S0145-2134(96)00177-9)
- Sobo, E. J., Bowman, C., & Gifford, A. L. (2008). Behind the scenes in health care improvement: The complex structures and emergent strategies of Implementation Science. *Social Science & Medicine, 67*(10), 1530-1540.

- Thomason, E., Volling, B. L., Flynn, H. A., McDonough, S. C., Marcus, S. M., Lopez, J. F., & Vazquez, D. M. (2014). Parenting stress and depressive symptoms in postpartum mothers: Bidirectional or unidirectional effects? *Infant Behavior and Development*, 37(3), 406-415. doi:10.1016/j.infbeh.2014.05.009
- Twohig, M. P. (2012). Introductions: The Basics of Acceptance and Commitment Therapy. *Cognitive and Behavioral Practice*, 12, 1-9.
- Watkins, D. C., Pittman, C. T., & Walsh, M. J. (2013). The Effects of Psychological Distress, Work, and Family Stressors on Child Behavior Problems. *Journal of Comparative Family Studies*, 44(1), 1-IX.