Title
Cultural and Psychobiological Processes in Pregnant Latina Women

Author
Ramos, Isabel Francheska

Publication Date
2020

Peer reviewed|Thesis/dissertation

UNIVERSITY OF CALIFORNIA

Los Angeles

Cultural and Psychobiological Processes in Pregnant Latina Women

A dissertation submitted in partial satisfaction of the

requirements for the degree Doctor of Philosophy

in Psychology

by

Isabel Francheska Ramos

2020

ABSTRACT OF THE DISSERTATION

Cultural and Psychobiological Processes in Pregnant Latina Women

by

Isabel Francheska Ramos

Doctor of Philosophy in Psychology

University of California, Los Angeles, 2020

Professor Christine Dunkel Schetter, Chair

Research indicates that women who experience higher levels of anxiety related to a current pregnancy have a higher risk of preterm birth (Blackmore, Gustafsson, Gilchrist, Wyman, & O'Connor, 2016; Dunkel Schetter, 2010). Previous studies demonstrate that pregnancy anxiety is associated with higher levels of placental corticotropin-releasing hormone (pCRH) which in turn, triggers the timing of delivery. Some evidence suggests that Latinas experience heightened pregnancy anxiety (Ramos et al., 2019), but no study has documented their specific experiences of pregnancy anxiety.

This dissertation tested a model that incorporates components of biopsychosocial and cultural processes in pregnancy across two studies. The first study examined ethnic and cultural moderation linking pregnancy anxiety to the length of gestation in a sample of pregnant Latina and non-Latina White women ($N = 125$). These women completed interviews and provided blood samples on three separate occasions during their pregnancy. Pregnancy anxiety in the first, second, and third trimesters each predicted shorter length of gestation. Latina and non-Latina White women did not differ in pregnancy anxiety and had similar gestational length at birth.

Moderation analyses on the full sample revealed that pregnancy anxiety was associated with gestational length for Latinas only. A similar pattern emerged in analyses on the subsample of Latinas for moderation by acculturation such that pregnancy anxiety predicted the timing of delivery only among low acculturated Latinas. Neither levels nor slopes of pCRH mediated the associations between pregnancy anxiety and length of gestation. This work adds to existing evidence that pregnancy anxiety predicts timing of birth and affirms that ethnicity and acculturation are relevant for understanding cultural and biopsychosocial processes leading to birth outcomes.

The second study used a qualitative methodology to investigate pregnancy anxiety and cultural beliefs surrounding pregnancy among Latinas. One focus group and 11 individual interviews were conducted in Spanish with pregnant Latinas. Thematic analysis (Braun & Clarke, 2006) revealed that Latinas felt that anxiety during pregnancy was normal, and that they were concerned about childbirth, losing their baby, their baby being born with a birth defect, and the current issues in the United States. Latinas felt lucky to be pregnant, believed that pregnancy was a blessing, and stressed the importance of maintaining a healthy pregnancy. Themes about family involvement and culturally-driven privileged status also emerged from the data.

Taken together, these two studies further affirm that pregnancy anxiety contributes to risk for preterm birth and adds evidence that associations of pregnancy anxiety and gestational length may be driven in part by ethnicity and by cultural factors among Latinas. Future studies using larger samples should further investigate these issues utilizing prospective designs with a closer examination of cultural processes. Such work can further identify the role of culture in prenatal processes affecting maternal and child outcomes and help to understand the nature and risks of pregnancy anxiety in Latinas.

The dissertation of Isabel Francheska Ramos is approved.

Julienne Bower

Denise Chavira

Molly Maurer Fox

Christine Dunkel Schetter, Committee Chair

University of California, Los Angeles

2020

This dissertation is dedicated to my mother, Melida, and my father, Ariel.

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ACKNOWLEDGEMENTS

This material is based upon work supported by the Eugene V. Cota Robles Fellowship and a pre-doctoral NIMH T32 Training Grant (T32-MH015750). Study 1 used data collected through the Healthy Babies Before Birth (HB3) study, which was funded by the NICDH (R01 HD073491-01A1). I'd like to acknowledge the PIs Drs. Chris Dunkel Schetter and Mary-Coussons-Read, collaborators Drs. Calvin Hobel and Roberta Mancuso, and all of the study staff in both Los Angeles and Denver for their brilliant work in carrying out this study.

I would like to express my deepest gratitude and admiration to my advisor, Dr. Chris Dunkel Schetter. She has supported me since my very first day as a graduate student and has given me the freedom to pursue my research interests. Chris has set an example of excellence as a research scientist, mentor, and role model. I am grateful for her wisdom and guidance in my professional and personal development. I truly believe that I won the lottery of graduate advisors.

I am very thankful to the members of my dissertation committee, Drs. Julie Bower, Denise Chavira, and Molly Fox for their invaluable feedback. I look up to each of them. I also extend special thanks to the members of the Stress Processes and Pregnancy Lab and my talented research assistants Jessica Escobar, Alondra Ortiz, and Katherine Quinteros for their hard work.

Words cannot begin to express how thankful I am to my family for their unconditional love. My mother, Melida, is the strongest woman that I know. My father, Ariel, instilled in me the value of hard work. I am blessed to have the most loving and supportive parents that I could have ever asked for. I wouldn't be the person that I am today without my beloved brothers, Samuel and Joshua. They have inspired me more than they will ever know. Finally, I'd like to thank my partner and best friend, Jose, for his endless encouragement. He believed in me when I needed it the most.

VITA

Education

Candidate of Philosophy, Psychology, University of California, Los Angeles, 2018

Master of Arts, Psychology, University of California, Los Angeles, 2015

Bachelor of Arts, Psychology, University of California, Riverside, 2014

Fellowships & Awards

Health Psychology Most Outstanding Paper Award, UCLA, 2019

Pre-Doctoral Fellowship, "Biobehavioral Issues in Mental and Physical Health" NIMH Training Grant T32-MH015750, 2017-2018, 2017–2018

American Psychosomatic Society Citation Poster Session Presentation, 2017

Diversity Service Scholarship, UCLA, 2017

American Psychosomatic Society Minority Initiative Travel Scholarship, 2016

Graduate Summer Research Mentorship Fellowship, UCLA Graduate Division, 2015

Distinguished University Fellowship, UCLA Graduate Division, 2014–2019

Eugene V. Cota-Robles Fellowship, UCLA Graduate Division, 2014–2019

Academic Excellence Award, UCR, 2014

Outstanding Achievement Award, UCR, 2014

Honors Academic Excellence Scholarship, UCR, 2013–2014

Deans Academic Distinction Award, UCR, 2012–2014

Publications

Cheadle, A. C. D., **Ramos, I. F.,** Dunkel Schetter, C. *(in press).* Stress and resilience in pregnancy. In M. Robbins & K. Sweeny (Eds.), *Wiley Encyclopedia of Health*

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General Introduction and Literature Reviews

For women, pregnancy is a transitional period marked by a range of both positive and negative emotions during the course of gestation. Research indicates that strong, negative emotional experiences during pregnancy increase the risk of adverse birth outcomes, particularly preterm birth (Dole et al., 2003; Goldenberg, Culhane, Iams, & Romero, 2008; Hedegaard, Henriksen, Sabroe, & Secher, 1993; Lobel & Dunkel Schetter, 2016; Lobel, Dunkel Schetter, & Scrimshaw, 1992; Nordentoft et al., 1996; Roesch, Dunkel Schetter, Woo, & Hobel, 2004). Research points to pregnancy anxiety, a negative emotional state rooted in concerns specific to the current pregnancy, as a powerful and independent risk factor for preterm birth (Dole et al., 2003; Kramer et al., 2009; Rini, Dunkel Schetter, Wadhwa, & Sandman, 1999; Roesch et al., 2004) with attendant developmental effects (Blair, Glynn, Sandman, & Davis, 2011; Buss, Davis, Hobel, & Sandman, 2011; Davis & Sandman, 2010; Huizink, De Medina, Mulder, Visser, & Buitelaar, 2002; Mahrer et al., 2020).

Pregnancy anxiety refers to anxiety stemming from several sources, such as worries about the current pregnancy in general, and fears about the health and well-being of the baby, the impending childbirth, hospital and health-care experiences, and parenting (Blackmore et al., 2016; Guardino & Dunkel Schetter, 2014; Roesch et al., 2004). A few studies suggest that Latina women experience heightened levels of pregnancy anxiety compared to other groups of pregnant women (Campos, Dunkel Schetter, Walsh, & Schenker, 2007; Campos, Ullman, Aguilera, & Dunkel Schetter, 2014; Ramos et al., 2019). However, to date, studies have not examined why this is the case, nor have they documented experiences of anxiety during pregnancy specifically among Latinas. Furthermore, research and theory have not explored how cultural attitudes about pregnancy and motherhood influence pregnancy anxiety.

Hypothalamic-pituitary-adrenal (HPA) processes have been documented as a potential mechanism explaining the relation between stress, in general, or pregnancy anxiety, in particular, and early gestational age at birth (Goldenberg et al., 2008; Hobel, Dunkel Schetter, Roesch, Castro, & Arora, 1999; Mancuso, Dunkel Schetter, Rini, Roesch, & Hobel, 2004; Sandman et al., 2006). Premature rises in placental corticotrophin-releasing hormone (pCRH) throughout the course of gestation have been hypothesized to mediate the effects of pregnancy anxiety on the timing of birth. Studies that examine how psychological and sociocultural factors interact with biological processes to influence birth outcomes are sparse. However, they are essential to understanding how these psychobiological processes interact.

To provide a basis for the studies included in this dissertation, the existing literature on pregnancy anxiety was reviewed. This review includes the topics of pregnancy anxiety measurement and research on pregnancy anxiety and developmental outcomes. Although limited, current literature on pregnancy anxiety and culturally-based sources of pregnancy anxiety in Latina women were also evaluated. Finally, evidence on the role of pCRH in pregnancy, pregnancy anxiety and shortened gestation as mediated by pCRH, and ethnic variations in these processes are presented.

Pregnancy Anxiety

A large body of research demonstrates that strong negative emotions experienced in pregnancy can adversely influence maternal and infant health. For example, stressors experienced during pregnancy, such as a death in the family (Khashan et al., 2008) and neighborhood stress (Ahern, Pickett, Selvin, & Abrams, 2003), pose risk for preterm birth. Adverse pregnancy outcomes are also distressing for new mothers and their families, as they

increase the risk of neonatal death and poor mental and physical health trajectories (Butler & Behrman, 2007).

One area of research in pregnancy examines a situation-specific, negative emotional state rooted in fears and concerns regarding the current pregnancy, called pregnancy anxiety, or alternatively labeled as pregnancy-specific anxiety (Roesch et al., 2004), pregnancy-specific distress (Yali & Lobel, 1999), or pregnancy stress (Chen, Chen, & Huang, 1989). Pregnancy anxiety stems from a number of sources of concern among pregnant women, such as concerns about their current pregnancy, and fears about the health and well-being of the baby, the impending childbirth, hospital and health-care experiences, and parenting (Roesch et al., 2004). Pregnancy anxiety is also defined as concerns about the significance of physical symptoms, changes in appearance and interpersonal relationships, parenting, and the health of the fetus (Alderdice, Lynn, & Lobel, 2012).

Pregnancy anxiety is a distinct clinical phenomenon with construct and discriminant validity (Blackmore et al., 2016). Pregnancy anxiety, thus, differs from general measures of anxiety and is argued to be a more sensitive index of maternal distress (Blackmore et al., 2016; Huizink, Mulder, & Buitelaar, 2004). Anxiety is a strong, negative, future-oriented emotional state associated with preparation for possible, upcoming negative events (Craske et al., 2011). Anxiety is typically classified into two types: (1) state anxiety, which changes over time; and (2) trait anxiety, a stable personality characteristic (Spielberger, 1985). Pregnancy anxiety is a negative emotional state similar to state anxiety, but it is distinct because it is rooted in a specific developmental and biological transition period for women: pregnancy.

Pregnancy Anxiety Measurement

Pregnancy anxiety is assessed using measurements reflecting worries, concerns, and fears women have about their pregnancies (Blackmore et al., 2016). One review indicated that there are at least 15 different pregnancy anxiety instruments that are used internationally (Alderdice et al., 2012). A number of reviews on pregnancy anxiety measurement exist (Alderdice et al., 2012; Blackmore et al., 2016; Brunton, Dryer, Saliba, & Kohlhoff, 2015; Meades & Ayers, 2011), and many of these instruments are short, easy to use, have strong psychometric properties, and can be integrated into prenatal care (Alderdice et al., 2012; Blackmore et al., 2016). These measures include the Cambridge Worry Scale (Green, Kafetsios, Statham, & Snowdon, 2003), High-Risk Pregnancy Stress Scale (Goulet, Polomeno, & Harel, 1996), Oxford Worries About Labor Scale (Redshaw, Martin, Rowe, & Hockley, 2009), Pregnancy Anxiety Scale (Burstein, Kinch, & Stern, 1974), Pregnancy Experience Scale (Hawkins, Dipietro, & Costigan, 1999), Pregnancy Experiences Questionnaire (Costa, Brender, & Larouche, 1998), Pregnancy Outcome Questionnaire (Theut, Pedersen, Zaslow, & Rabinovich, 1988), Pregnancy-Related Anxiety Questionnaire (Van den Bergh, 1990), Revised Pregnancy-Related Anxiety Questionnaire (Huizink et al., 2002), Pregnancy-Related Anxiety Scale (Wadhwa, Sandman, Porto, Dunkel Schetter, & Garite, 1993), Pregnancy-Specific Anxiety Scale (Roesch et al., 2004), Pregnancy Stress Rating Scale (Chen et al., 1989), Prenatal Distress Questionnaire (Yali & Lobel, 1999), Prenatal Psychosocial Profile (Curry, Campbell, & Christian, 1994), and Prenatal Social Environmental Inventory (Orr, James, & Casper, 1992).

These instruments reflect different facets of pregnancy anxiety. For example, the Pregnancy-Specific Anxiety Scale (Roesch et al., 2004) measures how often women experienced specific emotions related to their pregnancy (i.e., anxious, concerned, afraid, and panicky) during the past week. Meanwhile, the Prenatal Distress Questionnaire (Yali & Lobel, 1999), Pregnancy-

Related Anxiety Scale (Wadhwa et al., 1993), and the Pregnancy-Related Anxiety Questionnaire (Van den Bergh, 1990) assess the different sources of anxiety specific to pregnancy, such as anxiety related to childbirth and body image. The measures also differ in regard to timeframe. Some measures ask women about current pregnancy-related anxiety (e.g., Pregnancy-Specific Anxiety Scale; Roesch et al., 2004), whereas others ask about anxiety over the past year (e.g., Prenatal Social Environmental Inventory; Orr et al., 1992).

Of particular interest are the Pregnancy-Related Anxiety Scale (Rini et al., 1999) and the Pregnancy-Specific Anxiety Scale (Roesch et al., 2004). The Pregnancy-Related Anxiety Scale is a 10-item self-report measure that asks participants to rate the extent to which they worry about their health, their baby's health, and their labor and delivery (Rini et al., 1999). This measure was adapted from the Prenatal Self-Evaluation Questionnaire (Lederman & Weis, 2009). It is composed of four items about childbirth: "I am confident of having a normal childbirth," "I think my labor and delivery will go normally," "I am afraid that I will be harmed during delivery," and "I am concerned about having a hard or difficult labor and delivery." This measure also includes five items about the baby: "I am fearful regarding the health of my baby," "I am worried that the baby might not be normal," "I am concerned or worried about how the baby is growing and developing inside me," "I am concerned or worried about losing the baby," and "I am concerned about taking care of a new baby." One item focuses on medical risk: "I am concerned about developing medical problems during my pregnancy." Participants are asked to respond on a 4-point Likert rating scale ranging from 1 (*never* or *not at all*) to 4 (*almost all of the time* or *very much)*. This 10-item scale is reliable in both English and Spanish, with Cronbach's $\alpha = .75$ and .85, respectively.

The Pregnancy-Specific Anxiety Scale (Roesch et al., 2004) is a measure designed to assess women's level of anxiety about their pregnancy. This measure asks participants how often they experienced specific emotions due to their pregnancy in the past week. The measure consists of a list of four adjectives related to anxiety (i.e., anxious, concerned, afraid, and panicky) and eight other adjectives (i.e., lucky, excited, upset, happy, special, pleased, healthy, and in conflict). Respondents are asked to rate how often they felt these emotions on a 5-point Likert scale ranging from 1 (*never*) to 5 (*always*). This brief measure has good reliability in both English (Cronbach's $\alpha = .75$) and Spanish (Cronbach's $\alpha = .80$; Rini et al., 1999). It has been shown to predict the risk for preterm birth and early delivery (Kramer et al., 2009) more than general anxiety or perceived stress (Roesch et al., 2004). This measure has also been associated with increased levels of two biological markers during pregnancy: pCRH (Mancuso et al., 2004) and cortisol (Kane, Dunkel Schetter, Glynn, Hobel, & Sandman, 2014).

Pregnancy Anxiety and Preterm Birth

Several studies in the past decade have identified pregnancy anxiety as a powerful and independent predictor of preterm birth and shortened length of gestation (Dole et al., 2003; Glynn, Dunkel Schetter, Hobel, & Sandman, 2008; Lobel et al., 2008; Orr, Reiter, Blazer, & James, 2007; Rini et al., 1999; Roesch et al., 2004; Staneva, Bogossian, Pritchard, & Wittkowski, 2015). One early study of 90 predominantly non-Latina White women found that pregnancy anxiety measured using the Pregnancy-Related Anxiety Scale (Rini et al., 1999), significantly predicted length of gestation, even after adjusting for sociodemographic factors, such as maternal age, nulliparity, socio-economic status, prenatal care, and health behaviors (e.g., smoking, alcohol, and substance use; Wadhwa et al., 1993).

Notably, pregnancy anxiety is a stronger predictor of preterm birth than a wide range of psychosocial factors, including acute, chronic, and general forms of stress and anxiety (Kramer et al., 2009; Lobel et al., 2008; Orr et al., 2007; Roesch et al., 2004). For example, Roesch and colleagues (2004) examined whether particular types of stress, such as perceived stress, general anxiety, and pregnancy anxiety, measured using the Pregnancy-Specific Anxiety Scale (Roesch et al., 2004), were associated with gestational age in a large, multi-ethnic sample of 700 women living in Los Angeles, California, 43% of whom identified as African American, 34% as Latina, and 23% as non-Latina White. After controlling for risk factors, including a history of diabetes, smoking, maternal age, and nulliparity, only pregnancy anxiety over the course of pregnancy was associated with shorter length of gestation.

These findings are comparable to those of Dole et al.'s (2003) study of 2,000 pregnant women living in Central North Carolina, 60% of whom identified as non-Latina White and 40% as African American. Pregnancy anxiety was measured using 6 items from the 41-item Prenatal Social Environmental Inventory (Orr et al., 1992), which was developed to reflect exposure to psychosocial stressors related to pregnancy. The items that were used to measure pregnancy anxiety asked participants if they experienced worries or concerns about different aspects of their pregnancy (e.g., baby's health, labor and delivery, and nausea). In this study, women with higher pregnancy anxiety were two times more likely to deliver preterm than women with lower pregnancy anxiety, after controlling for medical risk factors. Racial discrimination, gender discrimination, and neighborhood safety were also associated with preterm birth risk. Meanwhile, different levels of social support and depression were not related to preterm birth risk.

In another large epidemiological study that followed over 5,000 mothers in Montreal, Canada, pregnancy anxiety, measured using the Pregnancy-Specific Anxiety Scale (Roesch et al., 2004), emerged as the only predictor of length of gestation when compared to a variety of acute and chronic psychological stressors experienced throughout pregnancy, such as job-related stress, negative life events, relationship strain, and domestic violence (Kramer et al., 2009). Among the various stress and distress measures examined, pregnancy anxiety was the only significant predictor of preterm birth, even after controlling for medical and obstetric risk, smoking, maternal age, perception of medical risk, depression, and nulliparity. Taken together, these prospective studies demonstrate that high levels of worry or fear regarding a current pregnancy significantly predict preterm birth and shortened length of gestation.

Similarly, Lobel et al. (2008) examined whether a latent pregnancy-specific distress factor predicted length of gestation better than latent factors representing state anxiety, perceived stress, life event stress, and a latent factor constructed from all stress measures. Pregnancy-specific distress was measured using the Prenatal Distress Questionnaire (Yali & Lobel, 1999), which asks women to indicate the extent to which they feel bothered, upset, or worried about pregnancy-specific issues, such as medical care, physical symptoms, parenting, bodily changes, and their infant's health. This study consisted of 279 mothers of whom 65% self-identified as non-Latina White, 11% as African American, 11% as Latina, and 8% as multiethnic. Even after adjusting for medical risk factors, higher pregnancy anxiety predicted shorter gestational age at delivery. Researchers speculated that pregnancy-specific distress emerged as a stronger predictor of gestational age compared to the other general forms of stress because it may be a more potent type of stress that triggers greater physiological arousal (Lobel et al., 2008). Furthermore, it was

suggested that because pregnancy-specific distress reflects worries and fears that are context-specific, it may have a more direct influence on birth outcomes, such as the length of gestation.

Finally, Orr et al.'s (2007) epidemiological study of pregnant African American women living in Baltimore, Maryland, found that higher pregnancy anxiety significantly increased the risk of spontaneous preterm birth. In this study, pregnancy anxiety was measured using six items from the 41-item Prenatal Social Environment Inventory (Orr et al., 1992). Results indicated that pregnant women who exhibit the highest levels of pregnancy anxiety (i.e., scores of 6, the highest possible score) have an almost three-fold increased risk of spontaneous preterm birth compared to pregnant women who scored less than 4. The results remained significant after controlling for traditional risk factors for preterm birth, such as first and second trimester bleeding, drug use, employment, prior poor pregnancy outcomes, smoking, low body mass index, maternal education, age, and race.

The results from the studies mentioned above imply that the effects of pregnancy anxiety do not stem from concerns over high-risk pregnancies. Moreover, these studies demonstrate that this situation-specific form of anxiety is a stronger predictor of preterm birth and shorter length of gestation than other types of stress and anxiety, even after controlling for known risk factors of preterm birth.

Pregnancy Anxiety and Developmental Outcomes

Pregnancy anxiety has been shown to have adverse effects on infant health and development (Davis & Sandman, 2010; Huizink et al., 2004). Some studies have found that infants of mothers who experienced higher pregnancy anxiety during gestation have worse cognitive and motor performance (Davis & Sandman, 2010; Huizink, Robles de Medina, Mulder, Visser, & Buitelaar, 2003) and poorer attention regulation (Huizink et al., 2002) in infancy.

Another study found that children of mothers with elevated pregnancy anxiety, but not prenatal maternal state anxiety, exhibited more negative temperament in a sample of 120 healthy 2-year-old children (Blair et al., 2011). Finally, a recent study on non-Latina White and Latina women, found that pregnancy anxiety in the second trimester of pregnancy, though not the third trimester, predicted higher child negative affect in children 4 years of age. Furthermore, researchers found a moderation effect indicating that the association between pregnancy anxiety and negative child affect was strongest among the lower acculturated Latinas (Mahrer et al., 2020).

Elevated levels of pregnancy anxiety can also have a negative impact on children's emotional and cognitive development up to preadolescence (Blair et al., 2011; Buss et al., 2011; Davis & Sandman, 2012). In one study of 89 mother-child pairs, high levels of mean pregnancy anxiety over gestation were associated with lower inhibitory control in girls only and lower visuospatial working memory performance in boys and girls between 6 and 9 years of age (Buss et al., 2011). Lastly, another study found that among different forms of psychological distress (e.g., general anxiety, perceived stress, depression, and pregnancy-specific anxiety), only pregnancy anxiety independently predicted child anxiety at 6 to 9 years of age (Davis & Sandman, 2012). These findings show that heightened levels of pregnancy anxiety during gestation may have lasting consequences that persist through infancy and into preadolescence.

Pregnancy Anxiety in Latinas

Research on pregnancy anxiety in Latinas is limited. For the purposes of this dissertation, the term Latina is used to refer to a person of South or Central American, Cuban, Mexican, Puerto Rican, or other Spanish culture or origin (Pew Research Center, 2017). Although Latinas living in the United States come from many Caribbean, North, Central, and South American countries, Latina prenatal research has primarily focused on pregnant women of Mexican descent

living in the United States. As such, the following studies reviewed are mainly focused on pregnant Latina women of Mexican descent.

One prospective longitudinal study showed that Latinas residing in Southern California experienced higher levels of pregnancy anxiety throughout pregnancy than non-Latina White women (Ramos et al., 2019). This study found that in a sample of 337 pregnant women, 107 of whom self-identified as Latina and 230 as non-Latina White, Latina women reported higher pregnancy anxiety using the 10-item Pregnancy-Related Anxiety Scale (Rini et al., 1999) at 19, 25, and 31 weeks gestation. These differences remained significant even after adjusting for years of education, per capita household income, nulliparity, and medical risk factors. Compared to the 230 non-Latina White women, the Latina women had lower household incomes, were younger and less educated, and more likely to have previously given birth, and be married or cohabitating. There were no significant differences between these groups on medical risk. Among the 107 Latina women, 32% were foreign-born, mainly from Mexico, but also from Guatemala, El Salvador, Cuba, the Dominican Republic, and Panama. Foreign-born Latinas had been living in the United States for an average of 18 years. Compared to U.S.-born Latinas, foreign-born Latinas had higher pregnancy anxiety at 19 weeks only.

Comparable with these findings, another study on women living in South Texas found that Mexican immigrant women living in the United States had higher levels of pregnancy anxiety, as measured using the Pregnancy-Related Anxiety Scale (Rini et al., 1999), at 23 weeks gestation than Mexican American women (Fleuriet & Sunil, 2014). Among the 300 women who participated in this study, 58% were born in Mexico. Compared to Mexican American women, Mexican immigrant women had more children and were older, less educated, and more likely to be married or cohabitating. Authors speculated that these differences in pregnancy anxiety may

be due to the level of educational attainment, as Mexican American women are more likely than Mexican immigrant women to have a high school education. However, in the study conducted by Ramos and colleagues (2019), pregnant foreign-born Latinas had higher levels of pregnancy anxiety at 19 weeks gestation even after adjusting for years of education. Based on these results, educational attainment does not appear to explain differences in pregnancy anxiety between pregnant immigrants and U.S.-born Latinas.

Further analyses in Fleuriet and Sunil's (2014) study revealed that for Mexican immigrant women, levels of pregnancy anxiety decreased as the time of residence in the United States increased. However, the number of children did not explain the decreasing levels of pregnancy-related anxiety among Mexican immigrant women. The authors implied that for Mexican immigrants, increased time in the United States may translate to changes in the meaning of family and the desirability of children, perceived and available social support, and shifting religious beliefs, which can all be related to levels of pregnancy anxiety. Notably, no study to date has examined how these evolving factors contribute to experiences of pregnancy anxiety. Moreover, the different pathways by which changes in cultural orientations may influence pregnancy anxiety among this group of women have not been identified.

The results from the two studies mentioned above are consistent with findings from another large prospective study of 1,000 pregnant women of Mexican descent living in Stockton, California (Campos et al., 2007). In this study, pregnancy anxiety, measured using the Pregnancy-Related Anxiety Scale (Rini et al., 1999), was associated with a Mexican orientation subscale in an acculturation index (ARSMA-II), which measures the extent to which an individual prefers to use Spanish in their everyday life (e.g., "I think in Spanish," "I enjoy Spanish movies"; Cuellar, Arnold, & Maldonado, 1995). In contrast, Anglo orientation (i.e.,

English preference) was unrelated to pregnancy anxiety. In other words, less acculturated Mexican women reported higher levels of pregnancy anxiety than more acculturated Mexican women. Pregnant women in this sample had been living in the United States for an average of 6 years, had primarily low-risk pregnancies, and were either married or cohabitating. These results are consistent with findings from Fleuriet and Sunil (2014), indicating that concerns and worries specific to pregnancy appear to shift with acculturation. Acculturation is a dynamic, bidirectional, multifaceted process through which a person from one culture adopts the practices, values, norms, and traits from another culture, with varying degrees of acquisition of host culture and varying degrees of retention of heritage culture (Berry & Sam, 1997, Campos et al., 2007; Fox, Thayer, & Wadhwa, 2017).

The correlates of anxiety in pregnancy, not specifically *about* pregnancy, were also studied in a sample of 300 primarily Mexican immigrant pregnant women living in Los Angeles, California (Engle, Scrimshaw, Zambrana, & Dunkel Schetter, 1990). Prenatal anxiety, not necessarily pregnancy-specific, was measured at 34 weeks gestation using the STAI State Anxiety Subscale (Spielberger, 1985). Higher prenatal anxiety was associated with less desire for control during labor and delivery, lower levels of assertiveness, lack of social support from family members other than the baby's father, and preferences for health-care providers who are female and Latina. In contrast, prenatal anxiety was not associated with social support from the baby's father, pregnancy complications, knowledge about childbirth, pain expectation at delivery, or level of acculturation. However, higher acculturation was associated with a higher desire for control during labor and delivery and a higher level of assertiveness. Notably, although acculturation was not related to prenatal anxiety in this sample, it does appear to be related to anxiety specific to pregnancy in other studies.

Although the above study did not directly measure pregnancy anxiety, the results raise interesting questions about which psychosocial factors during the pregnancy, labor, and delivery process provoke the most anxiety for pregnant Mexican immigrant women. Of particular interest is the finding that social support from the baby's father is unrelated to prenatal anxiety, whereas social support from the woman's family is related to prenatal anxiety. Therefore, for a Mexican immigrant woman, support from family during pregnancy is a more valuable source of support than support from the baby's father. This finding supports the broader view in the literature that Latino culture values close family relationships, labeled as familism or familialism (Sabogal, Marín, Otero-Sabogal, Marín, & Perez-Stable, 1987).

In summary, the limited literature on pregnancy anxiety demonstrates that Latinas experience higher levels of pregnancy anxiety and that differences exist between immigrant and U.S.-born subgroups of Latina women (e.g., Mexican immigrant and Mexican American women). These findings are particularly important because of the associations between pregnancy anxiety, length of gestation, and offspring developmental outcomes. One area of research on pregnancy that requires further attention is how cultural values and beliefs shape prenatal emotional health. Of particular interest are unique culturally-based sources of anxiety during pregnancy that have been identified in a few studies but have not been examined in relation to pregnancy anxiety (Engle et al., 1990; Scrimshaw, Zambrana, & Dunkel Schetter, 1997). Additional research on prenatal mental health in Latinas is needed, especially large-scale and rigorous studies. Using a cultural lens to better understand pregnancy anxiety may help characterize the context in which these experiences occur and help target evidence-based treatments to specific groups that are culturally appropriate.

Cultural Beliefs Surrounding Pregnancy in Latinas

Value of Childbearing and Pregnancy. The existing literature suggests that in Latino culture, childbearing is a highly valued aspect of the female role and an "identity-defining female task" (Poma, 1983). Latinos may even believe that a woman is not fulfilled until she is a mother (Maldonado-Duran, Munguía-Wellman, Lubin, & Lartigue, 2002). Motherhood, often described as a desirable, special, and highly respected role in Latino culture, is essential to the integrity of the family unit and the maintenance self-esteem (Maldonado-Duran et al., 2002).

Zambrana, Dunkel Schetter, Collins, and Scrimshaw (1999) affirmed that compared to African American women, Mexican American and Mexican immigrant women living in Los Angeles, California, reported feeling more special, happy, and lucky about their pregnancy. Although systematic research examining the value of childbearing in Latino culture is not extensive, the existing body of evidence indicating the high value placed on pregnancy in Latino culture raises interesting questions about how these values are transmitted across generations and how they influence prenatal mental health and pregnancy outcomes.

Privileged Status and Pregnancy. Two studies have indicated that Mexican immigrants and Mexican American families associate pregnancy with privilege and higher social status (Fleuriet, 2009; Fleuriet & Sunil, 2014; Laganá, 2003). This elevated and privileged status may contribute to both positive and negative emotions during pregnancy among Latina women because having a healthy pregnancy is a major responsibility to the family (Laganá, 2003). Additional research on the value of childbearing and pregnancy in Latino families is needed, particularly concerning differences among Latina women in nativity and generational status. Documenting cultural values surrounding pregnancy and motherhood, their effects, and their shift with time in the U.S. is an important step in understanding how these emotional experiences may translate into pregnancy anxiety.

Fears About Childbirth. Some studies suggest that Latinas are particularly fearful about dying during childbirth and leaving their babies motherless or about their infant dying during delivery compared to other groups of pregnant women (Scrimshaw et al., 1997). Findings from this qualitative study are comparable to analyses conducted in the previously mentioned acculturation study by Campos et al. (2007), which found that compared to English orientation, Mexican orientation (i.e., the extent to which a woman prefers to use Spanish in her everyday life) is positively associated with fear of harm during labor and delivery.

For Latina immigrants, the high maternal and infant mortality rates and limited medical resources in their native countries may fuel these concerns about childbirth (Scrimshaw et al., 1997). Latina immigrants from some Latin American countries may know of the high maternal and infant mortality rates in their native countries but may be unaware of the relatively low risk of delivery in U.S. hospitals (Campos et al., 2007; Scrimshaw et al., 1997). These perceptions concerning maternal and infant mortality may consequently contribute to Latina women's, especially those who recently immigrated, anxiety and fear about childbirth.

Summary

Substantial evidence from several large prospective studies indicates that pregnancy anxiety predicts length of gestation and preterm birth. Little is known about ethnic differences in pregnancy anxiety, even though some studies show that Latinas, especially those who are recent immigrants, are particularly concerned and worried about their pregnancies and the labor and delivery process. This dissertation examines the experience of pregnancy in Latinas, investigates the cultural attitudes and beliefs surrounding pregnancy and motherhood, and explores whether Latinas experience a privileged status due to being pregnant. Additional

research is needed to examine the values and beliefs Latinas hold surrounding pregnancy and motherhood, and how these beliefs may be related to emotional experiences in pregnancy.

Biopsychosocial Processes in Pregnancy

Studies that examine the full set of biopsychosocial processes in one research design are not only rare across health conditions but are particularly scarce in the area of pregnancy. Such studies that address the full set of biological, psychological, and sociocultural processes are challenging to design and conduct because they involve many variables at multiple levels. Psychological factors are usually conceptualized as predictors of adverse health outcomes, whereas biological mechanisms are proposed as mediators (Kemeny, 2003; Miller, Chen, & Cole, 2009), and social and cultural factors are explored as moderators (Repetti, Taylor, & Seeman, 2002). Empirical demonstrations of critical hypothesized links (e.g., stress hormones mediating effects of psychological states on adverse health outcomes) have remained relatively sparse (Dunkel Schetter & Glynn, 2011).

HPA processes have been documented as a key pathway from pregnancy anxiety to early gestational age at birth (Hobel et al., 1999; Mancuso et al., 2004; Sandman et al., 2006). The increasing release of CRH from placental origin into maternal and fetal circulation in response to stress is specifically hypothesized to trigger early labor and delivery processes (Hobel et al., 1999a; Mancuso et al., 2004; Sandman et al., 2006; Wadhwa et al., 1996). Increased pCRH is hypothesized to trigger the release of prostaglandins and stimulate the activity of oxytocin on myometrium contractions during parturition, all of which are mechanisms associated with preterm birth (Hobel et al., 1999a; Quartero, Srivatsa, & Glllham, 1992). Only a few studies in human pregnancy have investigated the mediating role of pCRH on the effect of pregnancy anxiety on length of gestation.

Role of Placental Corticotropin-Releasing Hormone in Pregnancy

Pregnancy is characterized as a temporary neuroendocrine axis between the mother, fetus, and placenta. In particular, the HPA axis, a key stress system, undergoes extensive changes and plays a significant role in regulating pregnancy (Glover, O'Connor, & O'Donnell, 2010). During pregnancy, CRH, a hypothalamic peptide that forms part of the HPA axis cascade, has been shown to regulate the physiological responses to stress and distress (Smith et al., 2009).

In the non-pregnant state, CRH is secreted by the hypothalamus and is not detectable in the blood (McLean et al., 1995; Smith et al., 2009). During pregnancy, however, the placenta synthesizes and secretes CRH into maternal and fetal circulation. Placental CRH is often referred to as the "pregnancy clock" because it increases in maternal blood over the course of pregnancy until it reaches a threshold that triggers labor and delivery processes (McLean et al., 1995). Placental CRH reaches exponentially high levels in maternal and fetal plasma in late pregnancy and peak concentrations during labor (McLean et al., 1995). In fact, pCRH is considered the "primary endocrine mediator of spontaneous labor and delivery" (Wadhwa et al., 2004).

Premature rises in pCRH levels throughout gestation have been implicated in risk for earlier gestational age and preterm birth (Hobel et al., 1999a; Sandman, 2015; Wadhwa et al., 1996, 2004). Research in human pregnancy also reveals strong associations between levels of placental CRH and the timing of birth (Hobel et al., 1999a; Warren, Patrick, & Goland, 1992; Wolfe, Poston, & Jones, 1987). Both trajectories and levels of pCRH at specific time points during pregnancy are reliable predictors of the timing of delivery (McLean et al., 1995).

The exponential rise of pCRH throughout the course of pregnancy has been shown to be accelerated in women who experience spontaneous preterm birth (Leung, Smith, To, Sahota, & Baker, 2001; McLean et al., 1995; Sandman et al., 2006; Smith et al., 2009), whereas women

who deliver at term and post-term have shown slower rises in pCRH (Torricelli et al., 2006). Levels of pCRH in the maternal bloodstream as early as 18–20 weeks (Hobel et al., 1999; Holzman, Jetton, Siler-Khodr, Fisher, & Rip, 2001; McLean et al., 1995) and as late as 30–36 weeks of gestation (Hobel et al., 1999; Sandman et al., 2006; Smith et al., 2009; Wadhwa et al., 2004) appear to be much higher in women who deliver spontaneously premature. These strong associations point to pCRH as a reliable predictor of spontaneous preterm risk.

Hypothalamic-Pituitary-Adrenal Mechanisms Linking Pregnancy Anxiety to Shortened Gestation

The activity of the HPA axis is a potential biological mechanism through which pregnancy anxiety is hypothesized to influence the length of gestation (Mancuso et al., 2004). Maternal stress experienced over the course of pregnancy accelerates pCRH production during late pregnancy through the action of the stress hormone and the HPA axis end-product, cortisol (Hobel et al., 1999; Thomson, 2013; Mancuso et al., 2004; Sandman, 2015). Accelerations in pCRH, in turn, increase the risk for preterm birth by triggering labor and delivery pathways.

Mancuso et al. (2004) were the first to examine a biological marker of stress (i.e., pCRH) as a mechanism by which pregnancy anxiety influences gestational age. Although previous studies implicated prenatal stress and elevated concentrations of pCRH as reliable predictors of preterm birth, no study had examined these variables together. Researchers investigated the effects of different forms of maternal stress (e.g., pregnancy anxiety, perceived stress, state-trait anxiety) and pCRH on the length of gestation. Pregnancy anxiety was measured using the Pregnancy-Specific Anxiety Scale (Roesch et al., 2004). This study consisted of 282 pregnant women, 43% of whom self-identified as African American, 32% as Latina, and 24% as non-Latina White. Results from this study supported the mediation hypothesis in that levels of pCRH

at 28–30 weeks gestation mediated the effect of pregnancy anxiety on the length of gestation, even after controlling for medical risk, income, education, and nulliparity. In other words, women with higher levels of pregnancy anxiety had shorter gestations, and higher pCRH at 28–30 weeks gestation mediated this effect. Pregnancy anxiety may, therefore, prematurely increase pCRH mid-pregnancy, which in turn increases risk for preterm birth.

Levels of pCRH at 18–20 weeks did not mediate the effect of pregnancy anxiety on length of gestation. Notably, this mediational effect was only found for pregnancy anxiety, and these associations did not hold for perceived stress or state anxiety, indicating that pregnancy anxiety may be more closely related to the physiological processes involved in childbirth (Mancuso et al., 2004).

Ethnic Variations in Bio-Mechanisms Linking Pregnancy Anxiety to Length of Gestation

Ramos et al. (2019) examined the mediated effect of pregnancy anxiety, pCRH, and length of gestation, and tested moderation by ethnicity, in a sample of 337 Latina and non-Latina White women. Levels of pCRH in the third trimester and changes in pCRH over pregnancy predicted length of gestation. The association between pregnancy anxiety at 19 weeks and length of gestation was mediated by pCRH at 31 weeks and by changes in pCRH from 19 to 31 weeks.

Tests of moderated mediation by ethnicity revealed that mediation by pCRH at 31 weeks held only for Latina women and not for non-Latina White women. In other words, pCRH levels in the 3rd trimester mediated the effect of early pregnancy anxiety on length of gestation for Latina women only. These findings suggest that levels of pCRH in the 3rd trimester are particularly significant for effects on length of gestation for Latina women.

Further analyses comparing Latina women with non-Latina White women found, as expected, that Latinas experienced higher pregnancy anxiety at each time point in pregnancy,

even after adjusting for income, years of education completed, nulliparity, and medical risk. Latina and non-Latina White women did not differ in gestational length at birth, levels of pCRH, or changes of pCRH during pregnancy. These findings point to anxiety specific to a current pregnancy and pCRH as biopsychosocial predictors of shorter gestations and reveal possible ethnic differences moderators. Replication of these effects in large, diverse cohorts is necessary to determine whether pregnancy anxiety and levels of pCRH in mid-pregnancy are particularly linked to shortened length of gestation and whether these effects are amplified in women of particular ethnicities.

The Current Research

Study 1 was a prospective longitudinal study with data collected at three time points in pregnancy and birth outcome data for sample of 125 Latina and non-Latina White women. This study investigated 5 questions: (1) whether Latina and non-Latina White women differed in levels of pregnancy anxiety and had similar length of gestation, (2) if low and high acculturated Latinas differed in pregnancy anxiety and gestational length at birth, (3) if pregnancy anxiety predicted the length of gestation in the sample as a whole, (4) whether Latina ethnicity in the full sample and acculturation in the Latina subset moderated associations between pregnancy anxiety and length of gestation, and (5) if levels or changes in pCRH over pregnancy mediated the association between pregnancy anxiety and length of gestation. Study 1 has been written in manuscript format for publication and therefore, shares introductory material with earlier sections of the dissertation.

Study 2 examined pregnancy anxiety and cultural beliefs surrounding pregnancy among Spanish-speaking Latinas with a qualitative methodology involving one focus group discussion of three women and 11 individual interviews. The purpose was to understand pregnancy anxiety

from the perspective of Latinas themselves and to explore cultural beliefs and values surrounding pregnancy, childbearing, and motherhood that may contribute to experiences of pregnancy anxiety in Latina women. This study interrogated the specific worries of Latina women related to their current pregnancy, examined whether current issues in the United States affected their moods, and explored the different ways that they coped with their pregnancy anxiety. Finally, this study investigated the beliefs that Latina women held surrounding pregnancy and whether Latinas experience a privileged status due to being pregnant.

Ethnic and Cultural Moderation Linking Pregnancy Anxiety to Length of Gestation in Latina and non-Latina White Women

Isabel F. Ramos[1,2]

[1]University of California, Los Angeles

[2]The Healthy Babies Before Birth (HB3) Study involved study collaborators, however, the research questions and analyses are the independent work of Isabel F. Ramos.

Correspondence: Isabel Ramos, Department of Psychology, isabelramos@ucla.edu or Christine Dunkel Schetter, Department of Psychology, dunkel@psych.ucla.edu, both at 1285 Franz Hall, Box 951563, University of California, Los Angeles, Los Angeles, CA 90095-1563; 310-206-8116

Acknowledgements: This research was supported by the Eugene V. Cota Robles Fellowship and a NIMH pre-doctoral fellowship (T32-MH015750) on Biobehavioral Issues in Mental and Physical Health awarded to the first author. This study used data collected through the Healthy Babies Before Birth (HB3) study, funded by NICDH (R01 HD073491-01A1).

Declaration of Interest: None.

Ethnic and Cultural Moderation Linking Pregnancy Anxiety to Length of Gestation in Latina and Non-Latina White Women

A mother's emotions during pregnancy and the birth of her child can negatively affect her own health, her child's development, and her family. One area of research on pregnancy examines a situation-specific, negative emotional state rooted in fears about the current pregnancy, referred to in the scientific literature as *pregnancy anxiety*. Pregnancy anxiety stems from pregnancy-specific concerns, such as worries about the current pregnancy in general, and fears about the health and well-being of the baby, the impending childbirth, hospital and health-care experiences, and parenting (Blackmore et al., 2016; Roesch et al., 2004).

Several studies in the past decade have identified pregnancy anxiety as a consistent predictor of preterm birth and shorter length of gestation (Dunkel Schetter, 2010). The literature is equivocal on when in pregnancy a mother's pregnancy anxiety best predicts length of gestation. Some studies indicate that pregnancy anxiety in the first trimester is a more powerful predictor of the timing of delivery (Hobel et al., 1999a; Roesch et al., 2004), whereas others indicate that anxiety late in the second trimester of pregnancy and early in the third trimester are better predictors (Rini et al., 1999; Wadhwa et al., 1993). More research is needed to better identify when anxiety about a current pregnancy has the strongest effect on the timing of birth. Pregnancy anxiety has been shown to be a stronger predictor of preterm birth than a wide range of psychosocial factors including acute, chronic, and general forms of stress and anxiety (Kramer et al., 2009; Lobel et al., 2008; Orr et al., 2007; Roesch et al., 2004).

Roesch et al. (2004) examined whether particular types of stress (i.e., perceived stress, general anxiety, and pregnancy anxiety) measured at three time points in pregnancy were associated with gestational age in a large, multi-ethnic sample of 700 women in Los Angeles,

California. After controlling for many risk factors, only pregnancy anxiety was associated with shorter length of gestation. Similarly, Kramer and colleagues (2009) found that in a sample of over 5,000 mothers in Montreal, Canada, pregnancy anxiety was the only significant predictor of preterm birth compared to a variety of acute and chronic psychological stressors experienced throughout pregnancy, such as job-related stress, negative life events, relationship strain, and domestic violence. Levels of pregnancy anxiety have been shown to be higher in the first trimester of pregnancy, lower in the second trimester, and higher in the third trimester of pregnancy (Gaurdino & Dunkel Schetter, 2014; Rini et al., 1999).

Women of color have poorer birth outcomes than non-Latina White women (Bryant, Worjoloh, Caughey, & Washington, 2010). Latinos are the largest minority in the United States and have the highest birth rate (Sampson, Torres, Duron, & Davidson, 2018), yet the majority of studies on maternal health focus on non-Latina White women. These studies are not necessarily generalizable to Latinas because Latinas have been shown to be uniquely vulnerable to distress which can alter the health of their pregnancy outcome, including length of gestation and infant birthweight (Ramos et al., 2019; Torche & Sirois, 2019).

A few studies have shown that levels of pregnancy anxiety decrease with higher acculturation to the United States. Acculturation is a dynamic, bidirectional, multifaceted process through which a person from one culture adopts the practices, values, norms, and traits from another culture, with varying degrees of acquisition of host culture and varying degrees of retention of heritage culture (Berry & Sam, 1997, Campos et al., 2007; Fox, Thayer, & Wadhwa, 2017). For example, a study on women living in South Texas found that, compared to Mexican American women, Mexican immigrant women have higher levels of pregnancy anxiety (Fleuriet

& Sunil, 2014). Further analyses revealed that the level of pregnancy anxiety among Mexican immigrant women decreased as their time of residence in the United States increased.

These results are consistent with the findings of another large prospective study of 1,000 pregnant women of Mexican descent living in Stockton, California (Campos et al., 2007). In this study, pregnancy anxiety was associated with a subscale in an acculturation index (i.e., ARSMA-II) labeled Mexican orientation (Cuellar et al., 1995). In contrast, Anglo orientation (i.e., English preference) was unrelated to pregnancy anxiety. For Mexican immigrants, increased time in the United States may translate into changes in the meaning of family and the desirability of children, perceived and available social support, and shifting religious beliefs, which can all be related to levels of pregnancy anxiety. Although a few studies indicate that pregnancy anxiety shifts with acculturation, to date no studies have examined whether level of acculturation is related to the association between pregnancy anxiety and shortened gestational length. That is, it remains unknown whether the association between pregnancy anxiety and length of gestation differs by degree of acculturation to the United States.

Past research shows that the interrelated activities of the hypothalamic-pituitary-adrenal (HPA) axis, especially of the placental corticotropin-releasing hormone (pCRH), is a mechanism that explains the association between pregnancy anxiety and shorter length of gestation (Hobel et al., 1999; Mancuso et al., 2004; Sandman et al., 2006; Wadhwa et al., 1996). In the non-pregnant state, CRH is secreted by the hypothalamus and is not detectable in the blood (McLean et al., 1995; Smith et al., 2009). However, in pregnancy, levels of pCRH increase exponentially, reaching high levels in maternal and fetal compartments during late pregnancy and peak concentrations at term and in labor (Hillhouse & Grammatopoulos, 2002; Lindsay & Nieman, 2005; McLean et al., 1995). Studies have shown that premature rises and accelerations in pCRH

levels pose a risk for shortened length of gestation (Hobel et al., 1999a; Sandman, 2015; Wadhwa et al., 1996, 2004).

To date, two published studies have found that pCRH mediates the association between pregnancy anxiety and length of gestation (Mancuso et al., 2004; Ramos et al., 2019). Mancuso et al. (2004) found that levels of pCRH at 28 to 30 weeks gestation mediated the effect of pregnancy anxiety on the length of gestation. Ramos et al. (2019) replicated this effect and found that pCRH levels at 31 weeks mediated the association between pregnancy anxiety at 19 weeks and length of gestation. This study was also the first to find evidence of moderated mediation, that is, the mediated effect of pCRH at 31 weeks was significant for Latinas only. Replication of these effects is necessary to determine whether pregnancy anxiety and levels of pCRH in late pregnancy are particularly linked to increased risk for shortened length of gestation and whether these effects are amplified in Latina women.

The current study examined several issues concerning pregnancy anxiety, length of gestation, a biological mechanism, and ethnic and cultural moderators in Latina and non-Latina White women. First, we examined ethnic differences in pregnancy anxiety and length of gestation in the full sample. Based on prior research, Latina women were hypothesized to report higher pregnancy anxiety and have similar gestational length as non-Latina White women. Second, we examined whether there were differences in pregnancy anxiety and length of gestation by degree of acculturation in the subset of Latina women. We hypothesized that less acculturated Latinas would report higher levels of pregnancy anxiety and would have longer length of gestation. Third, we examined whether pregnancy anxiety predicted the length of gestation, and whether this association was moderated by ethnicity in the full sample, and by acculturation in the subset of Latina women. It was hypothesized that pregnancy anxiety at each

time point in pregnancy would predict length of gestation. Based on prior research, this association was predicted to be stronger for Latina women. Among the Latina women, it was further hypothesized that the association between pregnancy anxiety and length of gestation would be stronger for less acculturated Latinas. Fourth, we examined whether the effects of pregnancy anxiety on gestational length were mediated by levels or trajectories of placental CRH, and if evidence of mediation was found, whether ethnicity and acculturation moderated these associations.

Method

Study Design

This study utilized data from the Healthy Babies Before Birth (HB3) study, a prospective, longitudinal study investigating relationships between antenatal maternal mood disorders, pregnancy-specific stress, and adverse pregnancy outcomes. Women were assessed at three time points during pregnancy, one per trimester (Time 1: 8 to 16 weeks gestation, Time 2: 20 to 26 weeks gestation, and Time 3: 30 to 36 weeks gestation). Each prenatal visit included an interview, a biological sample collection, and an ultrasound examination. Interviews consisted of an in-depth assessment of maternal stress and pregnancy anxiety. Maternal blood samples were collected at each trimester of pregnancy, including samples for pCRH. Medical charts of prenatal visits and labor and delivery were also obtained. The current study utilized data and samples collected over three pregnancy assessments and extracted from medical charts.

Participants

Pregnant women (i.e., less than 12 weeks gestation) were recruited in Los Angeles, California and Denver, Colorado. In Los Angeles, participants were recruited at a major medical center, mainly through direct patient contact at prenatal clinics, but also via brochures in

OB/GYN private practices and by referral. In Denver, participants were recruited at a public prenatal clinic affiliated with Denver Health and Hospital Authority, which is a major medical center serving mostly low-income women. They were identified at prenatal appointments, and if eligible, invited to participate in the study. Eligibility criteria were that a woman had to be 18 years of age or older, less than 16 weeks of gestation, and carrying a singleton intrauterine pregnancy. Denver participants were included in the study if they spoke English or Spanish as their primary language, while only English-speaking participants were included in the Los Angeles study site. Participants were excluded from the HB3 study if there was evidence of current substance abuse, HIV-positive status, smoking, or multiple gestations. The present study used a subset of 125 participants who self-identified as Latina (n = 53) or non-Latina White (n = 72) and had full pregnancy anxiety and gestational length at birth data.

Measures

Pregnancy Anxiety

Pregnancy anxiety was measured at all prenatal assessments, one each trimester, using the four-item Pregnancy-Specific Anxiety Scale, a measure designed to assess women's level of anxiety about their pregnancy (Roesch et al., 2004) (See **Appendix A** for the scale). This measure asks participants how often they experienced specific emotions due to their pregnancy in the past week. The measure consists of a list of four adjectives related to anxiety (i.e., anxious, concerned, afraid, and panicky) and eight other adjectives (i.e., lucky, excited, upset, happy, special, pleased, healthy, and in conflict). Respondents are asked to rate how often they felt these emotions on a 5-point Likert scale ranging from 1 (*never*) to 5 (*always*). Cronbach's alpha reliabilities for the 4-item pregnancy anxiety measure were $\alpha = .80$ at Time 1, $\alpha = .83$ at Time 2, and $\alpha = .81$ at Time 3.

Acculturation

The Short Acculturation Scale (Marín, Sabogal, Marín, Otero-Sabogal, & Perez-Stable, 1987) was administered at the first prenatal visit. This measure consists of 11 closed-ended items utilizing a five-point response scale. Respondents are asked for their preference for certain behaviors (i.e., language usually spoken at home, preference for the ethnicity of people at social gatherings, etc.) (See **Appendix A** for the scale). Participants responded on two 5-point Likert scales: 1 = Only Spanish, 2 = More Spanish than English, 3 = Both languages equally, 4 = More English than Spanish, and 5 = Only English, and 1 = All Latinos or Hispanics, 2 = More Latinos or Hispanics than any other group, 3 = About half and half, 4 = More from other groups than Latinos, and 5 = None are Latino/Hispanic.

There are three subscales in the acculturation measure. The language use sub-scale includes five items to assess respondents' proficiency and preferences for speaking a given language in a variety of settings. The media use sub-scale consists of three items to evaluate respondents' preference for a particular language media. The ethnic social relations sub-scale is comprised of three items to measure respondents' preferred ethnicity of social contacts. Scores are summated and averaged to calculate a general acculturation score. Higher scores reflect higher levels of acculturation, while lower scores reflect lower levels of acculturation. Acculturation was dichotomized into a low (i.e., less than 3.50) and a high (i.e., 3.51 and above) acculturation category for analyses. In the subset of Latinas (n = 53), 24 of the participants belonged to the low acculturation category. The Cronbach's alpha coefficient for the acculturation score is .94.

Placental Corticotropin-Releasing Hormone

Blood samples were obtained from pregnant women at all three prenatal assessments. At each time point, a sample was collected in an aprotinin-coated vacutainer tube (BD Biosciences, San Diego, California). Immediately following collection, samples were centrifuged at 1,300–1,800 xg for 10–15 minutes at 4 °C and 1 mL of serum was harvested and stored at -80°C. Pregnancy serum samples from both sites were transported to a laboratory at the University of Colorado, Colorado Springs, for storage. Serum samples were shipped to Dr. Roger Smith's Endocrine Lab at the University of Newcastle, Australia, as previously described (Smith et al., 2009). Samples were extracted with methanol and CRH was measured by using a radioimmunoassay. Extraction recovery was 82.5%. No correction of the data for extraction recoveries was made. The limit of sensitivity was 3 pg/mL. The intra- and inter-assay coefficients of variance (CVs) were 10.2% and 8.2%, respectively. The pCRH values were log transformed to reduce the typical skewness of the distribution.

Birth Outcome Variables

Birth outcomes and maternal medical risk factors were obtained from medical charts abstracted by research staff. Gestation in weeks was estimated during early prenatal visits using the conventional obstetrics methods of reported last menstrual period and confirmed by pelvic ultrasound. After delivery, length of gestation and preterm birth was determined and abstracted from medical charts. The present sample includes women who delivered following spontaneous onset of labor (47%) and non-spontaneous onset of labor (53%).

Demographics and Medical Covariates

Total household income over the past year, years of education completed, maternal age at study entry, nulliparity, and race/ethnicity information were all collected upon entry to the study by interview. Per capita household income was calculated as total annual household

income divided by household size, adjusted for cost of living in Los Angeles, California, or Denver, Colorado, in units of thousands of dollars. Nulliparity was dichotomized into first birth and non-first birth categories. Data on race/ethnicity were collected by standardized questions in interviews. Participants were first asked, "Are you of Hispanic origin?" Respondents answered yes or no. Next, participants were asked, "How would you describe your own race/ethnicity?" Participants used a card with answers (e.g., African American or Black, White or Caucasian, Latino or Hispanic) to indicate their responses.

Prenatal medical charts were abstracted and supplemented with self-report data on risk conditions and complications throughout pregnancy. This information was used to create a medical risk index on risk conditions from medical history (e.g., diabetes), pregnancy history (e.g., previous abortion), and current pregnancy complications (e.g., bacterial vaginosis). The medical risk score was calculated as the total number of conditions present based on prior research (see Hobel, Youkeles, & Forsythe, 1979 for the full list).

Data Analytic Plan

Several potential covariates were considered for inclusion based on previous studies showing associations with length of gestation (Butler & Behrman, 2007; Hobel et al., 1999a; Mancuso et al., 2004). These variables were: medical risk, nulliparity (first birth or not first birth), per capita household income, marital status (married/partnered or not married/partnered), years of education, and age at study entry. First, in preliminary analyses, bivariate correlations were run to determine whether potential covariates were justified for inclusion in the models based on the strength of their associations with the length of gestation. Next, the potential covariates (i.e., medical risk, nulliparity, per capita household income, marital status, years of education, and age at study entry) were then tested for statistical relationships with ethnicity in

the full sample and acculturation in the Latina subset. In the event that any potential covariate was significantly related to ethnicity or acculturation at $p < .10$, this covariate was also entered into the models testing that hypothesis.

Four one-way analyses of covariance models were used to determine whether there were ethnic differences in pregnancy anxiety at each time point and the length of gestation. Four additional one-way analyses of covariance models were used to investigate whether there were differences in pregnancy anxiety at each time point and length of gestation by acculturation in the subset of Latina women.

Three separate linear regression analyses were employed to evaluate whether pregnancy anxiety at each time point predicted length of gestation in the full sample. The association between pregnancy anxiety and preterm birth was not tested due to the small number of preterm births (i.e., 3 cases total) in the sample.

Three bias-corrected bootstrapping moderation tests based on 5,000 bootstrapped samples were conducted to evaluate whether ethnicity moderated the associations between pregnancy anxiety at each time point and length of gestation using the PROCESS macro in SPSS (Preacher & Hayes, 2008). Each model included any identified covariates, pregnancy anxiety at the relevant time point, ethnicity, and the interaction between pregnancy anxiety and ethnicity. Significant interactions were probed using simple slope analyses using the PROCESS macro (Preacher & Hayes, 2008). Statistical significance was set at $p < .05$.

To examine whether the association between pregnancy anxiety and length of gestation in the subset of Latina women was moderated by acculturation, three additional bias-corrected bootstrapping moderation tests were conducted. Each of the models included any identified covariates, pregnancy anxiety at the relevant time point, acculturation (low versus high

acculturation), and the interaction between pregnancy anxiety and acculturation. Again, any significant interactions were followed using simple slope analyses using the PROCESS macro (Preacher & Hayes, 2008).

To test whether pCRH levels at each time point in pregnancy (i.e., Time 1, Time 2, and Time 3) mediated the associations between pregnancy anxiety and length of gestation, six bias-corrected bootstrapping mediation tests were used to estimate CIs using the PROCESS macro (Preacher & Hayes, 2008). For each of the models, the predictor variable was pregnancy anxiety at each time point, the outcome variable was length of gestation, and the mediator variable was levels of pCRH at each trimester.

Finally, to determine whether changes in pCRH trajectories from Time 1 to Time 3 mediated the associations between pregnancy anxiety in any trimester and the length of gestation, three bias-corrected bootstrapping mediation tests were used to estimate CIs using the PROCESS macro (Preacher & Hayes, 2008). For each of the three models, the predictor variable was pregnancy anxiety at the relevant time point, the outcome variable was length of gestation, and the mediator variable was changes in pCRH from first to third trimester.

Results

Bivariate correlations (presented in Table 1.3) revealed that among the list of potential covariates considered for inclusion (i.e., nulliparity, medical risk, per capita household income, years of education, marital status, and age at study entry), the only variable significantly associated with length of gestation was years of education. Higher educational attainment was associated with longer gestations. Accordingly, years of education was included in all of the statistical models.

Compared to the non-Latina White women, Latina women had less per capita household income, completed fewer years of education, were less likely to be married, and were more likely to have had a prior birth. There was no significant difference between these groups in the medical risk index. Thus, all analyses using the full sample of Latina and non-Latina White women adjusted for per capita household income, years of education, marital status, and nulliparity. Table 1.1 presents the descriptive statistics and tests of ethnic differences for the demographic variables of the full sample and by ethnicity.

In the subset of Latinas, less acculturated Latinas completed fewer years of education, had less per capita household income, had at least one prior birth, and had less medical risk. There was no significant difference between these groups in marital status. As a result, acculturation analyses within the subset of Latina women adjusted for per capita household income, years of education, nulliparity, and medical risk. Descriptive statistics for demographic variables among Latinas by acculturation are presented in Table 1.2.

G*Power 3.1 (Faul, Erdfelder, Buchner, & Lang, 2009) was used to estimate what sample size would be necessary to detect a significant mediating effect, if one exists. With power set at 80% and a two-tailed significance level (α) of 0.05, a sample size of 98 would be needed to detect a significant effect. An effect size (f^2) of 0.15 was used in the calculations, which Cohen (1992) defined as a medium effect size. This indicates that the current study has sufficient power to evaluate the proposed hypotheses with a sample of 125.

Ethnic and Acculturation Differences in Pregnancy Anxiety and Length of Gestation

Table 1.1 presents descriptive statistics for pregnancy anxiety in each trimester and length of gestation. This table shows univariate descriptive statistics for these measures by ethnicity and results of tests of ethnic differences in pregnancy anxiety and length of gestation,

adjusting for per capita household income, years of education, marital status, and nulliparity. There were no ethnic differences in pregnancy anxiety at any time point between Latina and non-Latina White women. Latina and non-Latina White women had similar length of gestation. Analyses revealed no significant differences between low and high acculturated Latina women in levels of pregnancy anxiety across at any of the three time points or in length of gestation.

Pregnancy Anxiety and Length of Gestation

Table 1.3 presents bivariate correlations between pregnancy anxiety and length of gestation. Pregnancy anxiety at each trimester of pregnancy significantly predicted length of gestation, adjusting for per capita household income, years of education, marital status, and nulliparity. The effect size of the association between pregnancy anxiety at Time 1 and length at gestation was moderate. The effect sizes for the relationships between pregnancy anxiety at Time 2 and length of gestation, and pregnancy anxiety at Time 3 and length of gestational were small. Regression coefficients from the three different models predicting length of gestation from pregnancy anxiety, one model each for each trimester, are presented in Table 1.4.

Pregnancy Anxiety and Length of Gestation as Moderated by Ethnicity

When adjusting for per capita household income, years of education, marital status, and nulliparity, there was a significant interaction between ethnicity and pregnancy anxiety at Time 1 (b = -0.22, SE = .09, $p < .05$) and pregnancy anxiety at Time 2 (b = -0.28, SE = .10, $p < .01$, see Table 1.5). Probing the interactions using simple slope analysis revealed that there were significant associations between pregnancy anxiety (at Time 1 and Time 2) and length of gestation among Latina women (Time 1: simple slopes b = -0.75, SE = 0.21, $p < .01$; Time 2: simple slopes b = -0.88, SE = 0.22, $p < .01$, but not for non-Latina White women (Time 1: p = .66, Time 2: p = .76). Figure 1 displays ethnic differences in the effect of pregnancy anxiety at

Time 1 on the length of gestation. The interaction plot of the effect of pregnancy anxiety at Time 2 on the length of gestation was identical to the interaction plot at Time 1 (displayed in Figure 1). There was a marginally significant interaction between ethnicity and pregnancy anxiety at Time 3 in predicting the length of gestation (interaction term b = -0.19, SE = 0.10, p = .07).

Pregnancy Anxiety Predicts Length of Gestation as Moderated by Acculturation in Latinas

In the subset of Latinas, acculturation interacted significantly with pregnancy anxiety at Time 2 (interaction term b = 1.05, SE = 0.49, $p < .05$; see Table 1.6) covarying for years of education, per capita household income, nulliparity, and medical risk. As displayed in Figure 2, pregnancy anxiety was significantly associated with the timing of birth for low acculturated Latinas (simple slopes b = -1.16, SE = 0.29, $p < .001$), but not for high acculturated Latinas (p = .77). The interaction between acculturation and pregnancy anxiety was marginally significant at Time 1 (interaction term b = 0.86, SE = 0.44, p = .060) and not significant at Time 3 (p = .13).

pCRH Levels and Trajectories Mediation Analyses

Table 1.7 presents the full results of the pCRH levels mediation analyses. Levels of pCRH did not mediate the associations between pregnancy anxiety at any time point and length of gestation after adjusting for per capita household income, years of education, marital status, and nulliparity. Lastly, as presented in Table 1.8, trajectories in pCRH from Time 1 to Time 3 did not mediate the associations between pregnancy anxiety at any time point and length of gestation after adjusting for covariates. Analyses of moderated mediation by ethnicity were not conducted because there was no evidence of mediation.

Post-Hoc Analyses

The mechanisms whereby anxiety and HPA processes influence birth timing are thought to occur mainly via spontaneous labor and delivery, but this was not a main focus of the study in

part due to small samples size. Post-hoc analyses were however run to determine whether the significant effects remained after controlling for elective or planned cesarean sections (yes/no) and none of the significant effects changed.

Discussion

This longitudinal study examined a biological mechanism linking pregnancy anxiety to shortened gestational periods and tested whether these associations were moderated by ethnicity and acculturation in a sample of 125 pregnant Latina and non-Latina White women in Western United States. Results indicated that mean levels of pregnancy anxiety at three different times over the course of a pregnancy (one per trimester) significantly predicted shorter length of gestation. These results are consistent with prior study findings demonstrating that anxiety specific to a current pregnancy predicts when a woman will go into labor and give birth (Dunkel Schetter, 2010; Glynn et al., 2008; Kramer et al., 2009; Lobel et al., 2008; Orr et al., 2007; Rini et al., 1999; Roesch et al., 2004; Staneva et al., 2015). Our findings provide further evidence that pregnancy-specific concerns predict the timing of delivery.

In the current study, the effect of pregnancy anxiety on gestational length was strongest in the first trimester, compared to the second and third trimesters of pregnancy, which is consistent with prior published reports that pregnancy anxiety as early as 18 weeks predicts the timing of delivery (Hobel et al., 1999a; Roesch et al., 2004). However, some existing evidence shows that pregnancy anxiety late in the second trimester and early in the third trimester of pregnancy is a better predictor of gestational length than earlier time points (Rini et al., 1999; Wadhwa et al., 1993). Because the literature is equivocal on when pregnancy anxiety is the best predictor of the timing of birth, analyses on each of the three time points in pregnancy for comparison was one of the study's contributions. Length of the gestation of a pregnancy has

implications for infant health and development because every day in the womb improves fetal development and infant health and development (Butler & Behrman, 2007).

Contrary to hypotheses, levels of pCRH during each trimester of pregnancy and changes in pCRH between the first and third trimester did not mediate the associations between pregnancy anxiety and the timing of delivery. It is unclear why evidence of pCRH mediation was not found in the current study given that prior studies have found evidence of mediation. The present study's sample size of 125 participants is considerably smaller than that of prior studies that found evidence of pCRH mediation ($N = 282$ in Mancuso et al., 2004; $N = 350$ in Ramos et al., 2019). Sample size may be one factor responsible for lack of replication. It is worth noting that pCRH was assayed in a different laboratory in each of these studies and laboratories may produce results with varied accuracy, which could account for the lack of pCRH mediation found in our study.

In the present study, blood samples were shipped to Australia to a respected lab, however, shipping and storage factors may have reduced the accuracy of assays. Placental CRH assays are difficult to perform and are therefore not commonly conducted in research laboratories (Latendresse & Ruiz, 2008). Nonetheless, the means of pCRH in this study are comparable to prior work. In the current study, log transformed pCRH means were 2.77, 3.97, and 6.09 in the first, second, and third trimester of pregnancy, respectively. In Ramos et al., (2019), the log transformed pCRH means were 2.87 in the first trimester, 3.71 in the second trimester, and 5.28 in the third trimester of pregnancy.

Contrary to hypothesis, Latina and non-Latina White women did not differ in levels of pregnancy anxiety. However, that Latina and non-Latina White women had similar length of gestation at birth was consistent with some prior research (Ramos et al., 2019) and inconsistent

with others (Rini et al., 1999). Moderation analyses on the full sample revealed that pregnancy anxiety was associated with gestational length for Latinas only. A similar pattern emerged in analyses on the subsample of Latinas for moderation by acculturation such that pregnancy anxiety predicted the timing of delivery only among low acculturated Latinas. Although the subgroups are small in these analyses, they are consistent in showing pregnancy anxiety may be most potent for Latinas who have not acculturated yet to the United States. Less acculturated Latinas may be distinctly vulnerable to the effects of pregnancy anxiety on their pregnancies with consequences for how long they carry their pregnancies.

This finding is consistent with prior research showing that Latinas, especially those that are less acculturated to the United States, may be uniquely sensitive to distress, which can alter the courses of their pregnancies. For example, one recent study found that prenatal exposure to Arizona's restrictive immigration law (i.e., Senate Bill 1070), was associated with lower infant birth weight among Latina immigrant women, but not among U.S.-born Latina, non-Latina White, or Black, women (Torche & Sirois, 2019). Also, Ramos et al. (2019) found that levels of pregnancy anxiety are more closely associated with shorter gestational periods in Latina women than in non-Latina White women. Lastly, a recent study by Mahrer et al. (2020) presents further evidence that this risk is higher among less accultured Latina women. This study found that though levels of pregnancy anxiety did not differ between three groups (non-Latina White women, less acculturated Latina women, and more acculturated Latina women), the effects of pregnancy anxiety on offspring development at age 4 were greatest among less acculturated Latinas. In essence, these studies indicate that anxiety and distress in pregnancy may be most likely to have a negative effect on birth outcomes and child development among less acculturated Latinas.

It is not known why anxiety concerning a current pregnancy seems particularly risk-inherent for Latina women, especially when Latina and non-Latina White women experience similar levels of pregnancy anxiety. It is plausible that translational issues of instruments into Spanish may be capturing different experiences. However, this is unlikely for several reasons. First, only 7 Latinas in this study completed the interview in Spanish. Second, the pregnancy-specific anxiety measure used here is composed of only four-items, each consisting of only one word, thus there was minimal translation (Roesch et al., 2004). Finally, there were no significant differences in the variability in pregnancy anxiety scores between Latina and non-Latina White women, or between less acculturated and more acculturated Latina women. The question remains as to why Latinas may be uniquely sensitive to the effects of pregnancy anxiety. Findings from anthropological work indicate that less acculturated Latina women in the United States may have different perspectives concerning their pregnancies that affect their anxiety physiology and pregnancy outcomes (Engle et al., 1990; Scrimshaw et al., 1997; Zambrana et al., 1999). Additional qualitative research is needed to explain this pregnancy phenomenon.

Limitations

Some limitations are worth noting. First, the small sample size may have reduced power to detect biological mediation and limited the ability to test for preterm birth effects, as there were too few premature deliveries, as previously noted. Also, the size of the sample did not allow for investigating the study aims exclusively on women who had spontaneous labors, which would have been ideal. Second, place of birth was not documented in this study to protect the identities and documentation statuses of foreign-born Latinas and thus, we were not able to explore any potential relationships between country of birth and our variables of interest for foreign-born Latinas. However, most of the participants in this study are of Mexican origin.

Other Latino groups deserve consideration (e.g., South American, Caribbean, and Central American) in future research on birth outcomes in Latina women. Women of different national and geographic origins may differ in affective, cultural, and physiological processes, and this set of issues are worth attention.

Conclusions

In summary, anxiety concerning a current pregnancy predicted shorter gestational length in Latina and non-Latina White women. Moderation analyses revealed that pregnancy anxiety was associated with gestational length for Latinas in the full sample and less acculturated Latinas in the Latina subset. This suggests that Latinas living in the United States may be uniquely sensitive to the effects of pregnancy anxiety, which in turn affects at least one key pregnancy outcome -- the timing of delivery. Gestational length at birth is related to birthweight and other infant and child outcomes (Butler & Behrman, 2007). Some Latina women may be more at risk of early delivery, and acculturation may moderate this effect. These findings inform future qualitative research that examines cultural factors in Latina pregnancies and how these cultural processes may contribute to unique sources of distress, with consequences for their pregnancy outcomes.

Study 2: Culturally-Based Sources of Pregnancy Anxiety in Latinas: A Qualitative Study

Introduction

A few studies indicate that Latinas, especially those who are immigrants, experience high pregnancy anxiety (Campos et al., 2007; Fleuriet & Sunil, 2014; Ramos et al., 2019). However, no research has examined the experience of pregnancy anxiety in Latina women, nor explored how cultural attitudes about pregnancy are related to their pregnancy anxiety. Taking a cultural perspective to better understand pregnancy anxiety can clarify the cultural context in which these experiences occur. For example, the learned and shared values, beliefs, and norms surrounding pregnancy can affect emotional experiences in pregnancy. More research is needed to better understand this growing subgroup and this understudied perinatal mood phenomenon.

Culturally-based sources of anxiety during pregnancy in Latino culture, including the value of pregnancy and childbearing, privileged status associated with pregnancy, and fears about childbirth, have been identified in a few studies (Engle et al., 1990; Scrimshaw et al., 1997). However, these culturally-based sources have not been investigated in relation to pregnancy anxiety. Given the lack of research on why Latina women are particularly anxious about their pregnancies, the goal of this qualitative study is to intensively examine the experience of pregnancy anxiety in Latina women and to document the beliefs surrounding pregnancy that can affect prenatal emotional experiences.

Overall and Specific Aims

Overall Aim

To collect qualitative data from pregnant Latina women in Spanish on their experience of pregnancy anxiety and the cultural beliefs about pregnancy and the transition to motherhood.

Specific Aim 1

Pregnancy Anxiety in Latina Women. To examine the experience of pregnancy anxiety in Latina women and identify what particular fears, worries, and concerns Latinas have about their current pregnancy, and where these fears originate from.

Specific Aim 2

Attitudes and Beliefs About Pregnancy, Childbearing, and Transition to Motherhood. To document the cultural attitudes, beliefs, and values pregnant Latina women have about pregnancy and motherhood.

Specific Aim 3

Privileged Status as a Function of Being Pregnant. To explore whether Latinas believe that pregnancy is a time of privilege and high social status, and if so, how this status is recognized in their daily lives and communities.

Method

Overview

The qualitative study includes one focus group discussion of three women held at a prenatal medical clinic in West Los Angeles, California, and 11 individual face-to-face interviews held either at the prenatal medical clinic or at local coffee shops that were convenient for study participants. A discussion guide was created to include questions regarding pregnancy anxiety and the attitudes, norms, and perceptions about pregnancy and motherhood. The following topics were explored: (1) pregnancy-related fears; (2) attitudes, beliefs, and values about pregnancy and motherhood, and (3) privileged status associated with pregnancy. The focus group and individual interviews were conducted in Spanish in order to include participants who did not speak enough English to participate in the study. Participants were given a $40 gift card for their participation in the study.

The focus group discussion and individual interviews were coordinated and guided by the author of this dissertation and assisted by a UCLA undergraduate from the Psychology Research Opportunity Program. Data collection took place from May 2019 to August 2019 for a total of 4 months. Fewer focus groups and more individual interviews were conducted than planned due to scheduling conflicts. Individual interviews were stopped after the 11th interview because little new information was emerging from the individual interviews. Two qualitative researchers were consulted prior to this decision and agreed it was prudent.

Recruitment

Eligibility criteria were that a woman had to self-identify as Latina or Hispanic, be fluent in Spanish, pregnant, and 18 years of age or older. Study recruitment took place in Los Angeles, California. Individuals were invited to participate in the study using flyers, word of mouth, and personal communication in the waiting room of the UCLA Health OBGYN West Medical clinic. Of the 14 women in the study, seven were recruited using flyers and word of mouth, and seven were recruited at the prenatal clinic. **Appendix B** contains the study recruitment flyer in English and Spanish. The recruiters established and maintained a favorable relationship with the prenatal clinic by showing respect and courtesy to the staff, patients, nurses, and medical personnel at all times and by being as unobtrusive as possible. During recruitment at the prenatal clinic, the recruiters found it helpful to speak to the pregnant women in the language that they were speaking to their partners and family members if they arrived at the clinic accompanied. If a pregnant woman arrived at the clinic alone, the recruiters initially spoke to the woman in English, but promptly asked her if she preferred to speak in English or Spanish. A standard recruitment script created in English and Spanish was used for explaining the study.

All study procedures were approved by the Institutional Review Boards of UCLA. Researchers obtained verbal consent for these sessions to be audio recorded and for the study staff to take notes. All audiotapes were transcribed by the author, with permission from participants. The transcriptions reflected only the first names of participants. Participants were assured confidentiality and protection of their identities. Participants did not need to provide a signed informed consent to participate in this study as the UCLA IRB waived this requirement under 45 CFR 46.117(c)(2).

Sample

Descriptive information for each participant in the study is presented in Table 2.1. Among the 14 participants, three participated in the focus group and 11 were interviewed individually.

Age and Marital Status

The average age of the participants was 28.71 (*SD* = 5.35) with a range from 20 to 39 years and median and mode of 28 years of age. Eight of the women were married, while five were not married but in a romantic relationship, and one was not married or in a romantic relationship.

Heritage

Eight of the participants were foreign-born, and of these, six were born in Mexico, one was born in Guatemala, and one was born in Honduras. Foreign-born participants had been living in the United States for 17 years on average, with a range from 7 to 35 years, median of 16.50 years, and mode of 15 years. The parents of all six U.S.-born participants were of Mexican origin.

Socioeconomic Status

Half of the participants (seven out of the 14 women) had a high school education, and the other half had a college degree. The average household income was $41,157 (*SD* = 47,650) with a range from $1,200 to $180,000, median of $23,000, and mode of $20,000.

Pregnancy History

Ten out of the 14 women had previously given birth. Number of children ranged from 0 to 4, with a median and mode of 1 child.

Timing in Pregnancy in Study

Participants' average length of gestation at the time of their interview or participation in the focus group was 25.39 weeks (*SD* = 9.18), with a range from 7.50 weeks to 38 weeks, median of 25.50 weeks, and modes of 25 and 33 weeks gestation.

Procedure

For both the group discussion and individual interview, the primary facilitator—the author—used a script to explain what the purpose of the study was and what the information would be used for. Participants were assured that all responses and audio recordings would be de-identified and that they were free to leave at any time if they felt uncomfortable during the group discussion or individual interview. Next, the primary facilitator proceeded by asking questions using the discussion guide. Focus group discussion participants were also informed about the discussion ground rules, such as not interrupting others, showing respect, and maintaining the confidentiality of responses.

The group session lasted for 1 hour, while the individual interviews were 33 minutes on average, ranging from 21 to 49 minutes. At the end of the focus group or individual interview, participants were asked to fill out a questionnaire in Spanish that included demographic questions and the Spanish versions of the Pregnancy-Related Anxiety Scale (Rini et al., 1999),

Pregnancy-Specific Anxiety Scale (Roesch et al., 2004), and somatization subscale from the Symptom Checklist 90-Revised (Derogatis, Lipman, & Covi, 1973). All of the measures have been validated in Spanish (Martinez, Stillerman, & Waldo, 2005; Rini et al., 1999; Roesch et al., 2004). **Appendix C** contains these materials.

Discussion Guide for Focus Groups and Individual Interviews

All discussion guide materials were translated word for word from English into Spanish by the author who is bilingual and is herself a Latina. The translations were reviewed by four Latina women, all of whom are bilingual. See **Appendix D** for the discussion guide used for the focus group and **Appendix E** for the individual interview guide. The discussion guide was divided into four sections. The first section consisted of introductory questions that asked participants to introduce themselves, how many children they had, where their family was from, and which practices or traditions, if any, they have heard of or participated in during their pregnancy.

The second section of the discussion guide consisted of questions regarding the different attitudes, beliefs, and values women held about pregnancy and motherhood. These questions asked participants to describe the value of pregnancy for them and for women in their communities and culture, their feelings about being pregnant, and the ideas and beliefs passed down to them about pregnancy. Participants were also asked to describe whether they felt that having a healthy pregnancy was a major responsibility to their family. They were also asked to give specific examples of such occurrences.

The third section of the discussion guide asked questions about the different fears and concerns, if any, participants had about their pregnancies. Participants were asked where they believe these fears stem from (e.g., hearing stories about women or family members dying

during childbirth, prior childbirth experiences). Participants were also asked to describe whether current issues or the political climate in the United States made them more anxious or distressed in this pregnancy and, if so, to give specific examples of such instances.

The final section of the discussion guide included questions about the privileged status associated with being pregnant. Participants were asked to describe whether they viewed pregnancy as a time of high, privileged social status, and whether they had been treated with higher status because they were pregnant. If applicable, participants were asked to describe in what ways they had been treated with elevated status during their pregnancies.

Data Analytic Plan

A six-phase thematic analysis method (Boyatzis, 1998), as explained by Braun and Clarke (2006), was used to identify emergent themes regarding beliefs about pregnancy and experiences with pregnancy anxiety. Thematic analysis is a method for identifying, analyzing, and reporting patterns. Thematic analysis is a foundational method for qualitative analysis, which Braun and Clarke (2006) argued should be the first qualitative method that qualitative researchers learn because it teaches the essential skills to conduct other more complex qualitative analyses. This method entails organizing and describing qualitative data by coding all the data into themes and patterns. The coders, the author and one UCLA undergraduate research assistant, used the six phases of the thematic analysis guide developed by Braun and Clarke (2006) to analyze the qualitative data.

Data Familiarization

The first phase of thematic analysis involves data familiarization, which entails transcribing and reading the data and noting down initial ideas. The author transcribed the data, while the research assistant proofread the text files. The process of transcribing raw data to text

is a useful exercise for data familiarization as it informs the early stages of analysis (Nowell, Norris, White, & Moules, 2017). Following Braun and Clarke's (2006) recommendation, researchers individually read through the entire data set at least twice and documented initial ideas regarding the focus group discussion and each individual interview. Both researchers documented interesting features of the data and initial similarities between the interviews and the group discussion. After which, face-to-face meetings were held to share their notes about the group discussion and each participant's interview.

The first phase of thematic analysis also includes effective data management; thus, data were stored in well-organized and secure archives and all data, such as field notes and transcripts, were stored securely. The research team adopted a similar data management approach as Nowell et al. (2017). All files (i.e., raw and transcribed data) were named to distinguish between the focus group discussion and the individual interviews and when they were created. All data were stored on a password-protected computer, with folders for each type of data.

Initial Code Generation

The second phase of thematic analysis involves initial code generation across the entire dataset. For this phase, codes were generated by tagging and labeling selected pieces of text using the qualitative data analysis software program ATLAS.ti (Version 8 for Mac; Muhr, 1994). ATLAS.ti is a Computer Assisted Qualitative Data AnalysiS software (CAQDAS) that can be used with different theoretical approaches; it has been used by researchers from different fields, including psychology, education, and engineering (Friese, Soratto, & Pires, 2018).

To generate initial codes, researchers systematically coded interesting features of two interview transcripts, giving equal attention to each selection of text (Braun & Clarke, 2006).

Significant sections of text were identified, and codes were added to index them (King, 2004; Nowell et al., 2017). The transcripts uploaded into the Atlas.ti software (Muhr, 1994) were in Spanish, and the codes that were generated during the second phase of qualitative analysis were written in English. For example, an "attitudes and values regarding pregnancy and motherhood" code was created, and any data relevant to the attitudes and values participants expressed about pregnancy were tagged under this code.

Next, an aggregate list of codes—30 in total—was created to code the remaining data. The research team tagged each data item for each transcript, collating data relevant to each code. For each participant's transcript, researchers first read each selection of text, individually noted which code they believed the text belonged to, and then discussed which code they picked. Any discrepancies were noted and resolved through discussion. The interrater reliability (91%) was calculated using the formula described in Miles and Huberman (1984). According to Miles and Huberman (1984), an interrater reliability of 80% agreement between coders on 95% of the codes is sufficient for coders. Finally, a codebook with a list of all the different codes, their definitions, and summaries of text pertaining to each code was developed.

Theme Searching

The third phase began after all data were initially coded, carefully listed, and summarized in a codebook. This phase involves searching for themes, sorting codes into potential themes, and gathering all data relevant to each possible theme (Braun & Clarke, 2006). The aggregate list of codes was analyzed, combined, and organized to form code groups, initial overarching themes, and sub-themes. Unlike other forms of qualitative analysis, in thematic analysis, frequency is not the primary determinant for theme development (Braun, Clarke, & Weate, 2016). Patterns across the data and relevance to addressing the research questions guide

theme generation in thematic analysis. Themes were established through deductive reasoning, which involves approaching the data with preconceived themes, ideas, concepts, and potential codes based on theory or existing knowledge, which are then explored and tagged within the dataset (Braun, Clarke, Hayfield, & Terry, 2019). For example, a "pregnancy anxiety coping" theme was generated to include codes related to how participants coped with their pregnancy-specific fears, such as what they did to feel less anxious (e.g., distract themselves) or who they talked to about their pregnancy fears (e.g., their partners, mothers, and aunts).

Theme Review and Refinement

During the fourth phase, the research team worked collaboratively to review and refine themes and sub-themes created in the third phase. This process consisted of checking whether the themes work in relation to the codes and the entire data set (Braun & Clarke, 2006). Theme refinement included splitting and collapsing themes as seen fit. By the end of this phase, data were condensed into a feasible set of essential themes that reflected the content of the data (Braun & Clarke, 2006).

Defining and Naming Themes

The fifth phase involves defining and naming themes, which means refining the specifics of each theme in the overall "story" of the data and writing clear definitions, descriptions, and names for each theme produced during the third phase (Braun & Clarke, 2006). Themes that were not relevant to the study aims or research questions of interest, such as pregnancy folklore and traditions, were not included in the present written report but may be used in future qualitative publications. The researchers met weekly to discuss theme refinement and meet a consensus on theme selection.

Producing the Report

The final phase of thematic analysis involves producing the report that reveals the overall story of the qualitative data. Vivid and compelling examples and direct quotes were selected to provide evidence of the themes generated from the data. Pseudonyms were used to protect the identity of the participants in the written report. The selected quotes were translated into Spanish word for word by the author.

Results

Quantitative Data

The mean score for the Pregnancy-Related Anxiety Scale (Rini et al., 1999) was 1.75 (*SD* = .52, range = 1.0-2.60) which is comparable to the pregnancy-related anxiety levels of two different studies on Latina women (*M* = 1.76 in Fleuriet & Sunil, 2014; *M* = 1.94 in Ramos et al., 2019) but lower than that of a different study on Latina women, whose mean pregnancy-related anxiety scores averaged over second and third trimester was 2.12 (Mahrer et al., 2020).

The mean score for the Pregnancy-Specific Anxiety Scale (Roesch et al., 2004) was 2.16 (*SD* = .67, range = 1.0-3.50) which is comparable to that of the sample in Study 1, whose average pregnancy-specific anxiety score was 2.00 when averaged over three trimesters. However, the pregnancy-specific anxiety scores in the present sample are lower than those in a different study of African American, Latina, and non-Hispanic White women, which was 2.75 when averaged over three trimesters (Roesch et al., 2004).

The mean score on the somatization subscale of the Symptom Checklist 90-Revised (Derogatis et al., 1973) in this sample was 1.89 (*SD* = 0.63, range = 1.17-3.42). This score was slightly higher than the somatization score across three time points in pregnancy in another study Caucasian women whose mean was 1.52 (Bergink et al., 2011).

Qualitative Data

The results are divided into three categories representing three themes derived from the software used as described previously. Each theme is illustrated through specific examples and quotes of women. Table 2.2 contains each category and theme that was generated in the data.

Category 1 is *Experiences of Pregnancy Anxiety* and includes beliefs that (a) having anxiety about pregnancy is normal, (b) the specific worries women expressed having about their current pregnancy, (c) ways women coped with their pregnancy anxiety, and (d) current issues in the United States affecting emotional experiences during pregnancy.

Category 2 is *Attitudes and Beliefs About Pregnancy and the Transition to Motherhood* and includes beliefs that (a) pregnancy warrants respect, (b) pregnancy is a blessing from God, (c) women should feel lucky to be pregnant, (d) women should maintain a healthy pregnancy, and (e) family involvement in pregnancies in Latino culture.

Category 3 is *Privileged Status Associated with Being Pregnant* and describes (a) the special status given to pregnant women and (b) the recognition of this special status in their daily lives.

Category 1: Experiences of Pregnancy Anxiety

Anxiety About Pregnancy is Normal. Experiencing anxiety during pregnancy was described as being a necessity and normal. For example, Estela said: "*You need to worry when you are pregnant, because you don't know what to expect. The doctor can tell you that the baby is fine, that everything is fine, but you still need to worry*." Some sources of worry were more prevalent during different stages of pregnancy. As Carmen described:

> *It is normal to have some anxiety because you can be fine right now, but you never know how things will turn out. You don't know if something bad will happen. It's anxiety in the beginning of pregnancy when the pregnancy is the riskiest, when you can lose the baby. Once you are three months pregnant, you can relax a little bit, but then at the end of pregnancy you start to feel anxious again because the day to give birth is coming.*

Fears About Childbirth. Particular worries about childbirth emerged in the data. The specific aspects of childbirth that were concerning were the pain the women would feel during childbirth, having a stillbirth, and experiencing difficulties or complications during labor and delivery. For example, Daimí explained her experience of pregnancy anxiety during each of her pregnancies and a few specific worries she had:

> *I think it's normal to have anxiety. In all of my pregnancies, I have felt that anguish of not knowing what is going to happen. Even though this is my fourth baby, when you are finally going to have the baby, anything can happen. You don't dilate, your blood pressure rises, anything bad can happen.*

The fears of these women were from prior traumatic experiences with giving birth, both in the United States and in their home countries. In Delia's own words, "*It's normal to have worries about giving birth. I had a traumatic first childbirth, miscarried during my second pregnancy, and had a second, complicated childbirth, so with this pregnancy, I have a lot of bad thoughts.*" Andrea shared a similar experience:

> *I think it is [normal to worry]. I was in labor for 12 hours with my first daughter, then I had a hemorrhage two hours after giving birth, and I ended up in the operating room. I was bleeding a lot. That is when I got scared, and now, I don't want it to happen again.*

Fears About the Baby Being Born With a Birth Defect. Another theme that emerged was being afraid that the baby might be born sickly (*enfermito*), with a birth defect, an abnormality or "*not be formed right*." The term *malito* (i.e., the diminutive form of being in poor condition) was also used to indicate a birth defect. For example, Martha said, "*Sometimes I see kids that are malito, and I get afraid that it could happen to me.*" Similarly, Karla said, "*I worry that my baby will be born with abnormalities.*" Carmen described this being a constant worry:

> *There is always that worry in the back of your head where you wonder what if this or that happens, or what if he is born enfermito. But I believe that if God does something, He will do it for a reason.*

Worries About Losing the Baby. Finally, women also expressed fears about losing their babies during the beginning of their pregnancies. Ruby, Flor, Carmen, Natasha, Karla, and Melida described the fear of losing the baby as normal, yet it was the biggest worry they had. For example, Ruby said, "*You worry about having a problem in the pregnancy or falling and having an accident and losing the baby*." Karla said:

> *I think that it is a normal to worry to have. I have had this worry. Sometimes I wake up in the morning and don't feel my baby move. I get nervous and do things to make her move and when I feel her move, I know that she is okay.*

According to Natasha, "*It is normal to have these fears because you have no idea what is going on inside of you, and you only know that the baby is okay when it moves*." Sources of this fear included a woman's age (i.e., being older) and a long period of time since her last pregnancy. However, for others, it was anxiety-inducing to know that the beginning of pregnancy is the riskiest. Finally, women who had previously miscarried were afraid of it happening again in the current pregnancy.

Current Issues in the United States Affecting Moods During Pregnancy. Martha, Natasha, Amelia, and Victoria did not feel that the current social and political climate affected their pregnancies. For example, Natasha stated, "*There will always be bad things happening in the country, so I need to remain calm and only think about things that I can control so that my pregnancy is not affected.*" Conversely, Daimí, Estela, Carmen, Melida, Karla, Anna, Ruby, Andrea, Delia, and Flor felt that watching the news did affect them, making them feel worried, anxious or depressed; thus, they avoided watching the news altogether. Delia described, "*Watching the news is not a good thing, because when you are pregnant, it makes things much scarier."* Similarly, Amelia said:

> *I am worried because of all the rumors of what Trump is going to do. But I try not to watch the news so that it doesn't affect me. Because that is not good for me. I don't let it get to me so that I am okay.*

Ways Women Coped With Their Anxiety. Whenever they felt scared during their pregnancies, women distracted themselves and prayed that nothing bad would happen to their babies. They also talked about their worries with their partners, mothers, mothers-in-law, sisters, aunts, and friends. They were often told that it was normal to worry and that they needed to be strong and positive. However, Carmen, Delia, and Andrea did not talk to anyone about their concerns for fear of being told not to worry, which was not helpful.

Category 2: Attitudes and Beliefs About Pregnancy and the Transition to Motherhood

Pregnancy Warrants Respect. The overall message regarding the beliefs about pregnancy and motherhood was that pregnancy warrants respect because of the life that women are bringing into the world. Moreover, pregnant women are respected and valued because of all the emotional and physical changes they undergo and because women suffer to give birth and sacrifice their lives to be mothers. Amelia illustrated this theme in her own words:

> *We have to value every pregnant woman, especially because of everything that we have to go through during pregnancy and after giving birth. We go through so many changes, and we have to change the way we think, how we feel. We have to change our perspective and give everything up for the baby.*

Cultural ideas regarding pregnancy included pregnancy being important, expected, respected, and positive. According to Delia, "*In our culture, pregnancy is something important*." Carmen said, "*I come from a Latino family, and it has always been the case that pregnancy is positive.*" Karla shared that "*In Latino culture, having a baby is a privilege and expected of all women.*" Melida stressed that in Latino culture, mothers are respected because they are *luchadoras* (i.e., strong, hard-working women), often putting their babies' needs over their own.

Pregnancy is a Blessing From God. Women considered pregnancy and motherhood as marvelous and grand—a miracle and a blessing from God. Delia illustrates this point: "*Motherhood is marvelous and a miracle. For me, motherhood means everything, it is life, happiness, having descendants, and seeing that it comes from me is marvelous*." Ruby described:

> *Pregnancy is something really special, different, and unique. You feel things that you can't explain, like the baby moving. Maternity is something unexplainable and something that needs to be lived because it only lasts nine months, and they are beautiful.*

Women also discussed their views about God's role in their pregnancies. A common theme that emerged was that their bodies were designed by God to give birth. According to this belief, God uses women to give life, and they have been chosen by God to bring life into the world. As Daimí described, "*Pregnancy is a blessing. It comes from God. I feel blessed to have been chosen*." Flor shared a similar view: "*God uses us to give life. It is incredible, a miracle*."

Women Should Feel Lucky to Be Pregnant. Another theme that emerged was the belief that women should feel fortunate to be pregnant, specifically because there are women who cannot conceive. As Daimí revealed, "*I feel so lucky and blessed because there are many women in my family who have struggled to get pregnant. I feel so blessed because I have not had to go through that.*" Similarly, Melida said, "*I feel special. I thank God we could conceive in two months. I know many women who struggle, so I feel very fortunate*." Similarly, Ruby illustrates this experience in her own words:

> *I have an uncle who loved kids and did everything possible to have a child, but they gave up, and I think that's why I value pregnancy so much. I know of so many cases where a couple who wants children cannot have them, and that is why I feel so fortunate.*

Women Should Maintain a Healthy Pregnancy. In addition to their views about feeling lucky to be pregnant, Latina women stressed that pregnancy is a major and important

responsibility, and maintaining a healthy pregnancy is essential for the health of their baby—their main priority. According to Daimí:

> *When you take care of yourself, the baby will develop better. You have to give up a lot to have a healthy pregnancy, and it's challenging. Taking care of yourself is the priority, for the health of the baby.*

Women did not want to do anything that might harm their babies. For example, Estela explained, "*Pregnancy is a big responsibility, and you need to be more careful with everything that you do; if not, you will harm the baby*." Amelia. said:

> *Normally, you need to take care of yourself. But when you get pregnant, you need to focus on the baby. When you are pregnant, your body changes. That may change the way you feel about yourself. But you need to forget about how you feel, and just make sure that the baby is healthy.*

Other women supported this view. Carmen said, "*It's a big responsibility because you don't want to do anything that can harm the baby*." Flor explained, "*You need to give up things that might harm the baby*." Accordingly, women talked about engaging in healthy behaviors, such as eating healthier to provide nutrients for their babies, staying active, exercising, and drinking water. Women also refrained from engaging in any behavior that could harm their babies, such as lifting heavy objects, climbing stairs, drinking alcohol, or using drugs. In Melida's case, becoming pregnant made her develop healthier habits. She said:

> *I am eating healthier than I was before I became pregnant. The responsibility helps me because before I was eating for myself, and now, I am eating for my baby. That motivates me to eat better. I also try to walk once a day. I am more careful now.*

Family Involvement in Pregnancies in Latino Culture. The final theme that emerged in this category was how involved the women's families were in their pregnancies. Their family members made sure that they were taken care of, worried about them and their nutrition, and always gave them advice and shared their pregnancy experiences. For example, Carmen said:

> *In Latino culture, they treat pregnant women as something fragile, always asking us what we want to eat or what we are craving. In our culture, the family is always ready to help, making sure that you maintain a healthy pregnancy, that you are taking care of yourself, things like that. It is very important, and it is something that I have noticed in Latino families.*

Victoria, Delia, and Andrea shared similar experiences regarding the involvement of their families in their pregnancies. For example, Victoria said, "*My family tells me that I need to take care of myself, eat healthy, and not lift anything heavy or not to do this or that, because having a healthy pregnancy is my responsibility."* Similarly, Delia said*, "Pregnancy is important in our culture, so everyone worries about how I am taking care of myself."* According to Andrea, *"My family tells me, eat this, eat that, eat regularly, because in our culture pregnancy is important. They worry about our nutrition."*

Category 3: Privileged Status Associated With Being Pregnant

Special Status Given to Pregnant Women. In the final category, women spoke about the superior, privileged, and special status that they received during their pregnancy. This theme is illustrated in Carmen's own words. She said:

> *It feels special to be pregnant and, in my culture, when you see a pregnant woman, you offer her help. We are treated more special than when we are not pregnant. It is a special status due to being pregnant. You are treated in a way you aren't normally treated.*

The overall message was that the status of pregnant women is elevated because they need to be cared for and looked after more than when they are not expecting. For example, Daimí explained, "*I think pregnant women are superior because you need much more care and to be treated better. It is a necessity that you feel*." Natasha shared a similar experience. "*When you are pregnant, you are privileged. It's something you need. Since you are pregnant, you need more attention."* According to Amelia:

> *I get more attention. Everyone makes sure that I get what I need, that I don't have any accidents. It makes me feel special because it's something that you don't experience when you aren't pregnant. They give you more attention when you are pregnant.*

Recognition of Special Status of Pregnant Women. Women were asked to provide concrete examples of the different ways their special status was recognized in their daily lives. They talked about the extra care that they received during their pregnancies. Women were often told to relax, rest, and not do anything. For example, Martha explained:

> *I feel like my family appreciates me more. They are always trying to take care of me now that I am pregnant. They don't let me do anything. They want me to rest. They call me and ask how the baby and I are doing.*

Similarly, Melida said, "*Sometimes I am in the living room and visitors come, so I get up to give them water, but I am told not to stand up and to stay seated. Things like that. They do lots of things for me that I could have done alone."* Women shared that their family members insisted on helping them with their daily tasks, such as carrying items for them, getting them water, bringing them food, spoiling them, and helping them clean. Carmen explained:

> *I've noticed that my family is very attentive. If I want water, ice, or something to eat, they bring it. It's that extra special attention that you don't normally experience when you are not pregnant.*

Other women described how their friends and family often called to see how they were doing, to make sure that they were healthy, or to ask about the baby. In Anna's case, she was surprised to receive this extra attention from people with whom she had not spoken in years. Women also shared that their friends and family visited them, gave them support, expressed their happiness for them, and treated them with more patience than they normally had in the past. Overall, this special attention was positive and welcome. For example, Daimí explained that the attention she receives makes her feel good; it is as if she is "*on another level because she is pregnant*". However, Melida wished she was treated more normally:

Sometimes, I would like them to treat me normally because there are times when I can do the things myself, and it is good for me to move. They don't understand that I need more exercise, but it is part of the culture.

Discussion

Study 2 contributes to research on Latina pregnancies by documenting Latina women's perceptions of pregnancy anxiety and cultural beliefs surrounding pregnancy and motherhood. A key feature of the study design was that the focus group and individual interviews were all conducted in Spanish. This feature of the study promoted rich conversations regarding culturally-relevant topics between the interviewer and participant in their native languages. The findings for Aim 1 revealed that Latina women felt that experiencing anxiety about their pregnancies was normal. This suggests that experiencing anxiety surrounding a current pregnancy may be accepted, or perhaps expected, in Latino culture. In addition, there is no evidence in prior research that women of other ethnicities consider pregnancy anxiety to be normal, but further research is needed.

In terms of the specific worries that women had, themes emerged in the data about being fearful of childbirth, the baby being born with a birth defect, and losing the baby. For some women, the current issues in the United States made them more anxious or distressed during their pregnancies, thus they avoided watching the news altogether. Other women did not feel affected by the sociopolitical climate. Women also coped with their anxiety through distraction, prayer, and talking to their partners, mothers, mothers-in-law, sisters, aunts, and friends. The finding that women expressed being afraid about childbirth is consistent with prior research indicating that Latina women were especially fearful about dying during birth and leaving their babies motherless (Scrimshaw et al., 1997).

In addition to identifying which aspects of pregnancy were anxiety-provoking, this study also provides important information on the sources of their pregnancy anxiety. For example, the fears about childbirth were fueled by prior traumatic experiences with giving birth. The literature on prior traumatic childbirth experiences in Latina women has focused on adolescent mothers, indicating that marital status, fear of dying, fear of loss of control, and partner violence are all related to the likelihood of appraising the birth experience as traumatic (Anderson, 2010). In other studies of non-Latina women, traumatic childbirth experiences have been associated with negative relationships with their infants and other family members, and with negative breastfeeding experiences (Beck & Watson, 2010).

Fears about losing the baby were fueled by concerns about being older and knowing that the first trimester is the riskiest. In addition, a few women who had experienced prior miscarriages feared that it could happen again with their current pregnancy. The last finding aligns with the results of a study by Fertl, Bergner, Beyer, Klapp, and Rauchfuss (2009), which found that in a German sample of pregnant women, those with a prior miscarriage had higher levels of pregnancy-related anxiety than women without prior miscarriages. Considering that early pregnancy-related fear was significantly correlated with complications during pregnancy and delivery in the German sample, examining predictors and consequences of prior traumatic childbirth is worth investigating in Latina women, whose previous childbirth experiences impacted their experience of pregnancy anxiety in the present study.

Overall, the results of Aim 1 provide potential clues for which sources of pregnancy anxiety may be particularly salient for Latina women. Moreover, this data sheds light on the potential sources of those fears, including cultural sources, which have not been explored in prior research. This information contributes to a better understanding of the experience of pregnancy

anxiety in Latina women. If these results are replicated in larger samples, they may provide help in translation for the development of targeted interventions to reduce pregnancy anxiety and improve the pregnancy experience among Latina women.

Regarding Aim 2, one theme was that pregnancy warrants respect because of the life that women bring into the world and the sacrifices they make to be a mother. In addition, cultural ideas regarding pregnancy and motherhood emerged, specifically that pregnancy is important, expected, and respected. These themes are related to the concept of *marianismo*, the female counterpart of *machismo* in Latino culture. *Marianismo* is a gender-specific value that emphasizes the self-sacrificing mother who is blessed with moral superiority (Sampson et al., 2017; Stevens, 1973). A few studies have examined how the endorsement of this cultural value is related to physical and mental health among immigrant Latinas, but none have studied it during pregnancy. Endorsement of *marianismo* has been positively associated with interpersonal violence and psychological distress (Da Silva et al., 2018) and negatively associated with physical activity (D'Alonzo, 2012) in immigrant Latinas. Given the prior research presented here, a potential future research direction is to examine whether *marianismo* is related to increased distress or health behaviors during pregnancy in Latinas.

Findings from Aim 2 also indicated that many women considered pregnancy to be a blessing and felt fortunate to be pregnant. Interestingly, women felt fortunate to be pregnant because they knew other women who struggled to conceive. This raises possible questions on the stigma of infertility in Latino culture, and whether Latina women feel pressure, perhaps by their family members, to be able to conceive. The findings on pregnancy being a blessing were not surprising given prior research indicating that compared to African American women, Mexican American and Mexican immigrant women living in Los Angeles, California, reported feeling

more special, happy, and lucky about their pregnancies in a larger prior study (Zambrana et al., 1999). In this study, positive attitudes toward pregnancy was directly associated with higher infant birthweight, and indirectly associated with gestational age, explained by lower prenatal stress. Given these findings and the results presented in this study, future studies of large Latina samples should further investigate whether positive attitudes toward pregnancy are protective for pregnancy outcomes, such as the timing of delivery and infant birth weight, and the potential pathways explaining these associations.

Further, Aim 2 revealed that women felt that maintaining a healthy pregnancy was a major responsibility and essential for the health of their baby, which was their main priority. To achieve a healthy pregnancy, women developed or maintained healthy behaviors, such as eating healthy foods, exercising, and drinking water. These findings are consistent with results from a prior qualitative study of Puerto Rican and Dominican women living in the United States, who indicated that having a healthy baby was the primary goal of their pregnancies (Pearce, 1998). Moreover, they developed positive health behaviors such as balancing activity and rest, eating healthy foods, and seeking health education.

These results raise interesting questions about where Latina women learn about the importance of maintaining a healthy pregnancy and engaging in healthy behaviors to promote positive child outcomes. The current study reveals a potential answer: family members were very involved in these women's pregnancies. The women's family members reminded them to take care of themselves and stressed the importance of maintaining a healthy pregnancy, often worried about their nutrition and gave them frequent pregnancy-related advice. The extent to which this occurs equally in other groups is not known but appears to be especially prominent in Latinas.

Future studies might further identify whether the responsibility of maintaining a healthy pregnancy contributes to Latina women feeling increased pressure or anxiety. Perhaps pregnant Latina women feel pressure to maintain a healthy pregnancy so as not to let down their family members, who are actively involved and invested in their pregnancies. Alternatively, they may feel that they might be blamed if something bad were to happen to their baby. Future studies should investigate in more detail these potential sources of distress emanating from cultural sources in Latina pregnancies. Such studies might prospectively investigate whether the responsibility associated with maintaining a healthy pregnancy is a source of anxiety for pregnant Latina women, or is related to a woman's level of anxiety and if such relationships are associated with the timing of her delivery. It is possible that these sources of worry in Latinas are not captured in existing pregnancy anxiety scales. One future direction in this work is to develop a pregnancy anxiety scale specifically for Latinas to more directly assess culturally-based sources of pregnancy anxiety such as feeling pressure from family members to maintain a healthy pregnancy.

Finally, the results of Aim 3 revealed that pregnant Latina women receive a superior, privileged, or special status as a result of being pregnant. This finding is consistent with two prior studies indicating that Mexican immigrants and Mexican American families associate pregnancy with privilege and higher social status (Fleuriet, 2009; Fleuriet & Sunil, 2014; Laganá, 2003). When asked about the specific ways their special status was recognized in their daily lives, these women shared how their family members constantly told them to relax and rest and helped them complete daily chores during their pregnancies. Family members and friends also visited them more, gave them extra support, and treated them with more patience and care than they normally did when they were not pregnant. Although prior studies have found that

Latina pregnancies are characterized as positive, happy, and a time of privilege, this is the first study to examine the different ways that their elevated status is recognized. The women's social network made them feel that they had a superior status, mainly by attending to their needs and providing extra care.

Privileged status as a function of being pregnant could have positive effects for some aspects of Latina prenatal health but could perhaps have a negative impact on Latina postpartum emotional health. For example, Latina women may have higher levels of self-esteem during their pregnancies because they are treated with an elevated and privileged status. However, they presumably lose this special status after they give birth. This could be distressing for some women who welcomed or enjoyed the privileged status. This hypothesis was not be examined in the present study, but future research can expand on the evidence provided here by examining whether this privileged status may have negative consequences during postpartum—specifically, whether losing their special status is associated with negative emotions or decreased self-esteem after giving birth. Alternatively, being a mother may also carry special status in Latin culture, which should be considered as well.

Limitations

Some limitations need to be considered when interpreting these results. First, the sample is comprised of a small number of participants in Los Angeles, California, and thus, the views are not representative of the population of Latinas living in the United States. Relatedly, the sample is mostly comprised of women of Mexican descent. Latinas living in the United States also come from many Caribbean, and Central and South American countries, and we were unable to recruit participants from these geographical areas, which would have provided richer data on the cultural variations within the Latino sub-samples. Nonetheless, these results provide

a basis to generate further theoretical premises and testable hypotheses. Second, the study does not have a comparison group of a different ethnic background. Comparison groups would be useful to determine which aspects of pregnancy anxiety and beliefs about pregnancy are specific to Latinas versus common among pregnant women across different ethnic backgrounds. Third, the small sample size limited the ability to conduct any quantitative analyses of the information collected using the pregnancy anxiety and somatization scales.

Conclusions

In sum, Study 2 provides valuable information on the experience of pregnancy anxiety, and beliefs related to pregnancy, in a sample of Spanish-speaking pregnant Latina women living in Los Angeles, California. No studies have done this type of work, which illustrates specific themes that may be important in Latina pregnancies. Prior research has found that pregnancy anxiety predicts shorter gestational length, particularly for Latina women, and this study takes a necessary step in revealing why this may be the case. In particular, the results reveal the most prevalent sources of pregnancy-related concerns and their origins. Findings indicate childbirth, losing the baby, and the baby being born with a defect were the most salient sources of anxiety.

In general, the discussions about the attitudes surrounding pregnancy revealed that women believed that pregnancy was respected and a blessing. In addition, most women in the present study felt fortunate to be pregnant. The importance of maintaining a healthy pregnancy and family involvement in their pregnancies also emerged as themes in the data. Finally, pregnancy was characterized as a time of privileged status. These findings may guide future hypotheses to further investigate these prenatal experiences and beliefs about pregnancy, with the goal of improving the pregnancy experience among Latina women. These findings represent

a significant step forward in understanding the role of culture on maternal affect in Latinas at a crucial time in their childbearing years.

General Conclusions

This dissertation was based on theoretical perspectives involving biopsychosocial and cultural variables in pregnancy across two studies. Taken together, the findings add to our understanding of Latina pregnancies and the contexts in which they occur.

Study 1 was a prospective, longitudinal study with a sample of Latina and non-Latina White women guided by four aims involving pregnancy anxiety, the timing of delivery, and the role of ethnic and cultural moderators. Pregnancy anxiety was assessed at the first, second, and third trimesters of pregnancy by interviews with mothers. Latina and non-Latina White women had similar levels of pregnancy anxiety and gestational length. Pregnancy anxiety at each time point predicted the length of gestation in the full sample of Latina and non-Latina White women. Moderation analyses revealed that pregnancy anxiety was associated with gestational length for Latinas in the full sample and less acculturated Latinas in the Latina subset. This research contributes to existing knowledge confirming that pregnancy anxiety is a consistent contributor to the length of gestation, especially among Latina women living in the United States. It affirms that ethnicity and acculturation are relevant to the understanding of biopsychosocial and cultural pathways leading to the timing of delivery.

Study 2 used a qualitative methodology to investigate pregnancy anxiety and cultural beliefs surrounding pregnancy and motherhood among Latinas. One focus group and 11 individual interviews were conducted in Spanish with pregnant Latinas. Thematic analysis revealed that Latina women felt that experiencing anxiety during pregnancy was normal, and that they were particularly concerned about childbirth, losing their babies, their babies being born with a birth defect, and the current sociopolitical climate in the United States.

Regarding attitudes and beliefs about pregnancy and the transition to motherhood, Latinas felt fortunate to be pregnant, believed that pregnancy was a blessing, and that pregnancy warranted respect. In addition, women shared the importance of maintaining a healthy pregnancy, and how involved their families were in their pregnancies in order to achieve that goal. Finally, women described the privileged status that they had been given during their pregnancies, and how this status was recognized in their daily lives. Overall, the results of Study 2 provide specific themes that may be important to consider in the context of Latina pregnancies and that future work should continue to investigate.

Each of these studies had limitations and strengths, as previously described. In particular, both studies had smaller sample sizes than would be ideal and most of the participants were of Mexican origin and unrepresentative of other Latino groups living in the United States. Nonetheless, both studies contribute to the limited research on Latina pregnancies. These findings show that anxiety surrounding a current pregnancy has clear implications for Latina women, and shed light on the experience of pregnancy anxiety and beliefs about pregnancy in this growing population. This research also contributes to the understanding of psychological, cultural, and biological integration in prenatal health. Specifically, it addresses the physiological mechanisms through which cultural processes become biologically embedded. As these results are replicated in larger studies, this work has the potential to contribute to the development of targeted evidence-based interventions for Latinas to improve maternal and child outcomes.

Table 1.1

Descriptives and Tests of Ethnic Differences for Demographic and Key Variables

	Full Sample (N = 125)			Latina (n = 53)			Non-Latina White (n = 72)			F or χ^2	p
	M	*SD*	*Range*	*M*	*SD*	*Range*	*M*	*SD*	*Range*		
Age at study entry	31.57	5.39	18-44	31.13	5.94	18-42	31.90	4.96	20-44	0.62	.432
Per capita household income	32.11	26.61	0-130	25.93	23.41	0-130	36.49	28.01	0-130	4.65	.033
Medical risk index	0.74	0.90	0-4	0.72	0.96	0-4	0.76	0.86	0-3	0.05	.817
Years of education	16.14	3.29	7-26	14.34	2.95	7-21	17.45	2.89	12-26	34.60	.000
Length of gestation (weeks)	39.57	1.36	32-42.1	39.31	1.52	32-42.1	39.75	1.20	36.8-42.14	0.80	.372
Time 1 Pregnancy anxiety	2.12	0.87	1-5	2.07	0.89	1-5	2.16	0.86	1-5	0.54	.461
Time 2 Pregnancy anxiety	1.97	0.83	1-5	2.00	0.83	1-5	1.94	0.84	1-5	0.19	.659
Time 3 Pregnancy anxiety	1.97	0.81	1-4.75	2.00	0.86	1-4.75	1.95	0.77	1-4.25	0.29	.591
Married or partnered	70%			69%			87%			7.29	.063
Nulliparity (first birth)	52%			59%			43%			3.26	.071

Note. N = 125. Per capita household income was calculated as total annual household income divided by household size, adjusted for cost of living in Los Angeles, California, or Denver, Colorado, in units of thousands of dollars. The medical risk variable was calculated as the total number of conditions present based on medical history (e.g., diabetes), pregnancy history (e.g., previous abortions), and current pregnancy complications (e.g., bacterial vaginosis).

Table 1.2

Descriptives for Demographic and Key Variables in Latinas by Acculturation

	Low Acculturation (n = 24)			High Acculturation (n = 29)			F or χ^2	p
	M	*SD*	*Range*	*M*	*SD*	*Range*		
Age at study entry	30.70	5.56	18-40	31.48	6.32	19-42	0.21	.642
Per capita household income	19.48	12.42	1.02-45.50	30.77	28.34	0-130	2.90	.095
Medical risk index	0.45	0.67	0-2	0.93	1.09	0-4	3.21	.079
Years of education	13.00	2.75	7-18	15.46	2.66	11-21	10.91	.002
Length of gestation (weeks)	38.91	1.95	32-42.1	39.55	0.93	37.8-41.7	0.39	.534
Time 1 Pregnancy anxiety	2.18	1.07	1-5	2.02	0.71	1-4	0.30	.585
Time 2 Pregnancy anxiety	1.93	0.98	1-5	2.01	0.66	1-3.50	0.37	.545
Time 3 Pregnancy anxiety	2.15	0.97	1-4.75	1.89	0.69	1-3.75	0.16	.685
Married or partnered	79%			62%			2.54	.468
Nulliparity (first birth)	25%			58%			6.04	.014

Note. N = 125. Per capita household income was calculated as total annual household income divided by household size, adjusted for cost of living in Los Angeles, California, or Denver, Colorado, in units of thousands of dollars. The medical risk variable was calculated as the total number of conditions present based on medical history (e.g., diabetes), pregnancy history (e.g., previous abortions), and current pregnancy complications (e.g., bacterial vaginosis).

Table 1.3

Bivariate Correlations of Key Study Variables

	1	2	3	4	5	6	7	8	9	10	11
1. Time 1 Pregnancy anxiety	-	.59**	.50**	-.23**	.00	-.04	.08	.05	-.49	-.07	.17*
2. Time 2 Pregnancy anxiety		-	.58*	-.22*	.03	-.13	.07	-.09	-.13	-.17*	.16
3. Time 3 Pregnancy anxiety			-	-.24**	-.15	-.19*	-.04	-.13	-.15	-.02	.21*
4. Length of gestation (weeks)				-	.08	.12	-.07	.03	.19*	-.14	-.12
5. Time 1 pCRH (ln)					-	.64**	.32**	-.06	-.02	-.12	-.02
6. Time 2 pCRH (ln)						-	.54**	-.01	.10	-.06	-.07
7. Time 3 pCRH (ln)							-	.02	.00	-.14	-.00
8. Per capita household income								-	.29**	-.04	.00
9. Years of education									-	-.19*	-.13
10. Nulliparity										-	.09
11. Medical Risk											-

Note. $N = 125$. Per capita household income was calculated as total annual household income divided by household size, adjusted for cost of living in Los Angeles, California, or Denver, Colorado, in units of thousands of dollars. The medical risk variable was calculated as the total number of conditions present based on medical history (e.g., diabetes), pregnancy history (e.g., previous abortions), and current pregnancy complications (e.g., bacterial vaginosis). pCRH data were log transformed. Nulliparity was coded as (0 = non-first birth, 1 = first birth)

*$p < .05$.

** $p < .01$.

Table 1.4

Regression Coefficients of Separate Models Predicting Length of Gestation from Pregnancy Anxiety

Model	*b*	*SE*	*t*	*p*	Cohen's *d*
Time 1 Pregnancy anxiety	-0.36	0.14	-2.54	.012	.50
Time 2 Pregnancy anxiety	-0.39	0.15	-2.61	.010	.44
Time 3 Pregnancy anxiety	-0.39	0.15	-2.53	.013	.47

Note. $N = 125$. All analyses account for per capita household income, years of education, marital status (married/partnered or not married/partnered), and nulliparity (first birth or not first birth).

Table 1.5

Bootstrapped Analyses of Moderation Models Predicting Length of Gestation from Pregnancy Anxiety as Modified by Ethnicity

Model		*b*	*SE*	*p*
1	Years of education	0.05	0.04	.265
	Per capita household income[a]	0.00	0.00	.839
	Nulliparity[b]	-0.33	0.24	.174
	Marital status[c]	-0.25	0.33	.462
	Pregnancy anxiety (Time 1)	0.37	0.34	.280
	Ethnicity[d]	0.37	0.22	.095
	Ethnicity*Pregnancy anxiety	-0.22	0.09	.018
2	Years of education	0.05	0.04	.256
	Per capita household income	-0.00	0.00	.783
	Nulliparity	-0.37	0.25	.140
	Marital status	-0.45	0.32	.166
	Pregnancy anxiety (Time 2)	0.49	0.34	.152
	Ethnicity	0.44	0.21	.038
	Ethnicity*Pregnancy anxiety	-0.28	0.10	.005
3	Years of education	0.05	0.04	.233
	Per capita household income	-0.00	0.00	.932
	Nulliparity	-0.21	0.25	.408
	Marital status	-0.44	0.33	.193
	Pregnancy anxiety (Time 3)	0.26	0.38	.504
	Ethnicity	0.27	0.22	.226
	Ethnicity*Pregnancy anxiety	-0.19	0.10	.065

Note. $N = 125$.

[a] Per capita household income was calculated as total annual household income divided by household size, adjusted for cost of living in Los Angeles, California, or Denver, Colorado.

[b] Nulliparity coded as (0 = non-first birth, 1 = first birth).

[c] Marital status coded as (0 = married/partnered, 1 = not married/partnered).

[d] Ethnicity coded as (0 = Non-Latina White, 1 = Latina).

Table 1.6

Bootstrapped Analyses of Moderation Models Predicting Length of Gestation from Pregnancy Anxiety as Modified by Acculturation

Model		*b*	*SE*	*p*
1	Years of education	0.02	0.08	.792
	Per capita household income[a]	0.02	0.01	.032
	Nulliparity[b]	-0.66	0.40	.109
	Medical risk[c]	0.00	0.21	.100
	Pregnancy anxiety (Time 1)	-2.06	0.63	.002
	Acculturation[d]	-1.81	1.03	.088
	Acculturation*Pregnancy anxiety	0.86	0.44	.060
2	Years of education	0.02	0.08	.766
	Per capita household income	0.02	0.01	.066
	Nulliparity	-0.45	0.42	.283
	Medical risk	-0.06	0.22	.795
	Pregnancy anxiety (Time 2)	-2.22	0.70	.002
	Acculturation	-1.87	1.11	.101
	Acculturation*Pregnancy anxiety	1.05	0.49	.038
3	Years of education	0.02	0.08	.900
	Per capita household income	0.02	0.01	.068
	Nulliparity	-0.20	0.43	.550
	Medical risk	-0.15	0.24	.550
	Time 3 pregnancy anxiety	-1.67	0.72	.026
	Acculturation	-1.34	1.09	.226
	Acculturation*Pregnancy anxiety	0.75	0.50	.137

Note. $N = 125$.

[a] Per capita household income was calculated as total annual household income divided by household size, adjusted for cost of living in Los Angeles, California, or Denver, Colorado.

[b] Nulliparity coded as (0 = non-first birth, 1 = first birth).

[c] The medical risk variable was calculated as the total number of conditions present based on medical history (e.g., diabetes), pregnancy history (e.g., previous abortions), and current pregnancy complications (e.g., bacterial vaginosis).

[d] Acculturation coded as (0 = Low Acculturated, 1 = High Acculturated).

Table 1.7

Bootstrapped Analyses of Mediation Models Predicting Length of Gestation from Pregnancy Anxiety as Mediated by pCRH Levels

Model	Predictor	Mediator	Indirect Effect	*SE*	*LLCI*	*UCLI*
1	Time 1 Pregnancy anxiety	Time 1 pCRH (ln)	0.00	0.02	-0.05	0.04
2	Time 1 Pregnancy anxiety	Time 2 pCRH (ln)	-0.01	0.03	-0.09	0.04
3	Time 1 Pregnancy anxiety	Time 3 pCRH (ln)	-0.01	0.02	-0.06	0.03
4	Time 2 Pregnancy anxiety	Time 2 pCRH (ln)	-0.02	0.04	-0.12	0.03
5	Time 2 Pregnancy anxiety	Time 3 pCRH (ln)	-0.01	0.02	-0.06	0.03
6	Time 3 Pregnancy anxiety	Time 3 pCRH (ln)	0.01	0.03	-0.03	0.08

Note. LLCI = lower limit of confidence interval; ULCI = upper limit of confidence interval. Confidence intervals are bias-corrected and based on 5,000 bootstrapped samples. pCRH data were log transformed. All analyses account for per capita household income, years of education, marital status (married/partnered or not married/partnered), and nulliparity (first birth or not first birth).

Table 1.8

Bootstrapped Analyses of Mediation Models Predicting Length of Gestation from Pregnancy Anxiety as Mediated by pCRH Trajectories

Model	Predictor	Mediator	Indirect Effect	*SE*	*LLCI*	*UCLI*
1	Time 1 Pregnancy anxiety	Time 1 - Time 3 Δ pCRH (ln)	-0.01	0.02	-0.05	0.03
2	Time 2 Pregnancy anxiety	Time 1 - Time 3 Δ pCRH (ln)	-0.01	0.02	-0.06	0.04
3	Time 3 Pregnancy anxiety	Time 1 - Time 3 Δ pCRH (ln)	-0.02	0.02	-0.07	0.02

Note. LLCI = lower limit of confidence interval; ULCI = upper limit of confidence interval. Confidence intervals are bias-corrected and based on 5,000 bootstrapped samples. pCRH data were log transformed. All analyses account for per capita household income, years of education, marital status (married/partnered or not married/partnered), and nulliparity (first birth or not first birth).

Table 2.1

Descriptive Information for Each Participant in Study 2

Name	Age	Birth Country	Education[a]	Income[b]	Marital Status[c]	Gestational Week[d]	Interview or Focus Group	Number of children	PSA[e]	PRA[f]	SCL-90-R[g]
Delia	39	Mexico	H.S	20	Married	25.0	Focus Group	3	2.25	2.00	1.83
Flor	35	Guatemala	H.S	20	Partnered	26.0	Focus Group	4	3.00	2.60	1.42
Andrea	28	U.S.	College	23	Partnered	14.0	Focus Group	1	1.25	1.30	2.17
Daimí	38	Honduras	H.S.	50	Married	35.0	Interview	3	2.25	1.40	1.50
Estela	27	Mexico	H.S.	12	Partnered	31.0	Interview	1	2.50	1.90	1.92
Amelia	28	Mexico	H.S.	2	Married	38.0	Interview	3	2.25	1.20	2.58
Martha	28	Mexico	H.S.	23	Married	33.0	Interview	2	2.25	1.20	1.58
Victoria	28	Mexico	College	100	Married	25.0	Interview	0	1.00	2.20	1.42
Melida	29	U.S.	College	180	Married	23.0	Interview	0	2.50	2.50	1.58
Anna	23	U.S.	H.S.	40	Single	12.0	Interview	0	3.50	1.40	2.33
Carmen	25	U.S.	College	60	Partnered	33.0	Interview	0	1.50	2.20	1.17
Karla	20	U.S.	College	30	Married	7.5	Interview	2	2.00	1.50	2.50
Melida	25	Mexico	College	12	Partnered	21.0	Interview	2	1.50	1.00	1.17
Ruby	29	U.S.	College	15	Married	32.0	Interview	2	2.50	2.10	3.42

[a] H.S. indicates High School.
[b] Household income in units thousands of dollars.
[c] Partnered indicates not married, but in a romantic relationship.
[d] Gestational week at interview or focus-group discussion.
[e] Pregnancy-Specific Anxiety.
[f] Pregnancy-Related Anxiety.
[g] Somatization subscale of the Symptom Checklist-90-Revised.

Table 2.2

Study 2 Categories and Themes

Category	Themes
Experiences of Pregnancy Anxiety	Having Anxiety About Pregnancy is Normal Fears About Childbirth Fears About the Baby Being Born With a Birth Defect Worries About Losing the Baby Current Issues in the U.S. Affecting Moods During Pregnancy Ways Women Coped With Their Pregnancy Anxiety
Attitudes and Beliefs About Pregnancy and the Transition to Motherhood	Pregnancy Warrants Respect Pregnancy is a Blessing From God Women Should Feel Lucky to be Pregnant Women Should Maintain a Healthy Pregnancy Family Involvement in Pregnancies in Latino Culture
Privileged Status Associated with Being Pregnant	Special Status Given to Pregnant Women Recognition of Special Status in Pregnant Women

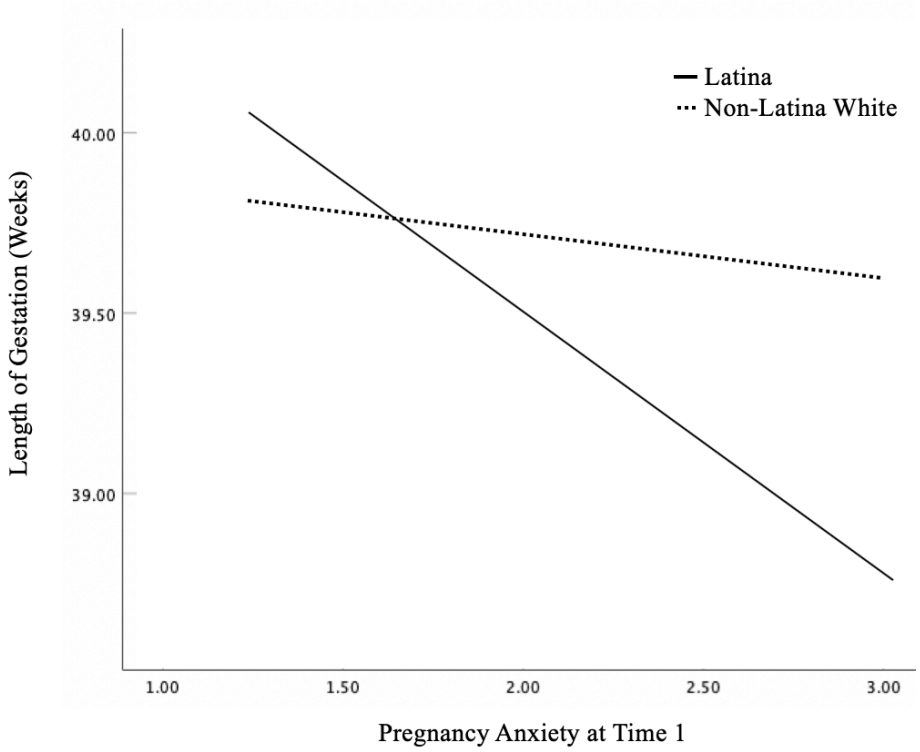

Fig. 1. Ethnic Differences in the Effect of Pregnancy Anxiety at Time 1 on Length of Gestation.

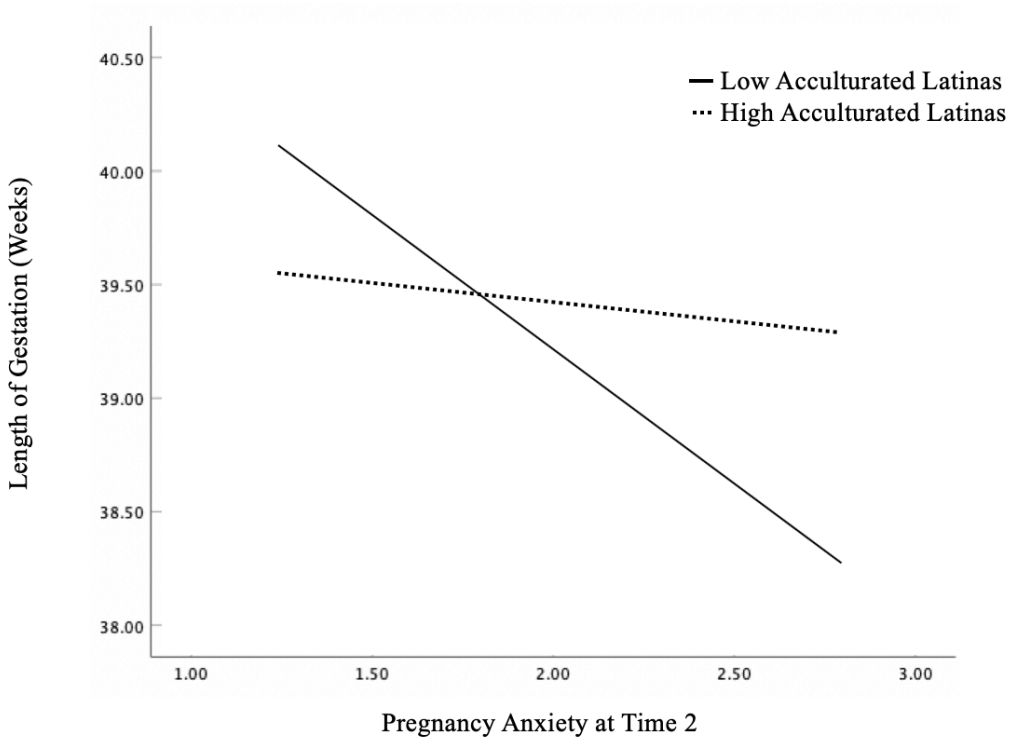

Fig. 2. Acculturation Differences in the Effect of Pregnancy Anxiety at Time 2 on Length of Gestation.

Appendix A: Study 1 Questionnaires

Pregnancy-Specific Anxiety Scale (Roesch, Dunkel Schetter, Woo, & Hobel, 2004)

In the past week, how often have you felt _____ about being pregnant?

1 = Never
2 = Rarely
3 = Sometimes
4 = Often
5 = Always

1. **Anxious**
2. Confident
3. In conflict (had mixed feelings)
4. Lucky
5. **Concerned**
6. Excited
7. Upset
8. Happy
9. **Afraid**
10. Special
11. **Panicky**
12. Pleased
13. Healthy

Short Acculturation Scale (Marín, Sabogal, Marín, Otero-Sabogal, & Perez-Stable, 1987)

1 = Only Spanish
2 = More Spanish than English
3 = Both languages equally
4 = More English than Spanish
5 = Only English

1. In general, what language(s) do you read and speak?
2. What was the language(s) you used as a child?
3. What language(s) do you usually speak at home?
4. In which language(s) do you usually think?
5. What language(s) do you usually speak with your friends?
6. In what language(s) are the T.V. programs you usually watch?
7. In what language(s) are the radio programs you usually listen to?
8. In general, what language(s) are the movies, T.V. and radio programs you prefer to watch and listen to?

1 = All Latinos or Hispanics
2 = More Latinos/Hispanics than any other group
3 = About half and half
4 = More from other groups than Latinos
5 = None are Latino/Hispanic

9. Would you say your close friends are...
10. Would you say you prefer going to social gatherings/parties at which people are...
11. Would you say the people you visit or who visit you are...

Appendix B: Study 2 Recruitment Flyer

Are you pregnant? Do you identify as Latina?

To participate in this UCLA research study, you must:

- Be pregnant
- Speak Spanish
- Identify as Latina/ or Hispanic
- Be 18 years or older

We would like to hear about your pregnancy! Participate in this group discussion (in Spanish) to help us understand your emotional experiences during your pregnancy.

All participants will remain confidential and any information shared will only be used for research purposes. Discussions will be audio recorded. Participants will be compensated with a $40 gift card.

To participate in the study, please contact Isabel Ramos at [redacted]

Protocol ID: IRB#18-001850 UCLA IRB Approved Approval Date: 1/8/2019 Through: 1/7/2022

Study 2 Recruitment Flyer (Spanish)

¿Estás embarazada?

Para participar en este estudio de UCLA usted necesita:

- Estar embarazada
- Ser mayor de 18

¡Nos gustaría escuchar de sus experiencias durante el embarazo! Participe en una discusión (en español) para expresar sus experiencias durante su embarazo.

Toda la información será confidencial y solo será usada para la investigación. Las discusiones serán grabadas. Todas las participantes serán recompensadas con una tarjeta de regalo de $40.

Para participar en este estudio, por favor contacte a Isabel Ramos: [redacted]

Appendix C: Study 2 Questionnaires

Preguntas demográficas

1. Contando el día de hoy, ¿cuántas semanas de embarazo tiene?
2. ¿Cuántos hijos ha parido?
3. ¿Qué edad cumplió en su último cumpleaños?
4. ¿Con qué raza/etnicidad se identifica?
5. Por favor, indique todos los que apliquen:
    a. Latina
    b. Hispana
    c. Mexicana
    d. Mexicana americana
    e. Chicana
    f. Americana
    g. Latinoamericana
    h. Blanca/angloamericana
    i. Afroamericana
    j. Etnicidad mixta/multirracial, por favor describa:
    k. Otro, por favor describa:
6. ¿En qué país nació?
    a. Si nació fuera de los Estados Unidos, ¿qué edad tenía cuando se mudó a los EE.UU.?
7. ¿En qué país nació su madre?
8. ¿En qué país nació su padre?
9. ¿Cuál es su grado educacional máximo que ha completado?
    a. Ninguno
    b. Primaria, básica o media
    c. Secundaria o GED
    d. Escuela técnica o vocacional
    e. Diplomado o Certificado
    f. Licenciatura o Bachillerado
    g. Título de postgrado (maestría, doctorado, medicina, leyes
    h. Otro: Por favor describa:
10. ¿Cuál fue el ingreso total de su hogar durante el año anterior? (Antes de impuestos)
11. ¿Cuál es el estatus actual con el padre del bebé?
    a. Casada
    b. No casada, pero en una relación romántica
    c. No casada, ni en una relación romántica

Pregnancy-Related Anxiety (Rini, Dunkel Schetter, Wadhwa, & Sandman, 1999)

Las próximas preguntas son sobre sus sentimientos y expectativas acerca del bebé y el parto. Por favor, lea cada pregunta e indique sus pensamientos.

1 = Para nada
2 = Un poco
3 = Moderado
4 = Mucho

1. Tengo confianza que tendré un parto normal.
2. Creo que el parto y alumbramiento irán normalmente.
3. Tengo mucho miedo con respecto a la salud de mi bebé.
4. Estoy preocupada que el bebé pueda ser anormal.
5. Temo que sufriré daño durante el parto.
6. Estoy preocupada por cómo el bebé está creciendo y desarrollando dentro de mí.
7. Estoy preocupada de perder al bebé.
8. Estoy preocupada de tener un parto difícil.
9. Estoy preocupada de cuidar a un recién nacido.
10. Estoy preocupada de desarrollar problemas médicos durante el embarazo.

Pregnancy-Specific Anxiety Scale (Roesch, Dunkel Schetter, Woo, & Hobel, 2004)

Durante la última semana, ¿con qué frecuencia se ha sentido _____ de este embarazo?

1 = Nunca
2 = Rara vez
3 = A veces
4 = A menudo
5 = Siempre

1. **Ansiosa**
2. Confiada
3. En conflicto
4. Afortunada
5. **Preocupada**
6. Emocionada
7. Molesta
8. Feliz
9. **Miedo**
10. Especial
11. **Pánico**
12. Satisfecha
13. Saludable

Symptoms Inventory SCL-90 (Derogatis, Lipman, & Covi, 1973)

Por favor, lea cada problema e indique cuanto le ha molestado cada problema durante la última semana.

1 = Nada
2 = Muy poco
3 = Poco
4 = Bastante
5 = Mucho

1. Dolores de cabeza
2. Sensación de mareo o desmayo
3. Dolores en el pecho
4. Dolores en la espalda
5. Náuseas o dolor de estómago
6. Calambres en manos, brazos o piernas
7. Tener dificultades para respirar bien
8. Ataques de frio o de calor
9. Hormigueos en alguna parte del cuerpo
10. Nudo en la garganta
11. Debilidad o flojedad en el cuerpo
12. Sensación de peso en mis brazos o piernas

Appendix D: Study 2 Focus Group Discussion Guide

Bienvenida

Bienvenida y muchas gracias por ser voluntaria en esta discusión. Este es un grupo de discusión para entender sus actitudes culturales y experiencias emocionales alrededor del embarazo. Estamos entusiasmadas por escuchar lo que cada uno de ustedes tiene para decir.

Antes de comenzar, quisiera repasar unas cosas básicas. Nos gustaría grabar el audio de la discusión, y Jessica tomará notas, pero quiero garantizarle que lo que usted diga no será compartido con su nombre ni con ninguna información que le pudiera identificar. Lo que comparta se mantendrá anónimo, y no será compartido con otras personas fuera del equipo de investigación. También hay unas reglas para nuestra discusión:

1. Por favor, trate de hablar de manera abierta y honesta, a la medida que usted se sienta cómoda. Si hay un tema sobre el cual usted no quiere comentar, no tiene que hacerlo. Valoramos sus opiniones, pero solamente debe expresarlas si se siente cómoda.
2. Los comentarios de todas las personas en este grupo son importantes. Si alguien está hablando, por favor, trate de no interrumpir. Yo ayudaré para asegurar que tomemos turnos.
3. Para que este sea un lugar seguro, por favor, trate a los miembros del grupo con respeto. Nadie debería discutir o contradecir las experiencias personales de otra persona.
4. Finalmente, si usted comparte sus experiencias en este grupo con cualquier otra persona después, por favor, hágalo sin utilizar nombres, ni identificar de ninguna manera a otro miembro del grupo.

Presentaciones

¿Hay alguna pregunta? Ahora, voy a encender la grabadora. Me gustaría que todos se presenten. ¿Pueden decirnos su nombre, cuántos hijos tiene, y de dónde viene su familia?

Preguntas introductorias

1. Voy a empezar con una pregunta introductoria: ¿Existen tradiciones familiares o culturales que usted realizó durante este embarazo? ¿Cuáles son?

Actitudes, valores, y creencias sobre el embarazo y la maternidad

Muchas personas tienen valores distintos acerca del embarazo. Algunos son muy positivos, otros no tanto, y difieren en cada embarazo, cada familia y para comunidades diferentes.

2. ¿Cómo se siente sobre el embarazo en general?
    a. ¿Es altamente valorado en su familia o en su comunidad? ¿Valora usted que otras personas estén embarazadas? ¿En cuáles maneras?
    b. ¿Su familia comparte estas ideas sobre el embarazo?
    c. ¿El padre de su bebé o su pareja comparte estas ideas sobre el embarazo?
3. ¿Piensa usted que las personas en su cultura (mujeres Latinas) comparten ideas o valores específicos sobre el embarazo? ¿Cuáles son? ¿Puede decirnos algo más sobre eso?
4. ¿En su opinión, qué sentimientos deberían de tener las mujeres embarazadas? ¿Alguien le ha dicho como se debería de sentir durante el embarazo? ¿Quien? ¿Que le dijeron?
5. ¿Usted cree que está bien, o es normal, sentirse un poco deprimida o triste durante el embarazo? ¿Y en general? ¿Porque está bien o no está bien sentirse así?
    a. ¿Se ha sentido un poco deprimida o triste durante el embarazo? ¿Por qué? ¿Cuándo empezó? ¿Por cuánto tiempo?
    b. ¿Está bien para su familia que usted se sienta de estas maneras? ¿En su cultura?
6. ¿Siente que está bien, o es normal, tener sentimientos de ansiedad, preocupación, o inquietud sobre su embarazo, sobre su bebé y el nacimiento de su bebé? ¿Por qué? ¿Que la hace sentir así?

a. ¿Se ha sentido estresada durante el embarazo? ¿Por qué? ¿Cuándo empezó? ¿Por cuánto tiempo?
b. ¿Se ha sentido ansiosa durante este embarazo? ¿Sobre qué́? ¿Cuándo y por cuánto tiempo?

7. Algunas personas se sienten especiales y afortunadas por estar embarazadas, y otras no se sienten tan afortunadas, y estos sentimientos pueden cambiar, lo cual es perfectamente normal.
    a. ¿Cómo se ha sentido usted durante las últimas semanas sobre estar embarazada? ¿Feliz, triste, preocupada?
    b. ¿Existe alguna situación en la cual usted se sintió́ especial/afortunada o desafortunada, por estar embarazada?
    c. Si usted se sintió́ especial/afortunada, ¿qué hizo que se sintiera especial o afortunada (o desafortunada; cualquier otro sentimiento)? ¿Puede decirnos algo más?

Temores relacionados con el embarazo

8. ¿Cuáles temores o inquietudes tienes, o tienen las mujeres embarazadas que conoces sobre el embarazo? ¿Puede darme algunos ejemplos?
    a. ¿Habla usted de esos temores o miedos?
    b. ¿Con quién, ¿cuándo y por qué́?
9. ¿Se ha sentido ansiosa durante este embarazo?
    a. ¿Sobre qué́? ¿Cuándo y por cuánto tiempo?
10. ¿Piensa usted que las cosas que están pasando en el país actualmente la hacen sentir más ansiedad en este embarazo?
    a. En caso afirmativo, ¿de qué manera?

b. ¿Puede dar algunos ejemplos?

c. ¿Estos problemas en los EE. UU. hacen que se preocupe por si su embarazo es saludable? ¿De qué manera?

Estatus privilegiado asociado con el embarazo

11. ¿Qué significa para usted la maternidad o ser madre?

    a. ¿Para su familia?

    b. ¿Piensa usted que el padre de su bebé, o su pareja, comparte estas opiniones? ¿Por qué́ sí o porqué no?

12. Algunas personas han descrito a la maternidad como un rol altamente respetado en las culturas Latinas. Qué piensa usted? ¿Es o no es altamente respetado?

    a. ¿De dónde piensa usted que provienen estas creencias?

    b. ¿Usted las heredó? En caso afirmativo, ¿de quién?

El embarazo también ha sido descrito como un tiempo privilegiado, donde se eleva el estatus social de la mujer en las culturas Latinas.

13. ¿Está usted familiarizada con esta experiencia, en que las mujeres embarazadas tengan un estatus superior? ¿Ha visto usted esto en alguna parte? ¿Aquí́? ¿En el país donde usted nació́?

    a. ¿Ha recibido usted un trato especial debido a su embarazo? En caso afirmativo, ¿de qué manera? ¿Quién? ¿Cómo lo hacen? ¿Qué dicen o hacen? ¿Puede pensar en algunos ejemplos?

    b. En caso afirmativo, ¿piensa usted que este estatus especial es una experiencia positiva? ¿De qué manera?

    c. O, ¿piensa usted que es una experiencia negativa? ¿De qué manera?

Algunas mujeres han descrito que tener un embarazo saludable es una gran responsabilidad para la familia en las culturas Latinas.

14. ¿Qué piensa usted sobre esta creencia? ¿Porqué piensa que es cierta o que es falsa para usted? ¿Puede explicar?

Conclusión

Muchas gracias por su participación. Fue una discusión muy exitosa. Sus opiniones serán valiosas para el estudio y espero que la discusión haya sido interesante para usted. Me gustaría recabar información demográfica de cada una de ustedes. Por favor, tómense algunos minutos para llenar este cuestionario.

Appendix E: Study 2 Individual Interview Guide

Bienvenida

Bienvenida y muchas gracias por ser voluntaria en esta entrevista. Esta entrevista es para entender sus actitudes culturales y experiencias emocionales alrededor de su embarazo. Estoy entusiasmada por escuchar lo usted tiene para decir.

Preguntas introductorias

¿Hay alguna pregunta? Ahora, voy a encender la grabadora. ¿Me puede decir su nombre, cuántos hijos tiene, y de dónde viene su familia?

1. Voy a empezar con una pregunta introductoria: ¿Existen tradiciones familiares o culturales que usted realizó durante este embarazo? ¿Cuáles son?

Actitudes, valores, y creencias sobre el embarazo y la maternidad

Muchas personas tienen valores distintos acerca del embarazo. Algunos son muy positivos, otros no tanto, y difieren en cada embarazo, cada familia y para comunidades diferentes.

2. ¿Cómo se siente sobre el embarazo en general?
    a. ¿Es altamente valorado en su familia o en su comunidad? ¿Valora usted que otras personas estén embarazadas? ¿En cuáles maneras?
    b. ¿Su familia comparte estas ideas sobre el embarazo?
    c. ¿El padre de su bebé o su pareja comparte estas ideas sobre el embarazo?
3. ¿Piensa usted que las personas en su cultura (mujeres Latinas) comparten ideas o valores específicos sobre el embarazo? ¿Cuáles son? ¿Puede decirnos algo más sobre eso?
4. ¿En su opinión, qué sentimientos deberían de tener las mujeres embarazadas? ¿Alguien le ha dicho como se debería de sentir durante el embarazo? ¿Quien? ¿Que le dijeron?

5. ¿Usted cree que está bien, o es normal, sentirse un poco deprimida o triste durante el embarazo? ¿Y en general? ¿Porque está bien o no está bien sentirse así?
    c. ¿Se ha sentido un poco deprimida o triste durante el embarazo? ¿Por qué? ¿Cuándo empezó? ¿Por cuánto tiempo?
    d. ¿Está bien para su familia que usted se sienta de estas maneras? ¿En su cultura?
6. ¿Siente que está bien, o es normal, tener sentimientos de ansiedad, preocupación, o inquietud sobre su embarazo, sobre su bebé y el nacimiento de su bebé? ¿Por qué? ¿Que la hace sentir así?
    a. ¿Se ha sentido estresada durante el embarazo? ¿Por qué? ¿Cuándo empezó? ¿Por cuánto tiempo?
    b. ¿Se ha sentido ansiosa durante este embarazo? ¿Sobre qué́? ¿Cuándo y por cuánto tiempo?
7. Algunas personas se sienten especiales y afortunadas por estar embarazadas, y otras no se sienten tan afortunadas, y estos sentimientos pueden cambiar, lo cual es perfectamente normal.
    a. ¿Cómo se ha sentido usted durante las últimas semanas sobre estar embarazada? ¿Feliz, triste, preocupada?
    b. ¿Existe alguna situación en la cual usted se sintió especial/afortunada o desafortunada, por estar embarazada?
    c. Si usted se sintió especial/afortunada, ¿qué hizo que se sintiera especial o afortunada (o desafortunada; cualquier otro sentimiento)? ¿Puede decirnos algo más?

Temores relacionados con el embarazo

8. ¿Cuáles temores o inquietudes tienes, o tienen las mujeres embarazadas que conoces sobre el embarazo? ¿Puede darme algunos ejemplos?
    a. ¿Habla usted de esos temores o miedos?
    b. ¿Con quién, ¿cuándo y por qué?
9. ¿Se ha sentido ansiosa durante este embarazo?
    a. ¿Sobre qué? ¿Cuándo y por cuánto tiempo?
10. ¿Piensa usted que las cosas que están pasando en el país actualmente la hacen sentir más ansiedad en este embarazo?
    a. En caso afirmativo, ¿de qué manera?
    b. ¿Puede dar algunos ejemplos?
    c. ¿Estos problemas en los EE. UU. hacen que se preocupe por si su embarazo es saludable? ¿De qué manera?

Estatus privilegiado asociado con el embarazo

11. ¿Qué significa para usted la maternidad o ser madre?
    a. ¿Para su familia?
    b. ¿Piensa usted que el padre de su bebé, o su pareja, comparte estas opiniones? ¿Por qué sí o porqué no?
12. Algunas personas han descrito a la maternidad como un rol altamente respetado en las culturas Latinas. Qué piensa usted? ¿Es o no es altamente respetado?
    a. ¿De dónde piensa usted que provienen estas creencias?
    b. ¿Usted las heredó? En caso afirmativo, ¿de quién?

El embarazo también ha sido descrito como un tiempo privilegiado, donde se eleva el estatus social de la mujer en las culturas Latinas.

13. ¿Está usted familiarizada con esta experiencia, en que las mujeres embarazadas tengan un estatus superior? ¿Ha visto usted esto en alguna parte? ¿Aquí? ¿En el país donde usted nació?
    a. ¿Ha recibido usted un trato especial debido a su embarazo? En caso afirmativo, ¿de qué manera? ¿Quién? ¿Cómo lo hacen? ¿Qué dicen o hacen? ¿Puede pensar en algunos ejemplos?
    b. En caso afirmativo, ¿piensa usted que este estatus especial es una experiencia positiva? ¿De qué manera?
    c. O, ¿piensa usted que es una experiencia negativa? ¿De qué manera?

Algunas mujeres han descrito que tener un embarazo saludable es una gran responsabilidad para la familia en las culturas Latinas.

14. ¿Qué piensa usted sobre esta creencia? ¿Porqué piensa que es cierta o que es falsa para usted? ¿Puede explicar?

Conclusión

Muchas gracias por su participación. Fue una entrevista muy exitosa. Su opinión será valiosa para el estudio y espero que la entrevista haya sido interesante para usted. Me gustaría recabar información demográfica de usted. Por favor, tómese algunos minutos para llenar este cuestionario.

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