Exploring the Dynamic Relationship Between Life Stressors and Reproductive Decision-Making

by

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Dedication

This dissertation is dedicated to the women who told me their stories of hope, loss, and transition. Thank you for giving me the honor of sharing your words.

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Abstract

Background: High rates of unintended and unplanned pregnancies in the United States result in challenges to quality of life, negative maternal and neonatal outcomes, and increased federal spending. While several socioeconomic and environmental factors have been associated with increased risks of unintended pregnancy, limited research has been conducted to evaluate the relationship between life stressors and reproductive outcomes such as unintended and unplanned pregnancies. Additionally, fertility intentions and reproductive decision-making are understudied in relation to stressors experienced by vulnerable populations in the United States. Specifically, the stressors associated with uprooting and flight experienced by Syrian refugees who have resettled in the United States, and the impact of these stressors on reproductive decision-making, has yet to be studied.

Purpose: The purpose of this dissertation is to deepen the scientific understanding of the dynamic process of pregnancy intention and planning in women experiencing major life stressors, both in the United States and in the context of forced migration.

Paper One: A secondary analysis of longitudinal data from 1,730 women following their first birth was conducted. A total of 1,552 pregnancies were experienced in the 36-month follow-up period. An Andersen-Gill survival analysis was used to assess how changes in stress over time relate to risk of pregnancies that are unintended, unplanned, or both unintended and unplanned. Minor (HR 1.66 and HR 1.68) and major (HR 2.34 and HR 1.90) decreases in stress, as well as minor increases (HR 1.60 and HR 1.40) in stress, were associated with an increased risk of unintended and unplanned pregnancies respectively. Increases in risk were not seen in major

increases in stress over time. Major increases in stress may be associated with improved vigilance in contraceptive use, or stress-related decreases in intercourse. Clinical and policy interventions to reduce unintended pregnancy should take into consideration the impact that changes in stress may have on reproductive outcomes.

Paper Two: A mixed-methods evaluation of reproductive decision-making with 36 women from Syria who resettled in southeast Michigan was conducted. Women completed a quantitative survey for every pregnancy experienced since the start of the Syrian Civil War, followed by a qualitative interview structured around a timeline. Participants described factors influencing fertility intentions over time including the facilitators and barriers to accessing reproductive healthcare and contraception. Findings will be used to improve reproductive healthcare access and uptake for women that are refugees in the United States and globally.

Paper Three: Interviews with women from Syria were utilized to reconstruct a gender-informed migrant theory using extended case methodology. These interviews enabled deeper theorization of the work of women and the temporality of the refugee. This theory will be used to guide future research, policy, and clinical interventions for women who are refugees, specifically with the goal of improving reproductive healthcare access and uptake.

Future Directions: The results of this dissertation aim to improve understanding of the relationship between life stressors and pregnancy intention and planning, and to identify barriers to providing quality reproductive healthcare to vulnerable populations. Results will be used to inform future work to develop policy and healthcare interventions aimed at assisting women in seeking congruence between their reproductive intentions and outcomes both in the United States and globally.

Chapter One Introduction

Rates of unintended pregnancies have been measured on the national level in the United States since the 1980s, with theoretical understandings of pregnancy intention and planning evolving significantly since that time. Currently more than 4 in 10 pregnancies in the United States are qualified as unintended (Finer & Zolna, 2016), with certain populations of women at an increased risk of experiencing an unintended or unplanned pregnancy. This dissertation will further current understandings of the relationship between life stressors and unintended and unplanned pregnancies. Additionally, a contextualization of reproductive decision-making in women who are refugees will add depth to current literature on the impact of uprooting on fertility intentions and use of family planning.

Statement of the Problem

Of the approximately 6.1 million pregnancies that occur in the United States each year, more than 45% are qualified as unintended (Finer & Zolna, 2016). While 42% of unintended pregnancies are terminated, the rate of birth resulting from an unintended pregnancy is 22 per 1,000 in women 15 to 44 years of age (Finer & Zolna, 2016). While some pregnancies that are unintended are later qualified as wanted or bringing happiness, about half of pregnancies that are unintended are also reported as not bringing happiness (Sable & Libbus, 2000).

Unintended pregnancies have been associated with many adverse maternal, fetal, and neonatal outcomes. In addition to being detrimental to health, unintended pregnancies can also

be costly for publicly funded insurance (Cleland, Peipert, Westhoff, Spear, & Trussell, 2011). A better understanding of the factors related to, and context surrounding, unintended pregnancies may be used to inform reproductive health interventions aimed at improving health outcomes. Further, this understanding can be used to optimize current and future social, clinical, and healthcare policies to assist women who seek to increase congruence between their reproductive intentions and outcomes.

Individual and system-level factors, such as socioeconomic status, education, and access and use of contraception, are known to influence the risk of unintended pregnancy. Additionally, specific life stressors, such as financial instability or housing insecurity, are known risk factors for unintended pregnancies (Gelberg et al., 2008; Iseyemi, Zhao, McNicholas, & Peipert, 2017). However, little is known regarding how cumulations or changes in stressors may be predictive of these outcomes. A comprehensive lens will be applied to this work to examine beyond individual- and systems-level factors. This contextualization will allow for a more nuanced structural analysis of life stressors on fertility intention and family planning use in vulnerable women. A better understanding of the ways in which stress influences women's pregnancy intention and planning contributes to a more holistic view of how life context influences pregnancy risk, which can be used to assist clinicians in providing more effective contraceptive counseling.

Additionally, limited research has examined how fertility intentions and contraceptive use of refugees change throughout the course of resettlement, a process replete with major life stressors that have the potential to significantly affect decision-making. There are approximately 65.3 million people worldwide who have been forcibly displaced from their homes secondary to conflict, with individuals resettling in their native or neighboring countries, refugee camps, or

third countries (United Nations High Commissioner for Refugees, 2016). In the past ten years 669,000 forcibly displaced people have resettled in the United States as refugees, and approximately half of these refugees are women (The UN Refugee Agency, 2016c; Zong & Batalova, 2017). The reproductive healthcare needs and intentions of refugee women in the United States are poorly understood, despite known barriers to quality care (A. J. Gagnon, Merry, & Robinson, 2002).

Since the start of the Syrian Civil War, more than 20,000 refugees have been resettled in the United States from Syria (Refugee Processing Center, 2017a). While insufficient family planning services in Syrian refugee camps result in high rates of unmet need for contraception and high rates of unintended pregnancies, limited research has explored refugee perceptions of family planning services post-resettlement. Due to cultural and language limitations, there has yet to be substantive data collected from female refugees from Syria who have resettled in the United States, resulting in a limited understanding of the reproductive experiences of these women. Increasing understanding of these experiences can shed light on the ways reproductive healthcare is accessed, how this healthcare may be lacking, and ways to improve the care women receive.

Current published literature which examines reproductive health in refugees throughout migration is frequently atheoretical or relies on migrant health theories to explain or describe outcomes or processes. Theories traditionally used to describe refugee decision-making have not been specific to forced migrants and fail to recognize the unique distinctions between forced and elective migration. No theory or framework to guide refugee research has been developed that is informed both by a gender analysis and from the perspective of forced migration. The development of such a theory can be used to inform future research and to support development

of health interventions, resulting in care that better addresses the needs and desires of women who are refugees.

Purpose

The purpose of this dissertation is to deepen the scientific understanding of the dynamic process of pregnancy intention and planning in women experiencing major life stressors, both in the United States and in the context of forced migration.

Theoretical Approach

The scientific premise for this work is that an improved understanding of the context within which unintended and unplanned pregnancies occur can lead to improved reproductive health interventions for women who are at highest risk. Increased access to reproductive healthcare and contraception can decrease incongruence between reproductive intentions and outcomes. Additionally, a reduction of unwanted pregnancy through family planning uptake may lead to improved maternal and neonatal outcomes and significant federal and state cost savings (Cleland et al., 2011; Ehiri et al., 2014; J. Hall, Benton, Copas, & Stephenson, 2017; Trussell, 2007). A guiding theoretical framework, the Cycle of Reproductive Decision-Making, is discussed in Chapter 2. This theoretical framework guides the understanding of constructs of importance to reproductive decision-making, their relationships, and their use in the three projects discussed in this dissertation.

Specific Aims

This dissertation consists of three projects exploring the theoretical and contextualized implications of life stressors on fertility intentions and reproductive planning.

Paper One

A secondary analysis of the First Baby Study was performed. Using data collected over three years from 1,730 women following the birth of their first child, an Andersen-Gill survival analyses was conducted to evaluate the ways in which changes in total stress scores over time are related to pregnancies which are unintended, unplanned, or both unintended and unplanned.

Paper Two

A mixed-method approach was used to explore reproductive decision-making in Syrian women who are refugees, to better understand the opportunities and limitations to current reproductive healthcare services received. This research is guided by the overarching goal to improve policies and healthcare interventions for refugees in the United States and throughout resettlement, with the outcome of optimizing pregnancy planning and reduction of unwanted pregnancies. This project makes a unique contribution in better understanding the experiences of Syrian women who are refugees in the United States; a population whose experiences with the reproductive healthcare system has yet to be studied.

The specific aims of this project are to collect and analyze quantitative and qualitative (n=36) data about Syrian women who have resettled in southeastern Michigan as refugees, and to:

1. Explore reproductive intentions and behaviors throughout the resettlement process
2. Examine the factors influencing unmet need for contraception post-resettlement
3. Examine the facilitators and barriers to reproductive healthcare access and service use for Syrian women in the United States

Paper Three

No guiding theory for refugee health research exists, resulting in research and intervention development that is atheoretical or based on the experiences of elective migrants.

However, the experiences of women refugees, qualified as forced migrants, are unique. A theory specific to women who are refugees may result in more appropriate, applicable, and successful research and interventions with this population. This project will involve utilizing extended case methodology to reconstruct Grieco and Boyd's (1998) gender-informed migrant theory to address the needs and experiences of women who are refugees. The qualitative interviews obtained in Project Two will be analyzed for ways in which the decision-making discussed is at odds with Grieco and Boyd's framework. This analysis will result in the proposal of an extended version of the framework, one which is both gender- and refugee-informed, to guide research on refugee decision-making.

Conclusion

Together, these three projects work towards developing a deeper understanding of pregnancy intention and planning amidst life stressors. These papers share a common goal of providing women with the opportunity and resources necessary to control their reproductive outcomes as desired. Improved reproductive health outcomes will be achieved through increasing access to comprehensive reproductive health services, structuring health policies to support vulnerable populations, and delivering healthcare provider-specific approaches to improving the care of women.

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Chapter Two Literature Review and Conceptual Model

Approximately 2.7 million unintended pregnancies occur annually in the United States, with 58% of these pregnancies not being terminated (Finer & Zolna, 2016). While privately and publicly funded public health campaigns, as well as increased availability of highly effective contraceptives, have resulted in a general downward trend, rates of unintended pregnancy remain high. Despite its frequency, rates of unintended pregnancy are not stable across populations. Rates are two to three times the national average in women below the federal poverty line and those cohabitating (Finer & Zolna, 2016). Additionally, low education (Metcalfe, Talavlikar, du Prey, & Tough, 2016b), obesity (Brunner Huber & Hogue, 2005), presence of a chronic disease (Chor, Rankin, Harwood, & Handler, 2011), and reduced social support (Sable, Washington, Schwartz, & Jorgenson, 2007) are all risk factors for unintended pregnancy. However, while black and Hispanic women are more likely to experience an unintended pregnancy than a white woman, the majority of this disparity is explained with age, relationship status, income, and insurance status (Kim, Dagher, & Chen, 2016).

Unintended pregnancy rates are closely associated with lack of access to reproductive health services, particularly affordable, highly effective, contraception. Women who lack knowledge about, access to, or effective use of contraception are more likely to experience an unintended pregnancy (Gadow et al., 1999; K. S. Hall et al., 2016; Metcalfe et al., 2016b; Rosenbert, Waugh, & Long, 1995; Secura, Allsworth, Madden, Mullersman, & Peipert, 2010; Sriprasert, Chaovisitsaree, Sribanditmongkhol, Sunthornlimsiri, & Kietpeerakool, 2015).

Additionally, lack of access to emergency contraception, in addition to lack of knowledge regarding the availability of emergency contraception, increases the risk of an unintended pregnancy (Hayes, Hutchings, & Hayes, 2000; Lakha & Glasier, 2006a; Payakachat, Ragland, & Houston, 2010).

Much of the policy-oriented argument for decreasing unintended pregnancy rates is based on the federal and state financial cost of unintended pregnancies, in contrast to potential improvements in quality of life or empowerment (Cleland et al., 2011; Thomas, 2012). Due to a long history of structural racism within politics and medicine in the United States, resulting in the prioritization of birth in white women over women of color, it is important to be aware of intentional or unintentional biases underlying research and interventions seeking to reduce unintended pregnancies, particularly in vulnerable populations (Alhusen, Bower, Epstein, & Sharps, 2016; Downing, LaVeist, & Bullock, 2007; Henderson, Raine, Schalet, Blum, & Harper, 2011; Wren Serbin & Donnelly, 2016). While the public health challenge of unintended pregnancy has encompassed all populations, the actual application of interventions aimed at reduction have frequently focused on select populations, and are rooted in cultural and social assumptions of race, class, gender, and poverty (Downing et al., 2007). As poor women and women of color are more likely to report an unintended pregnancy than white women or women of high socioeconomic status, reproductive policies frequently focus on reduction of pregnancies in these populations (Haider, Stoffel, Donenberg, & Geller, 2013). Therefore, a conscious effort must be made to maintain a critical and constructive analysis of previous research and policy, including attention to the role of structural racism, alongside the goal of improving health equity.

The reduction of unintended pregnancies as a public health policy goal has also been tied to its associated poor maternal, fetal, and neonatal outcomes. However, whether these outcomes

are causal consequences has been contested. Health outcomes discussed in association with unintended pregnancies are frequently minimized or absent after adjusting for socioeconomic or other factors.

Unintended pregnancies have been associated with late initiation and inadequate prenatal care (Kost & Lindberg, 2015; Wilcox, Koonin, & Adams, 1999). Women with unintended pregnancies are more likely to engage in high-risk behavior in the antepartum period, including illicit drug use and smoking (Dott, Rasmussen, Hogue, Reefhuis, & National Birth Defects Prevention Study, 2010), and not taking folic acid or a multivitamin (Chuang, Hillemeier, Dyer, & Weisman, 2011; Dott et al., 2010; Hellerstedt et al., 1998; Wilcox et al., 1999). Additionally, women experiencing unwanted births are more likely to experience depression (Abajobir, Maravilla, Alati, & Najman, 2016; Brito, Alves, Ludermir, & Araújo, 2015), anxiety (A. M. Gariepy, Lundsberg, Miller, Stanwood, & Yonkers, 2016) and have lower quality relationships with their children in late adolescence and early adulthood (J. S. Barber, Axinn, & Thornton, 1999). However, after adjusting for socioeconomic factors, unintended, unplanned, and unwanted pregnancies were not associated with maternal lower health-related quality of life (A. Gariepy et al., 2017).

Several neonatal risk factors have also been linked to pregnancy intention. Unintended pregnancies have been associated with an increased risk for preterm birth and low birthweight (J. Hall et al., 2017), and neonatal mortality (de La Rochebrochard & Joshi, 2013; Gipson, Koenig, & Hindin, 2008; Guterman, 2015). However, these risks are minimized when adjusting for socioeconomic status and maternal behaviors (Afable-Munsuz & Braveman, 2008; J. Hall et al., 2017; Hellerstedt et al., 1998). Pregnancy intention may further influence maternal and infant bonding, with babies born secondary to an unintended pregnancy more likely to experience

maternal psychological aggression and neglect, and be less likely to be breast-fed (Hromi-Fiedler & Pérez-Escamilla, 2006; Kost & Lindberg, 2015).

The cost of birth and potential negative health outcomes associated with unintended pregnancies, specifically the risk for preterm delivery, neonatal mortality, and problems in child development, result in significant public health expenditures (Dieguez, Pyenson, Law, Lynen, & Trussell, 2015). As 48% of births in the United States are covered by Medicaid or other public insurance programs, the impact of unintended pregnancies results in state and federal expenditure of approximately $21 billion yearly (Markus, Andres, West, Garro, & Pellegrini, 2013; Sonfield & Kost, 2015). Decreases in family planning expenditure have been found to result in increased Medicaid spending on pregnancy and newborn care, with up to $5 saved in Medicaid expenses for every $1 in federal funding on family planning initiatives (Amaral et al., 2007; Frost, 1996).

For researchers and clinicians, the associations between pregnancy intention and maternal and neonatal health outcomes raises issues surrounding providing holistic care to women. Factors surrounding an unintended pregnancy, such as lack of easy access or ability to afford healthcare, are also associated with many of the health outcomes associated with unintended pregnancy. Additionally, while relationships discussed above may not be causal, the associations provide context of the experiences and challenges that women with an unintended pregnancy may also face. For these reasons, pregnancy intention has been established as one of nine indicators of preconception wellness per the Consensus Recommendations of the Clinical Workgroup of the National Preconception Health and Health Care Initiative, with family planning noted to be an essential piece of preconception care (Frayne et al., 2016; Kallner & Danielsson, 2016).

Because of potential negative health outcomes associated with unintended and unwanted pregnancies, as well as the impact of an unintended pregnancy on a woman's quality of life, it is imperative for clinicians and researchers to identify and support women at highest risk. The contribution of this proposal lies in studying life stressors as risk factors for unintended pregnancy. The goal of improving upon this knowledge is to better understand the individuals that are at highest risk of an unintended pregnancy, therefore informing future interventions to aid its decrease. To better identify opportunities for improvement in reproductive healthcare, measurements that guide our current understandings must be critically evaluated. Reproductive and social justice frameworks have called for refinements in measurement and expanded areas of assessment for reproductive intentions. A more nuanced understanding of women's experiences may provide increased contextualization to reproductive outcomes, informing interventions to assist women in achieving congruence between desired reproductive intentions and outcomes.

Measuring Reproductive Decision-Making

The term "reproductive decision-making" is used to encompass the affective, cognitive, and behavioral constructs within the reproductive process as a woman navigates desires, plans, and expectations surrounding her fertility. These constructs, while related and often combined in measurement, are independent. The measurement of *pregnancy intention* as a construct has frequently been conflated with *pregnancy planning*, *pregnancy timing*, and *pregnancy wantedness*. These constructs will be discussed as independent functions within reproductive decision-making, and how they have been captured in measurements independently and jointly.

Pregnancy Intention: The incidence of unintended pregnancies was first evaluated in the United States in a city-specific survey in the early 1940s, with national surveys of unwanted pregnancies in married women taking place in the 1950s and 1960s. A history of the

development of unintended pregnancy surveys in the United States has been completed elsewhere (Campbell & Mosher, 2000).

The National Survey of Family Growth (NSFG), a survey conducted by the National Center for Health Statistics of the Centers for Disease Control and Prevention, is a survey of fertility, family structure, and demographics that runs in five-year cycles. Developed in the 1960s, the NSFG has provided the longest running survey containing an assessment of pregnancy intention in the United States. The NSFG has several questions to assess various facets of pregnancy intention and other pregnancy-related constructs, including specifying whether a pregnancy, if mistimed, is mistimed by less than two years (*moderately mistimed*) or more than two years (*seriously mistimed*) (Mosher, Jones, Abma, & Department of Vital Statistics, 2012). However, the most frequently used single question to assess for pregnancy intention taken from the NSFG is the question:

> *"At the time of your last pregnancy, did you want the child then [an intended pregnancy], later [a mistimed pregnancy], or not at all [an unwanted pregnancy]?"*

Researchers using this data qualify pregnancies wanted then as intended, wanted later as mistimed, and wanted not at all as unwanted. In the bulk of research on pregnancy intention, pregnancies that are mistimed and unwanted are combined into the single category of unintended pregnancy. Other measures of pregnancy intention, including the Demographic and Health Survey (DHS) and the Pregnancy Risk Assessment Monitoring System (PRAMS), have adopted similar wording and the same categorization in their measures of pregnancy intention (DHS & USAID, 2015; PRAMS Working Group, 2004).

The majority of research that examines outcomes associated with unintended pregnancies using this type of survey data report results with the dichotomized *intended* and *unintended* pregnancy categories (Mumford, Sapra, King, Louis, & Buck Louis, 2016). However, when the categories of *intended*, *mistimed,* and *unwanted* are analyzed independently, unwanted pregnancies present more risk of negative sequalae, and mistimed pregnancy is associated with the same or slightly more risk than an intended pregnancy (Dye, Wojtowycz, Aubry, Quade, & Kilburn, 1997; Maddow-Zimet, Lindberg, Kost, & Lincoln, 2016; Maxson & Miranda, 2011; Taylor & Cabral, 2002). However, statistical differences in health outcomes between unwanted and mistimed pregnancies do not always persist after controlling for clinical and socioeconomic factors (Orr, Miller, James, & Babones, 2000; Shah et al., 2011).

Despite the frequency with which these measures of pregnancy intention are utilized, they have been critiqued for failing to recognize important distinctions between the constructs they name. Pregnancy intention as it is constructed in many measures provides an over-simplified dichotomy of pregnancy (un)intention. A qualitative assessment of women stratified by NSFG pregnancy category found that themes in their self-reported attitudes and pregnancy-behaviors were not clearly related to pregnancy category (Stanford, Hobbs, Jameson, DeWitt, & Fischer, 2000), suggesting that distinct boundaries established between constructs in measurement may not be a true representation of real lived experiences.

To address the critique of an oversimplification of the dichotomy of pregnancy (un)intention within the NSFG, scaled questions were added in 2002. Based on the psychosocial theories of Miller (1995), scales from 0-10 assessing how much women had wanted to avoid or become pregnant, and how much they had tried to avoid or become pregnant, were developed (NSFG, 2003). These scales recognize the distinct reproductive constructs of *wanting* and *trying*,

or desire and behavior, in reproductive decision-making. However, despite the availability of this data in post-2002 NSFG surveys, few researchers have utilized it for analysis purposes (Kost & Lindberg, 2015; Mosher, Jones, Abma, & Department of Vital Statistics, 2012).

A further critique of these measures of pregnancy intention is the potential for *mistimed* to be of varying theoretical and analytical importance based on to what extent the pregnancy is mistimed (Kost & Lindberg, 2015). When traditional three category assessments of pregnancy intention further include increased specificity in timing options, typically *slightly mistimed* (less than two years) and *greatly mistimed* (two years or more), these categories have significantly different outcomes (Kost & Lindberg, 2015; Mosher, Jones, Abma, & Department of Vital Statistics, 2012; Pulley, Klerman, Tang, & Baker, 2002). Additionally, when evaluating for risk of mistimed birth, births that are mistimed by less than two years share more sociodemographic similarities with intended pregnancies that pregnancies that are mistimed by more than two years (Kost & Lindberg, 2015), suggesting that interventions to reduce mistimed births may be most successful and effective in focusing on women who are more likely to report a *greatly mistimed* pregnancy.

Despite NSFG having an additional question to specify how much sooner than desired the pregnancy occurred since their 1995 surveys, and PRAMS utilizing a similar additional question since their 2012 survey, this information is frequently not utilized in analysis (NSFG, 2003; PRAMS Working Group, 2012; Pulley et al., 2002). However, breaking down mistiming into pre-qualified categories fails to acknowledge that the level of stress or upheaval that is experienced by the pregnancy may not inherently be tied to a set time frame, but rather may be related to life circumstances. This raises theoretical questions of how *untimed* a pregnancy must

be to be considered *mistimed*, and whether this assessment can be generalized to all women, or if a different measure analyzing the stress or burden of the pregnancy may be more appropriate.

Pregnancy Planning: Pregnancy planning is conceptualized as a behavioral construct, operationalized both as planning to avoid pregnancy through the use of contraception, and as planning to conceive a pregnancy through actions such as seeking preconception care, monitoring fertility, timing sex, and adopting healthy behaviors (Anderson et al., 2002; Bodin et al., 2017; Green-Raleigh, Lawrence, Chen, Devine, & Prue, 2005; Stern et al., 2016). However, measures of pregnancy planning frequently fail to specify the theoretical understanding of planning as a behavioral construct, resulting in simplified dichotomous measures such as:

> *"Are you planning on becoming pregnant soon?"* (Green-Raleigh et al., 2005)

Measures such as these demonstrate significant theoretical overlap with pregnancy intention. Additionally, multi-item measures of pregnancy planning such as the London Measure of Unplanned Pregnancy (Barrett, Smith, & Wellings, 2004; Borges et al., 2016; Hall, Barrett, Copas, & Stephenson, 2017), conceptualize pregnancy planning as the combination of preconception behaviors, attitudes towards timing and wantedness, intention, and conversations regarding pregnancy with their partner. This multi-item measure conflates planning with several other pregnancy-related constructs, resulting in a measurement output that doesn't recognize the independent nature of these constructs.

While relationships between planning to prevent pregnancy and pregnancy intention have been studied, less research has looked at planning for pregnancy and its relationship with pregnancy intention (Hall, Benton, et al., 2017; Moreau, Hall, Trussell, & Barber, 2013; Tsui et

al., 2010). Healthcare providers and public health policies alike frequently recommend women of reproductive age to take actions to plan for pregnancy regardless of pregnancy intention. This can be seen in the encouraging of women to take folic acid and refrain from heavy drinking while in their reproductive years (Centers for Disease Control and Prevention, 2016, 2017). This focus suggests the public health priority for all women to be operating as though they may become pregnant at any time, regardless of their reproductive desires. This position has been criticized as valuing the health outcomes of pre-conceived infants over both the agency of, and the impact of healthy life changes on, a woman (Victor, 2016).

In women taking active steps to prevent pregnancy through the use of contraception, close to one third of resulting pregnancies were considered intended, and a quarter of the births qualified as unintended were to women who were "happy" or "very happy" about the pregnancy (Trussell, Vaughan, & Stanford, 1999). Conceptual distinctions between pregnancy planning and wantedness were further demonstrated qualitatively, with pregnancy wantedness more related to desired pregnancy outcome (e.g. abortion, delivery) than pregnancy planning (Fischer, Stanford, Jameson, & DeWitt, 1999; Stanford et al., 2000). These distinctions are particularly relevant as pregnancy wantedness, such as measures of pregnancy happiness, are more closely related to health outcomes than pregnancy intention, as presented above.

That a significant portion of women are happy about the pregnancy they reported as occurring outside of when they wanted raises significant theoretical questions regarding justification of reduction of pregnancies that are unintended, unplanned, and/or unwanted. A main theme of the literature on pregnancy and health outcomes, as well as public health policy, is the focus of intendedness of pregnancy as the outcome of interest for health optimization.

However, this presents a disconnect with the experience of women who are likely to maintain, desire, and feel happiness about being pregnant with an unintended pregnancy.

Further, this research suggests that pregnancy planning may not be as important to women, or as relevant as a single outcome of interest in health research, as pregnancy happiness. Therefore, researchers interested in developing interventions to increase the ability of women to achieve congruence in their reproductive desires and outcomes are challenged to seeks ways to assess which women are at highest risk of having a pregnancy that would make them unhappy, and then provide opportunities for pregnancy prevention to these women. Further research needs to be done to address what drives pregnancy happiness, and the ways in which these drivers can be utilized to reduce risk.

Pregnancy Happiness: Pregnancy happiness, or wantedness, has been measured both pre-conceptionally and post-conceptionally to explore a woman's attitudinal position towards pregnancy. The assessment of pregnancy wantedness frequently overlaps with the assessment of pregnancy intention during the preconception period, with measures of pregnancy intention also containing categories for pregnancy wantedness:

> *Thinking back to just before you got pregnant, how did you feel about becoming pregnant? Would you say:*
> *You wanted to pregnant sooner*
> *You wanted to be pregnant later*
> *You wanted to be pregnant then*
> *You didn't want to be pregnant then or at any time in the future*
> (PRAMS Working Group, 2012)

Post-conception measures of pregnancy happiness are typically operationalized as a Likert-type scale of happiness, or a prompt asking how a woman felt when she found out she was pregnant. For instance the PRAMS survey offers the options: very unhappy, unhappy, not sure, or happy to be pregnant (PRAMS Working Group, 2012).

Pre-conception wantedness and post-conception happiness, while both attitudinal directions towards pregnancy, are themselves unique. Women may report not wanting to be pregnant, but may state they would feel happy about an unintended pregnancy (Aiken, 2015; Aiken & Potter, 2013). Differentiating pregnancy wantedness or happiness from pregnancy intention is critical for several reasons. Happiness is more strongly related to health-risk behaviors and chosen pregnancy outcomes, such as the decision to maintain, abort, or become an adoptive parent (Blake, Kiely, Gard, El-Mohandes, & El-Khorazaty, 2007; Gariepy et al., 2016; Lakha & Glasier, 2006b). Additionally, as discussed previously, maternal and neonatal health outcomes are worse with pregnancies qualified as unwanted than with pregnancies qualified as unintended. The importance of wantedness in neonatal and maternal health outcomes, as a contrast to pregnancy intention, has resulted in the recommendation that a clinical assessment of pregnancy wantedness be developed for use in preconception counseling to establish which women may be at highest risk for negative health outcomes following conception of an unintended pregnancy (Gaydos, Kramer, & Hogue, 2011).

However, scales examining the extent of pregnancy wantedness fail to capture the ways in which a pregnancy is unwanted, and therefore are difficult to operationalize and use as a means to develop health interventions. Qualitative interviews with women who experienced an unwanted pregnancy found four primary themes regarding why they qualified a real pregnancy as unwanted: it was an accident, there were too many arguments/reasons not to have a child, it was impossible to prevent a pregnancy, and because it doesn't have to be planned (Helfferich, Hessling, Klindworth, & Wlosnewski, 2014). This diversity in understandings of unwanted pregnancy presents opportunities to consider clinical implications for pregnancy wantedness,

including empowerment through education regarding options for termination, contraception, and support services.

Pre-conception and post-conception attitudinal measures are critiqued for their frequent use in cross-sectional study designs, and therefore do not measure how attitudes may change over time as a response to one's life circumstances. Cross-sectional designs for study of reproductive attitudes may not be ideal, given how reports of pregnancy wantedness are known to change retrospectively. Additionally, attitudes towards a pregnancy have also been noted to be related to post-delivery life circumstances. In a retrospective assessment of pregnancy intention mothers whose child had died were less likely to report the pregnancy as unintended. However, children who were unhealthy were more likely to be characterized as unintended than a healthy child (Smith-Greenaway & Sennott, 2016).

As demonstrated above, pregnancy wantedness is a better indicator of negative health outcomes than pregnancy intention. However, this raises the question of whether there is a distinct point in time to measure for wantedness to most accurately assess for the risk of future negative health outcomes. As pre-conception characterization of hypothetical pregnancy wantedness is distinct from post-conception pregnancy wantedness, and post-conception wantedness changes with time and life circumstances, reports of wantedness are not stable. Future work must examine what characteristics are associated with sustained pregnancy unwantedness to best address negative health outcomes.

Importance of Independent Constructs

Critiques of measures of reproductive decision-making are best understood within the context of how these constructs operate independently and in conjunction with one another. The relationships between these constructs highlight opportunities for operationalization as well as

potential limitations. The unique constructs that operate in conjunction to form the affective and behavioral circumstance of reproductive decision-making are pregnancy intention, planning, and wantedness. In colloquial usage, women do not often clearly differentiate between these constructs (Barrett & Wellings, 2000, 2002; Stanford, Hobbs, Jameson, DeWitt, & Fischer, 2000). Therefore, questions that aim to differentiate between these three constructs must be carefully validated to ensure they are accurately understood by participants. However, because there are important distinctions in practice between affective characteristics (such as intention and wantedness) and behavioral characteristics (such as planning) for reproduction, it remains important to measure these as independent constructs. Operationalizing these constructs as distinct may improve understanding of their relationships to one another and their relationships to health outcomes. It is in this understanding that effective interventions can be developed to reduce the negative health outcomes associated with unwanted, unplanned, and unintended pregnancies.

Relationships Between Constructs

While constructs act independently of one another, there are established relationships between affective characterizations and behaviors. As women's intention to become pregnant decreases, consistent use of contraception increases from 22% to 78% (C. Moreau et al., 2013). However, intent and behavior have frequently been found discordant in reproductive outcome literature. This has been seen in the lack of consistent contraceptive use in women despite unequivocal feelings of anti-conception (C. Moreau et al., 2013), and in women frequently reporting feeling happy or very happy when they discovered they were pregnant with a catalogued "mistimed" pregnancy (Abma, Mosher, & Jones, 2008; Williams & Abma, 2000). Pregnancy planning and intention have been demonstrated to be further discordant, in

pregnancies frequently being qualified as intentional, despite contraceptive use immediately prior to conception (Trussell et al., 1999).

The relationships between these constructs highlight a bias towards survey questions which assume the act of contracepting to be solely woman-centered. Contraceptive use is frequently dependent upon an agreement between both parties, and having a partner that uses contraception in a way discordant with what the woman desires is not captured in questions that only ask about a woman's contraceptive consistency and individual pregnancy intentions. As discussed earlier, pregnancy planning behaviors occur within a network of power structures, including a woman's agency and power to act on her own intentions within a partnership. Because of this, while constructs may be treated uniquely, they continue to fail to recognize the complex relationship between intention, behavior, and pregnancy outcome.

It is also feasible that researchers are not consistently measuring all constructs that are important to understanding reproductive decision-making. Pregnancy readiness has been argued to be a separate construct further influencing pregnancy intention and planning (Gaydos et al., 2011; Santelli, Speizer, Avery, & Kendall, 2006). While many researchers recognize that the NSFG is not an ideal way to measure pregnancy intention and serves limited function in clinical work as a preconception or contraceptive counseling tool, Gaydos et al. (2011) translated it for intended applicability to the clinical setting. This attempt resulted in a pre-conception clinical tool to measure a woman's "readiness" for pregnancy. However, this raises the question of whether readiness is the same as the affective measures being utilized, and what the applicability is to who needs or wants contraception.

Measures that Combine Constructs

Desires to conceive or not conceive a pregnancy are frequently independent of desires to prevent or not prevent a pregnancy (Huber, Esber, Garver, Banda, & Norris, 2017), with the majority of measurements failing to "account for the complexity, dynamic quality and context-specific nature of pregnancy desires" (Barber, Kusunoki, & Gatny, 2011). Because of this, multiple measures that combine affective and behavioral questions have been developed to better explain relationships between the constructs related to pregnancy intention and planning, and relationships between constructs and health outcomes. Miller, Barber and Gatny (2013) developed a measure to assess desires to avoid and conceive a pregnancy as operationalized in one tool. In establishing the domains of antinatal desire (desire to avoid pregnancy and a desire not to conceive), pronatal desire (desire not to avoid pregnancy and a desire not to conceive), indifferent pregnancy desire (desire not to avoid pregnancy and a desire not to conceive), and ambivalence pregnancy desire having both a desire to avoid pregnancy and a desire to conceive), researchers are able to assess how affect and decision-making impact outcomes as a unit. Combining these constructs in a measure, the authors argue, allows the dynamic nature of pregnancy intention to more fully be measured (Miller et al., 2013). The combined constructs act in independent ways, with any deviation from the highest rating of being antinatal indicating an increased risk of pregnancy (Warren B Miller, Barber, & Gatny, 2013)

Similarly, Yoo et al. (2014) has combined affective (feelings if they became pregnant) and cognitive (importance of preventing pregnancy) to establish four categories of ambivalence: antinatal consistency (important to avoid a pregnancy, and would be upset if became pregnant), positive ambivalence (important to avoid a pregnancy, but would be happy if became pregnant), negative ambivalence (not a priority to avoid a pregnancy, but would be unhappy if became

pregnant), and pronatal consistency (not important to prevent a pregnancy, and would be happy if became pregnant). However, while this measure is unique in utilizing a cognitive construct of *importance,* this model does not account for the strength of feelings.

Another measurement tool that has combined constructs was that developed by Santelli et al. (2009). This tool, considered the *desire scale*, combined a wantedness dichotomy, three Likert-scale questions on trying, wanting, and happiness at discovery of a pregnancy, and whether the woman had wanted to have a baby with that baby's father. Results of this tool were parsed into seven ordinal categories, the extremes of which had a strong relationship with pregnancy outcomes, e.g. abortion vs delivery (Santelli et al., 2009).

While measures with mixed constructs are improvements on traditional measures that conflate constructs or lack contextualization, they continue to be used infrequently compared to the common use of simpler constructs of pregnancy intention, planning, and wantedness in surveys such as the NSFG and PRAMS. Further research should utilize, and improve upon, more complex measures that contextualize the affective and behavioral constructs of reproductive decision-making. Identifying opportunities to support the prevention of unwanted pregnancies will be most effective with nuanced, contextualized understandings of women's experiences.

Method Critiques

The use of study designs that focus on retrospective data collection represents a limitation in the state of the science of reproductive decision-making. Over time, reported feelings will increasingly align with past behavior and decision-making (Aiken & Potter, 2013; Festinger, 1957; Williams, Abma, & Piccinino, 1999). Additionally, frequently used retrospective cross-sectional study designs fail to assess the ways in which these constructs change over time, particularly in the immediate pre- and post-partum stages (Barber et al., 2011). However, a

measurement of unplanned pregnancy found responses were stable from early pregnancy through the first 6-12 months postpartum, signifying that measures of pregnancy intention and pregnancy planning may be less subject to change over the short-term postpartum period (Barrett et al., 2004). Like pregnancy intention, wantedness of pregnancies is known to change over the course of a pregnancy, with an increasing likelihood of reporting an intended or wanted pregnancy the farther from conception that one gets (Bachrach & Newcomer, 1999). However, incongruencies between pregnancy intention and affective constructs are also seen in prospective measures, suggesting retrospective bias may not be the sole cause of inconsistencies, but rather compounded by the nature of the constructs themselves (Aiken & Potter, 2013).

However, changes in reported pregnancy wantedness over time are not necessarily solely a result of bias. Rather, changes in self-report of constructs may be related to the dynamic ways in which women relate to their pregnancies and children. Reproductive desires and plans are not static over time. In women who took emergency contraception in response to unprotected sex, half of women stated they had a plan for how they would respond if they became pregnant, but upon becoming pregnant half of these women altered their plan (Royer, Turok, Sanders, & Saltzman, 2016).

While frequent use of retrospective cross-sectional study designs is a limitation in the published literature on reproductive decision-making, this weakness highlights an opportunity to better understand the relationships between independent constructs, time, and negative outcomes. Further work is needed to develop research methodologies that gather data in ways that minimize bias while optimizing usefulness in interpretation and application for health interventions.

Cycle of Reproductive Decision-Making

As discussed above, pregnancy intention is a complex construct, encompassing "affective, cognitive, cultural, and contextual dimensions" (Santelli et al., 2003). The frequent mismeasurement of pregnancy intention is well established, and challenges in measuring accurate unintended pregnancy rates have been well documented (Barrett, Morof, Rocca, Kavanaugh, & Schwarz, 2010; Campbell & Mosher, 2000; Miller, 1995; J. Santelli et al., 2003; Santelli et al., 2006; Stanford et al., 2000; Wilcox et al., 1999). Issues include unclear distinctions between pregnancy desire, intention, planning, and wantedness (Barrett et al., 2004; Santelli et al., 2003; Yeatman & Sennott, 2015), in addition to concerns with measurements of these constructs almost exclusively being collected retrospectively (Ted Joyce, Kaestner, & Korenman, 2002). Measures of pregnancy planning also assume a baseline ability or cultural appreciation of reproductive planning (Santelli et al., 2003). Additionally, these constructs are frequently measured quantitatively, failing to contextualize the experiences of pregnancy intention and planning (Barrett et al., 2004; DHS & USAID, 2015; PRAMS Working Group, 2012; U.S. Dept. of Health and Human Services & National Center for Health Statistics, n.d.).

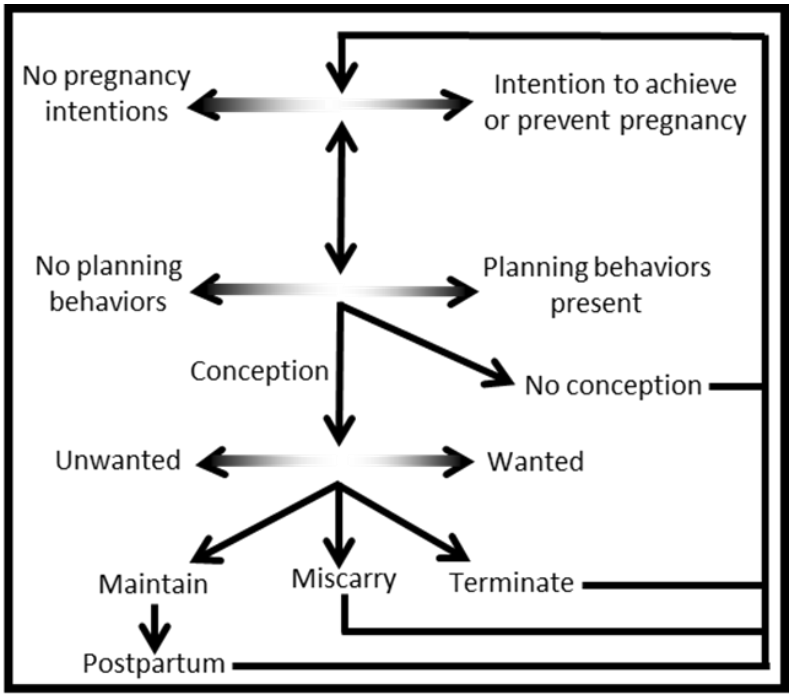
Analysis of this review included an outlining of the unique factors to reproduction that are frequently misrepresented in measurement as pregnancy intention.

The Cycle of Reproductive Decision-Making (see Figure 2.1) was developed to inform research that seeks to explore the multitude of ways in which women can approach their reproduction. This model was developed from an analysis of the constructs which are misrepresented or conflated in the measurement of pregnancy intention. This convolution of pregnancy intention, planning, wantedness, and outcome (e.g. maintained or terminated) has

resulted in the frequent inappropriate operationalization of pregnancy intention. This framework highlights the points of the reproductive cycle at which distinct measurement can be made.

The cyclical nature of the model recognizes that women who are of reproductive age can situate themselves on the model, regardless of their reproductive status. Affective and behavioral points of interest exist both pre-conception and post-conception. The goal of congruence between reproductive intentions and outcomes refers to a woman's ability to achieve agreement between an intent to become or not become pregnant and whether she becomes pregnant. A better understanding of how this congruence can be achieved must take place within research that recognizes that intentions, behaviors, and an emotional response to pregnancy are independent constructs, with the potential to operate uniquely in response to stressors. While the cycle depicts individual feeling and behavior, no individual woman exists apart from the influence, constraints, and freedoms of her relationships, community, and society. This framework informed the development of variables of interest and analytic framework in Project One, and choice of approach and measurement in assessing the reproductive decision-making in Syrian refugee women in Project Two.

Figure 2.1 Cycle of Reproductive Decision-Making



Influence of Stressful Life Events on Reproductive Decision-Making

Stressful life events have been linked extensively in the literature with negative health outcomes (Honkalampi et al., 2005; Lantz, House, Mero, & Williams, 2005; Schulz et al., 2000; Shalowitz et al., 2006; Warren-Findlow, 2006). The experience of unintended pregnancy alone, as outlined above, is linked with negative maternal and infant outcomes. Experiencing stressful life events around the time of conception and through pregnancy, such as financial, emotional, traumatic and partner-related stressors, has also been associated with negative pregnancy and neonatal outcomes. High levels of stress in the antepartum period lead to poorer neonatal health outcomes such as prematurity, low birthweight, and stillbirth (Hogue et al., 2013; Rondó et al., 2003), with a direct relationship between number of stressful life events experienced prior to conception and severity of low birthweight (Witt et al., 2014). Experiencing stressful life events is also associated with a number of birth defects, including facial defects and cardiac defects,

after adjustment for maternal race/ethnicity, age, smoking, education, intake of folic acid, obesity, food insecurity, and neighborhood crime (Carmichael, Shaw, Yang, Abrams, & Lammer, 2007). Women who experienced stressful life events around the time of the conception of an unintended pregnancy were more likely to experience poor mental and physical health outcomes, with associated chronic disease, mental health conditions, depression, and stress (Hall, Dalton, Zochowski, Johnson, & Harris, 2017).

While limited research has examined the effect of stressful events on pregnancy, neonatal, and maternal outcomes, little research has examined how stressful events themselves may be associated with unintended pregnancy. Individual stressors, such as financial instability or housing insecurity, have been associated with increasing the risk of unintended pregnancy (Gelberg et al., 2008; Iseyemi et al., 2017). However, no literature is available that has examined how a number, cumulation, or change in stressors, over time, impact risk of unintended pregnancy. Additionally, certain major stressors, such as the uprooting involved in being a refugee, have not been assessed for their relationship with fertility intentions and outcomes.

Stressful Life Events and Reproductive Decision-Making in Special Populations: Women who are Refugees

While research has looked at reproductive constructs within many vulnerable populations, including ethnic and racial minorities, adolescents, and religious minorities, few published research studies have examined these constructs within refugee populations, particularly refugee populations resettled in the United States. The United Nations Refugee Agency estimates that 65.3 million people worldwide have been forcibly displaced from their native countries, with 21.3 million registered as refugees (United Nations High Commissioner for Refugees, 2016). Many refugees eventually return to their homeland or settle in the country

which they initially fled. Less than 1% of refugees are resettled in third countries, with the U.S. accepts almost two-thirds of the refugees that require resettlement (United States Department of State, n.d.).

There are several reasons why this dissertation addresses the reproductive needs of refugees rather than immigrants more broadly. Individuals who elect to migrate frequently have better health and lower mortality rates than those native born (Beiser, 2005). Additionally, the trauma that precedes the migration of refugees creates increased vulnerabilities in accessing healthcare and optimizing health outcomes. These factors, coupled with a significant gap in current understanding, drive Project Two and Three's research on refugee reproductive decision-making.

Refugee Health and Reproductive Decision-Making

The World Health Organization reports that complications secondary to unsafe abortion causes 13% of maternal deaths around the world, with comprehensive delivery of family planning services having the potential to avert approximately 10% of childhood deaths and 30% of maternal deaths worldwide (Inter-Agency Working Group on Reproductive Health in Crises, 2010b). It is for this reason that family planning services are a life-saving intervention in crisis settings (Inter-Agency Working Group on Reproductive Health in Crises, 2010a)**.** Given that one in five women of reproductive age who are refugees are pregnant at any time, this provides significant opportunities for improving reproductive healthcare for displaced women (Inter-Agency Working Group on Reproductive Health in Crises, 2014).

A review of reproductive and sexual health interventions to increase utilization of services in crisis situations found that only half of interventions had high quality evidence to support their use (Singh et al., 2018). While intervention research is lacking, even interventions

that are known to improve sexual and reproductive health outcomes, such as providing long-acting reversible contraceptives in humanitarian settings, are rarely fully implemented (Chynoweth, Amsalu, Casey, & McGinn, 2018). However, this lack of data is due in part to the unique challenges of data collection in the humanitarian setting (Dickinson, Pyone, & van den Broek, 2016).

A minimum initial service package (MISP) of reproductive healthcare services in humanitarian settings has been established by the Inter-Agency Working Group on Reproductive Health in Crisis (Inter-Agency Working Group on Reproductive Health in Crises, 2009). This package includes ensuring access to maternity and newborn care, HIV treatment and preventative, treatment for survivors of gender-based violence, and a plan for transition to comprehensive reproductive health services (Inter-Agency Working Group on Reproductive Health in Crises, 2009). When a full range of family planning options are affordable and easily accessible, the uptake of modern methods among refugees increases (Casey et al., 2013; Raheel, Karim, Saleem, & Bharwani, 2012). However the full components of the MISP are rarely implemented in humanitarian settings, with low MISP awareness, poor coordination, logistical difficulties, and inadequate reproductive health training among humanitarian workers acting as primary barriers to its implementation (Onyango, Hixson, & McNally, 2013; United Nations High Commissioner for Refugees, 2004).

Syrian Women and Pregnancy Intention

Approximately 5 million Syrians have registered as refugees since civil unrest began in 2011 (The UN Refugee Agency, 2016c). Approximately a quarter of refugees from Syria are women of reproductive age (The UN Refugee Agency, 2016c). Many refugees spend time living

in refugee camps prior to being resettled, where reproductive health services are known to be scant (Benage, Greenough, Vinck, Omeira, & Pham, 2015).

The majority of Syrian refugees have fled to the countries immediately surrounding Syria, many to established refugee camps (The UN Refugee Agency, 2016c). While few studies have been conducted regarding the reproductive health needs of Syrian women and adolescents who continue to reside in Syria, there is a noted need for maternal and other reproductive healthcare for internally displaced persons in Syria (Aburas, Najeeb, Baageel, & Mackey, 2018). Access to reproductive healthcare in refugee camps and the surrounding areas is also frequently lacking. (Benage et al., 2015; Sandra Krause et al., 2015).

While approximately 60% of women in Syria pre-conflict were using some form of family planning, only 34.5% of Syrian refugees displaced in Lebanon reported using family planning (Benage et al., 2015; Masterson et al., 2014). This decrease in family planning use is associated with lack of access, and is not reported to be related to changes in cultural or social attitudes towards contraception (West, Isotta-Day, Ba-Break, & Morgan, 2016). In a study of Syrian refugee women living in Lebanon, barriers to using contraception included fear of side effects, and cost and the lack of knowledge that free or subsidized contraception was available (Cherri, Cuesta, Rodriguez-Llanes, & Guha-Sapir, 2017).

Approximately 90% of Syrians are Muslim (U.S. Department of State, 2011). Studies that explore the complex interplay between religion, sexuality, and reproductive decision-making are rare, and investigators have identified a need for research addressing the nuanced interplay between these identities (Arousell & Carlbom, 2016). Many articles published on the topic generalize the role that religion plays in the sexuality and reproductive decision-making of women who identify as Muslim (Al Mutair, Plummer, O'Brien, & Clerehan, 2013; Kellogg

Spadt et al., 2014). Variation in birth control use, as well as contraceptive method choice, varies by religious practice, region of residence, marital status, ethnicity, and health insurance (Budhwani, Anderson, & Hearld, 2018; Caroline Moreau, Trussell, & Bajos, 2013). This holds true in the United States, where education and income are more important to understanding contraceptive use than ethnicity, religion, or immigrant status (Budhwani et al., 2018).

Refugees Post-Resettlement

Since 1975, more than 3 million refugees have made the United States their permanent home (United States Department of State, n.d.). Approximately 20,000 Syrian refugees have resettled in the U.S. since 2011, with the state of Michigan accepting more than 2,000 of these refugees since October 2015 (Refugee Processing Center, 2017a). Published research on the content and findings of post-resettlement refugee health assessments performed with newly resettled refugees in the United States is scant.

A study that examined U.S. refugee arrival health assessments found that only 76% of incoming refugees received an incoming health assessment (Vergara, Miller, Martin, & Cookson, 2003). Of sites that provided these assessments, only 56% offered pregnancy tests, 11% performed breast exams, and 22% offered pelvic exam and Papanicolaou tests (Vergara et al., 2003). Components of the health assessment which were gender-neutral, such as blood pressure measurement, vision and dental examination, and a brief physical examination, were performed much more frequently on women than women-specific health assessments. This scarcity of women-specific health services raises concern regarding current quality and comprehensiveness of family planning counseling available at locations offering refugee health assessments. The CDC's guidelines for domestic medical examinations for newly arriving refugees do not include assessing for pregnancy intention and need for family planning in either

male or female refugees. Care specific to women includes only a pregnancy test and antenatal care as needed (United States Department of Health and Human Services, Centers for Disease Control and Prevention, & National Center for Emerging and Zoonotic Infectious Diseases, 2012).

The findings of the studies reviewed above, taken together, demonstrate significant gaps in the reproductive healthcare that Syrian women receive throughout the migratory process and post-resettlement in the United States. A deeper understanding of the experiences of Syrian women resettled in the United States would highlight specific opportunities for improvement in the care that women receive. Additionally, contextualizing reproductive health choices of women who are refugees can be used to develop theoretical understandings of the factors influencing health decision-making more broadly.

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Chapter Three Impact of Changes in Stress on Risk of Unintended and Unplanned Pregnancies Over Time (Paper One)

Introduction

Approximately 2.7 million unintended pregnancies are conceived annually in the United States, a rate of 45 unintended pregnancies per 1,000 women (Finer & Zolna, 2016). Unintended pregnancies can have a significant impact on quality of life, with implications for a woman's mental and physical health and well-being (Helfferich et al., 2014; McCrory & McNally, 2013; Moos et al., 2008; Schwarz, Smith, Steinauer, Reeves, & Caughey, 2008). Due to a disproportionate number of unintended births being to women receiving state and federal assistance (Sonfield & Kost, 2015), these pregnancies cost approximately US$5 billion in public funds annually in direct medical costs (Trussell, 2007) and the total gross potential savings with prevention of unintended pregnancies could be $15.5 billion annually (Sonfield & Kost, 2015). Given this, there are clear public health and economic reasons to develop interventions to prevent unintended pregnancies.

Unintended pregnancies are those which women report were not intended prior to conception; pregnancies which are unwanted are those which are qualified as unwanted after conception, regardless of intendedness. Behaviors taken to work towards or against pregnancy make up pregnancy planning, with pregnancies that are conceived despite planning against conception being qualified as unplanned pregnancies for the purpose of this paper. Structural factors such as cost, availability, and gender power and roles, may result in incongruence between pregnancy intention and behavior, providing barriers to accessing methods of preventing an unintended pregnancy (Kendall et al., 2005). While unintended pregnancies are

not inherently unwanted pregnancies or reported as resulting in unhappiness post-delivery (A Aiken, 2015; A Aiken, Dillaway, & Mevs-Korff, 2015), being afforded the ability to decide and act on fertility intentions is a reproductive right (United Nations Population Fund, 2007). Multiple factors denoting socioeconomic marginalization have been associated with increased risk for unintended pregnancy (Finer & Zolna, 2016).

Unintended pregnancies are associated with lower reported social support, family support, and significant other support than intended pregnancies, however it is unclear whether decreased support is a product of or a contributor to unintended pregnancy (Sable et al., 2007). Additionally, specific life stressors, such as financial instability (Iseyemi et al., 2017), housing insecurity (Gelberg et al., 2008), and medical burden of chronic illness (Chor et al., 2011), have been associated with increasing the risk of unintended pregnancy due to increased barriers to securing contraception or terminations. Women experiencing high levels of stress are more likely to use less effective forms of contraception, and to use these contraceptives less consistently (Kelli Hall, Moreau, Trussell, & Barber, 2013b, 2013a; Kelli Hall, White, Rickert, Reame, & Westhoff, 2012).

Unintended and unwanted pregnancy and birth are also associated with a number of negative maternal, fetal, and child health behaviors and outcomes, including maternal high-risk behavior in the antepartum period such as illicit drug use and smoking (Dott et al., 2010), late initiation and inadequate prenatal care (Kost & Lindberg, 2015; Wilcox et al., 1999) increased risk of maternal mental health concerns such as anxiety and depression (Abajobir et al., 2016), preterm birth and low infant birthweight (J. Hall et al., 2017), and child maltreatment (Guterman, 2015).

However, after adjusting for socioeconomic factors, increased risks associated with an unintended pregnancy are frequently significantly reduced or disappear completely (Afable-Munsuz & Braveman, 2008; de La Rochebrochard & Joshi, 2013; A. Gariepy et al., 2017; Kost & Lindberg, 2015). This is likely related to demographic characteristics such as socioeconomic status and education being strongly related to the overall risk of an unintended pregnancy. While black and Hispanic women are more likely to experience an unintended pregnancy than white women, 51% and 73% of this disparity is explained with age, relationship status, income, and insurance status between black and white women, and Hispanic and white women, respectively (Kim et al., 2016).

Experiencing stressful life events before or around the time of conception and throughout pregnancy have been associated with negative pregnancy and neonatal outcomes, such as stillbirth (Hogue et al., 2013), prematurity and low birthweight (Rondó et al., 2003; Witt et al., 2014), and birth defects (Carmichael et al., 2007) through hypothesized activation of neuroendocrine pathways and inflammatory and vasoactive mediators through the release of stress-related hormones (Gouin, Glaser, Malarkey, Beversdorf, & Kiecolt-Glaser, 2012). There is additionally a dose-effect seen with stress, with an increasing severity of low birthweight associated with increasing reports of stressful life events experienced prior to conception (Witt et al., 2014). However, many studies on stress and pregnancy are cross-sectional, failing to capture how changes in stress may influence risk of pregnancy outcomes over time and the inability to determine the direction of relationships between stress, pregnancy intention, and pregnancy outcomes (J. Hall et al., 2017; K. S. Hall et al., 2017; Sable et al., 2007). Additionally, the influence of stress on reproductive health has focused on maternal and neonatal health outcomes,

as outlined above, but not on other reproductive factors including family planning use and pregnancy intention (K. S. Hall et al., 2017).

While stressful life events occurring around the time of an unintended pregnancy have been assessed for their effect on pregnancy outcomes, there is little evidence of the effect of stressful life events on the risk of unintended pregnancy (J. Hall et al., 2017; K. Hall, Dalton, Zochowski, Johnson, & Harris, 2015). As stressful life events are themselves, and can lead to, restrictions in resources and the ability to plan, it is reasoned that they influence the risk of unintended and unplanned pregnancies.

The purpose of this study is to explore the relationship between life stressors and unintended and unplanned pregnancies over time in women following the birth of their first baby in the northeastern United States. This work aims to provide insights into understanding who may be at an increased risk of unintended pregnancy related to the life stressors they are experiencing. The results seek to increase awareness among healthcare providers as to which women may need directed counseling at preventing unintended pregnancy in relation to their life stressors. Changes in total stress scores over time will be assessed for its relationship with unintended and unplanned pregnancies.

This work is grounded in Fundamental Cause Theory (Link & Phelan, 1995), developed to explain the association between socioeconomic status and mortality, and utilized to demonstrate the complex relationships between social conditions and health outcomes. Fundamental Cause Theory has demonstrated how social inequalities such as social support (Link & Phelan, 1995), socioeconomic status (J. Phelan, Link, & Tehranifar, 2010), stigma (Hatzenbuehler, Phelan, & Link, 2013), racial residential segregation (D. R. Williams & Collins, 2001), and racism (J. Phelan & Link, 2015) influence health inequalities. Link and Phelan (1995)

identify stressful life events and stress-process variables, such as social support, as social factors that influence disease through access or barrier to resources that aid in avoiding disease. Resources such as knowledge, money, power, and social connections all act to protect health and enable health decision-making. These fundamental causes have a persistent association with disease and poor health outcomes due to their relationship with access to resources. Stress may increase the risk of disease through behavioral responses in the form of high-risk behavior such as contraceptive nonuse (Kelli Hall et al., 2013a), physiological responses such as increased inflammatory markers or elevated blood pressure (Gouin et al., 2012), and psychological or mental responses such as anxiety or depression, which have been noted to influence contraceptive adherence (Kelli Hall, Steinberg, Cwiak, Allen, & Marcus, 2015).

The use of Fundamental Cause Theory to frame the development of this research project leads us to hypothesize that stress acts as a fundamental cause of unintended pregnancy. Common sources of stress, including financial, employment, and insurance concerns, create barriers to accessing healthcare providers and the uptake of contraception (Dennis & Grossman, 2012; Eisenberg, McNicholas, & Peipert, 2013; Secura et al., 2010). While an unintended pregnancy is not inherently considered a disease, it can be classified as a life event that may be disruptive and lead to negative consequences as described above. No literature has examined how stress over time impacts the risk of unintended pregnancy.

Methods

Study Design

This was a secondary analysis conducted from the First Baby Study (FBS), a three-year longitudinal cohort study of 3,006 women who were recruited when pregnant with their first baby. Women who had previously had miscarriage(s) or abortion(s) qualified for inclusion. The

primary aim of the FBS was to investigate the relationship between mode of first delivery and subsequent childbearing (Kjerulff et al., 2013). Women were included if they were between the ages of 18 and 35, spoke English or Spanish, were intending to give birth in a hospital in Pennsylvania, and were nulliparous and pregnant with a singleton pregnancy. Women were excluded from the study if they intended to have a tubal ligation immediately postpartum or planned for the infant to be adopted.

Institutional Review Board (IRB) approval for the project was obtained by the Pennsylvania State College of Medicine and the IRBs of participating hospitals. Written informed consent was obtained from all participants after at least 24 weeks gestation. Data was collected via phone survey at baseline during the 3rd trimester, and 1, 6, 12, 18, 24, 30, and 36 months postpartum, and included multiple validated instruments.

Recruitment

Active and passive recruitment methods were utilized, with participants being recruited through childbirth educational classes, hospital-based advertising such as posted flyers and hospital tours, and low-income clinics or community centers. Participant enrollment took place between January 2009 and April 2011. Participants were first interviewed via phone after the 30th week of gestation, and one month postpartum, and then every six months postpartum for three years. Full description of recruitment and sampling for this research project has been published elsewhere (Kjerulff et al., 2013).

Measures

Time-Constant Demographic Variables

Age, maternal education, race, intention and planning of first delivery, and baseline poverty status were analyzed as time-constant demographic variables gathered when participants

were in the third trimester of their pregnancy. Poverty status was calculated using the U.S. Census Bureau's classification system, with a household income over 200% of the poverty threshold classified as *not poverty*, household income 100-200% of the poverty threshold as *near poverty*, and household incomes less than 100% of the poverty threshold classified as *poverty* (United States Census Bureau, 2018).

Time-Variant Demographic Variables

The use of both time-constant and time-variant variables allows for the conduction of a survival analysis, demonstrating change in variables over time post first birth. Marital status, insurance status, trouble affording basic needs, and ease of accessing healthcare were analyzed as time-variant demographic information and collected at baseline and every 6-month interval. Marital status was categorized as married, living with partner, partnered but not living together, or not partnered. "Partner" was not specified as an opposite-sex partner. Affordability of basic needs was measured with the question, "In general, do you and your family have a lot of trouble, some trouble, or no trouble at all paying for basic needs such as food, housing, gas, and electrical bills?" Analysis was performed with two categories, *No trouble* and *Some or a lot of trouble*. Insurance was assessed with the question, "Was there any point since [the last time point] that you did not have any health insurance." Ease of accessing care was measured with the question, "How easy or difficult has it been for you to get medical care when you needed it," with analysis comparing the categories *Extremely or somewhat easy* and *Extremely or somewhat difficult*.

Measures of Pregnancy Intention and Pregnancy Planning

The outcomes of interest in this study are pregnancies that are unintended, unplanned, or both unintended and unplanned. Important distinctions lie between the affective nature of pregnancy intention and the behaviors required for pregnancy planning (Mumford et al., 2016).

Our outcomes of interest include an affective intention variable and a behavioral planning variable independently as well as jointly, in analyzing pregnancies that are unintended, unplanned, and both unintended and unplanned. Women were asked if they were pregnant at each timepoint starting at 6 months postpartum. Women that reported that yes, they were pregnant, were asked about pregnancy intention and planning of that pregnancy. Women who stated they didn't know if they were pregnant were considered to not be pregnant and were not asked about intention or planning of a potential pregnancy. If a participant had a pregnancy between the time of the prior time point and current time point, but were not currently pregnant, they were not asked about pregnancy intention and planning.

Pregnancy Intention

Pregnancy intention was measured with standard measurement from the Pregnancy Risk Assessment Monitoring System (PRAMS) (PRAMS Working Group, 1996). This measure asks, "Thinking back to just before you got pregnant this time, how did you feel about becoming pregnant? Would you say: You wanted to be pregnant sooner, pregnant later, pregnant then, or you didn't want to be pregnant then or at any time in the future." Per standard classifications, pregnancies reported to be wanted later or not at any time in the future are categorized as *unintended*, and pregnancies wanted then or sooner categorized as *intended* (Mosher, Jones, Abma, Department of Vital Statistics, & Division of Vital Statistics, 2012; J. Santelli et al., 2003).

Pregnancy Planning

Two questions were used to evaluate for unplanned pregnancies: "Were you using any type of birth control such as condoms, withdrawal, or birth control pills at the time your baby was conceived?" and, "At the time you conceived, were you trying to become pregnant?". These

two questions represent a means of evaluating pregnancy planning as both behaviors that can be taken to prevent pregnancy (using contraception) and behaviors that can be taken to work towards pregnancy ("trying" to become pregnant). Women who were using any type of birth control at the time of conception, even inconsistently, were categorized as planning against pregnancy and a subsequent pregnancy was characterized as unplanned. Women who reported they were "trying" to become pregnant were characterized as having a planned pregnancy.

Stress Change

Maternal stress is measured with a modified 12-item stress subscale of the Prenatal Psychosocial Profile (PPP), developed from the Daily Hassles Scale, as a means to measure stress experienced during pregnancy (Curry, Campbell, & Christian, 1994; Kanner, Coyne, Schaefer, & Lazarus, 1981). The PPP is a valid and reliable measure in culturally diverse women in the United States (Curry, Burton, & Fields, 1998). Pilot testing of this instrument in the First Baby Study population found that the items, "Sexual, emotional or physical abuse" and "Problems with alcohol or drugs" did not test well in the population studied. These two items were changed to "Fights with partner" and "Fights with other family members". The new items demonstrated corrected item-total correlations of 0.44 and 0.42 (A. L. Phelan, DiBenedetto, Paul, Zhu, & Kjerulff, 2015). An additional item was added to the instrument for the purpose of this study, "Problems with the baby," given this common feature of all participants. The revised 12-item instrument was internally valid, with a Cronbach's alpha of 0.73.

Participants reported perceived stress of each stressor on a scale from 'no stress' (scored at 1) to 'severe stress' (scored at 5), for a total score of 12 to 48 and higher scores indicating a larger amount of perceived stress. Previous researchers have set "high" stress to be scores above the mean plus two standard deviations (Heaman, 2005), above the 75th percentile (Misra,

O'Campo, & Strobino, 2001), or have categorized low, medium, and high levels of stress as tertiles (A. L. Phelan et al., 2015). When used in analysis, total score is typically used (Curry et al., 1994). Stress change is measured as the change in stress score from one data collection time point to the next. Higher scores indicate an increase in maternal stress over time, a negative score indicates a decrease in stress over time.

Maternal-Infant Bonding

Feelings of closeness with the child(ren) is measured with a subset of the Postpartum Bonding Questionnaire (PBQ), a questionnaire developed to identify women at risk for mother-infant relationship disorders, validated in research and clinical settings (Brockington, Fraser, & Wilson, 2006; van Bussel, Spitz, & Demyttenaere, 2010; A Wittkowski, Wieck, & Mann, 2007; Anja Wittkowski, Williams, & Wieck, 2010). While a 22-item shortened version of the questionnaire was developed (Anja Wittkowski et al., 2010), it was deemed too long to be used in a large research study that involved the completion of many surveys at each time point (Bicking Kinsey, Baptiste-Roberts, Zhu, & Kjerulff, 2014). Items included in the shortened PBQ were chosen from each of the three original PBQ factors, including impaired bonding, rejecting and anger, and maternal confidence, and have acceptable internal reliability (Cronbach's alpha = 0.67) (Bicking Kinsey et al., 2014; Brockington et al., 2006). The further truncated version of the PBQ used here, the shortened-Postpartum Bonding Questionnaire (S-PBQ), is a 13-item scale depicting a positive or negative attitude towards the child or motherhood, rated on a five-point scale (1 = *all the time*, 5 = *none of the time*). Half of the items regard positive bonding (e.g. close to baby, cuddle, being a mother) and half are negative bonding traits (e.g. annoys, cries too much, wish I never had) and are reverse coded. Bonding is measured on a continuous scale from 13 – 65, with higher scores indicating higher levels of infant bonding. Internal consistency is

acceptable, with a Cronbach's alpha of 0.67 and convergent validity demonstrated with longer scales of mother to infant bonding (A Wittkowski et al., 2007). This instrument was used to collected maternal infant bonding data between the mother and the first baby at 1, 6 and 12 months postpartum.

Social Support

A modified *Medical Outcomes Study (MOS) Social Support Scale* was used to evaluate maternal social support (Sherbourne & Stewart, 1991). The MOS Social Support Scale measures four dimensions of social support: affectionate support, positive social interaction, tangible support, and emotional/informational support. The modified MOS Social Support Scale, used by McGovern et al. (2006) is a five-item tool with one item addressing each of the dimensions of social support (one item for each emotional and informational support). Each item is rated on a five-point scale (1 = *none of the time* to 5 = *all of the time*) for a total output of 5 to 25. Higher scores indicate higher maternal social support. In all postpartum timepoints an additional four items were added that specifically relate to the social support of new mothers, including, "Someone to help you take care of the baby" and "Someone to teach you what you need to know about taking care of a new baby". This modified social support instrument demonstrated high internal reliability with a Cronbach's alpha of 0.88 (Alexander, Zhu, Paul, & Kjerulff, 2017).

Partner Support for Participant

Partner/father of baby support is measured with the Dyadic Adjustment Scale's Dyadic Satisfaction subscale, which measures the degree to which the participant feels satisfied with their partner (Spanier, 1976, 1979). This is a seven-item subscale, rating how frequently events occur in a relationship on a six-point scale (1 = *all the time* to 6 = *never*) with higher scores indicating higher levels of satisfaction with the partner. A reliability generalization meta-analysis

of 91 published studies utilizing the Dyadic Adjustment scale found that the Dyadic Satisfaction subscale had a mean alpha of .848, stable across diverse samples (Graham, Liu, & Jeziorski, 2006). Four items in the subscale were adapted by the study authors to make appropriate for partners that are not married or living together.

Partner Support with the Baby

An investigator-developed 6-item scale was used to measure partner baby support, including questions such as, "How much of the time is your partner interested in the baby?" and "In terms of your husband or partner and the new baby, how much of the time does your partner take care of the baby?". Questions are rated on a scale of *none of the time* to *all of the time*. The instrument has acceptable internal reliability, with a Cronbach's alpha of 0.70. Higher scores indicate more partner support with the new baby. This survey was collected at all postpartum data collection timepoints.

Analysis

Participants who did not have complete data for all seven data collection time points were dropped from analysis. Chi-square and t-tests were conducted for categorical and continuous variables to compare demographic data in those who were in the analysis sample and those who were not. Participants that declined an answer were considered missing. Participants that responded "don't know" to a question were considered missing. Women in the analysis sample were more likely to be white and higher educated, were slightly older, and less likely to be in poverty. Results should be viewed through the lens that the analysis sample is less predisposed to the outcome of interest secondary to these demographics. See *Limitations* section for further discussion of implications. Distribution frequencies were calculated for demographic data at

baseline including race, age, maternal education, parity, poverty status, marital status, insurance. Time to a first and subsequent unintended or unplanned pregnancies were ordered events.

An Andersen-Gill (Andersen & Gill, 1982) survival analysis was conducted to evaluate the three main outcomes of interest: unintended, unplanned, and both unintended and unplanned pregnancies. Given the potential for multiple-failures of pregnancy, and relevance of the ordering of pregnancies, the Andersen-Gill model allows for the unique qualities of multiple pregnancies as an outcome to be taken into consideration (Cleves & StataCorp, n.d.). Given that the power of a survival analysis is related to the number of events that occur, a minimum of 10 events observed for each covariate in the equation is needed to minimize bias in regression coefficients (Peduzzi, Concato, Feinstein, & Holford, 1995). Coefficients in this analysis include stress level, general support, partner support, feelings of closeness with child(ren), and demographic information, resulting in a minimum of 100 unintended and unplanned pregnancies in the data for optimal results.

Cox proportional hazards regression models were constructed to evaluate survival without an unintended (UIP), unplanned (UPP), or unintended and unplanned pregnancy (UIP/UPP). Unadjusted and adjusted models were constructed for each of the three outcomes of interest. Stress change was analyzed as a categorical variable with five categories: no change since the previous time point, minor positive or negative change (+/- 1 – 3), or major positive or negative change (+/- 4 – 18).

Results

There were 3,006 participants originally recruited for the study, with 2,423 women being followed for the entire three-year data collection timeframe. Of these women, 1,730 had complete data for all seven time points. Data were censored at each time point if the participant

was not at risk of pregnancy at that point, including those who reported being sterilized, not having sex since the prior time point, and who were pregnant now but did not have a new pregnancy since the last data collection time point.

Participants were generally white (91.79.%, 2.6% black, 2.89% Hispanic), with almost half of participants being 25 – 29 years old. Participants had mostly completed college (68.7%), were married (84.5%), and had never been pregnant before (81.27%). Women who were in the analysis sample, compared to those that were dropped for missing data, were a selective subset of the original sample, being more likely to be white (91.79% vs. 71.69%, p = 0.000), more likely to be older than 24 years old (85.09% vs. 56.66%, p = 0.000), and less likely to be living in poverty (3.70% vs. 15.06%, p = 0.000). See Table 3.1 for further demographic information and comparisons.

A total of 1,490 pregnancies were experienced by the 1,730 participants in the 36-month follow-up period. Of these pregnancies 332 (22.28%) were unintended, 372 (24.97%) were unplanned, and 287 (19.26%) were both unintended and unplanned. Therefore, this study was powered for a survival analysis with the intended number of covariates. Stress change over time was noted to be within the range of -18 to +18, with the five stress change categories having the following distributions: no change (19.18% of cases), minor negative change (25.45%), major negative change (6.24%), minor positive change (34.88%), and major positive change (13.07%). In unadjusted models, women experiencing changes of stress over time, regardless of whether that change was positive or negative, were more likely to experience an unplanned, unintended, or both unplanned and unintended pregnancy (see Table 3.2). This held true in adjusted models and was statistically significant for women experiencing major decreases (HR 1.9, p=0.006 / HR 2.34, p = 0.001 / HR 2.26, p = 0.003), minor decrease (HR 1.68, p=0.004 / HR 1.66, p = 0.012 /

HR 1.73, p=0.013), and minor increase in stress change (HR 1.30, p = 0.054 / HR 1.60, p = 0.013 / HR 1.67, p = 0.014), for unplanned, unintended, and unplanned and unintended pregnancies, respectively (see Table 3.3). Women who experienced major increases in stress over time did not experience a statistically significant increase in the outcomes of interest. Additionally, few covariates were statistically significant in adjusted models, with maternal age (p = 0.017 in unplanned pregnancy model), social support (p = 0.010 in unintended/unplanned pregnancy model), and trouble paying for basic needs (p = 0.056 in unplanned pregnancy, and p = 0.047 in unintended/unplanned pregnancy models) being the only variables of significance

Table 3.1 Demographic information

	Baseline (N = 3,006)	Sample Used (N = 1,730)	Dropped from Sample (N = 1,276)	Chi-squared or t-test p-value of those in analysis sample vs those not
Race (N = 3,005 / 1,730)				
White non-Hispanic	2,502 (83.26%)	1,588 (91.79%)	914 (71.69%)	**0.000**
Black non-Hispanic	221 (7.35%)	45 (2.60%)	176 (13.80%)	
Hispanic	155 (5.52%)	50 (2.89%)	116 (9.10%)	
Other	116 (3.86%)	47 (2.72%)	69 (5.41%)	
Age (N = 3,006 / 1,730)				
18 – 24	811 (26.98%)	258 (14.91%)	553 (43.34%)	**0.000**
25 – 29	1,193 (39.69%)	804 (46.47%)	389 (30.49%)	
Over 30	1,002 (33.33%)	668 (38.61%)	334 (26.18%)	
Education (N = 3,006 / 1,730)				
High school or less	501 (16.67%)	150 (8.67%)	351 (27.51%)	**0.000**
Some college of vocation training	804 (26.75%)	392 (22.66%)	412 (32.29%)	
Completed college or higher	1,701 (56.59%)	1,188 (68.67%)	513 (40.20%)	
Baseline parity (including this pregnancy)				
(N = 3,004 / 1,730)	2,398 (79.83%)	1,406 (81.27%)	992 (77.86%)	**0.033**
1	469 (15.61%)	257 (14.86%)	212 (16.64%)	
2	137 (4.56%)	67 (3.87%)	70 (5.49%)	
> 2				
Poverty Status (N= 2,998 / 1,730)				
Poverty	225 (8.51%)	64 (3.70%)	191 (15.06%)	**0.000**
Near poverty	340 (11.34%)	118 (6.82%)	222 (17.51%)	
Not poverty	2,403 (80.15%)	1,548 (89.48%)	855 (67.43%)	
Marital Status at baseline				
(N = 3,006 / 1,730)				
Married and living with husband	2,117 (70.43%)	1,462 (84.51%)	655 (51.33%)	**0.000**
Not married, but living with a partner	544 (18.10%)	205 (11.85%)	339 (26.57)	

Partnered, but not living together No partner or significant other	187 (6.22%) 158 (5.26%)	43 (2.49%) 20 (1.16%)	144 (11.29%) 138 (10.82%)	
Any time spent uninsured this pregnancy? (N = 3,006 / 1,730) Yes No	391 (13.01%) 2,615 (86.99%)	137 (7.92%) 1,592 (92.08%)	254 (19.91%) 1,022 (80.09%)	**0.000**
Trouble paying for basic needs? (N= 3,002 / 1,730) Yes No	620 (20.65%) 2,382 (79.35%)	243 (14.05%) 1,487 (85.95%)	377 (29.64%) 895 (70.36%)	**0.000**
Ease of accessing care (N = 3,006 / 1,730) Extremely or somewhat easy Somewhat or extremely difficult	2,924 (97.27%) 82 (2.73%)	1,708 (98.73%) 22 (1.27%)	1,216 (95.30%) 60 (4.70%)	**0.000**
Social Support (N = 3,006 / 1,730) Range Mean score Std. Deviation 25% / 50% / 75%	5 – 31 22.21 3.01 21 / 23 / 25	5 – 28 22.36 2.68 21 / 23 / 25	5 - 31 22.00 3.41 20 / 23 / 25	**0.001**
Partner Support (N = 3,006 / 1,730) Range Mean score Std. Deviation 25% / 50% / 75%	14 – 39 30.85 2.655 29 / 31 / 33	16 – 35 31.05 2.37 30 / 31 / 33	14 – 35 30.56 3.01 29 / 31 / 33	**0.000**
Total Stress Score (N = 3,006 / 1,730) Range Mean score Std. Deviation 25% / 50% / 75%	12 – 43 18.63 4.51 16 / 18 / 21	12 – 41 18.16 3.94 15 / 18 / 20	12 – 43 19.27 5.11 16 / 18 / 22	**0.000**
Want another baby (N = 3,006 / 1,730) Yes No Don't know	2,586 (86.03%) 202 (6.72%) 218 (7.25%)	1,539 (88.96%) 72 (4.16%) 119 (6.88%)	1,047 (82.05%) 130 (10.19%) 99 (7.76%)	**0.000**
Intend another baby (N = 3,006 / 1,730) Yes No Don't know	2,566 (85.36%) 236 (7.85%) 204 (6.79%)	1,525 (88.15%) 95 (5.49%) 110 (6.36%)	1,041 (81.58%) 141 (11.05%) 94 (7.37%)	**0.000**

Table 3.2 Unadjusted Models

	Hazard Ratio (p-value)
Unplanned Pregnancy (compared to no change)	
Major negative stress change	**2.15 (0.001)**
Minor negative stress change	**1.71 (0.003)**
Minor positive stress change	**1.46 (0.029)**
Major positive stress change	1.30 (0.235)
Unintended Pregnancy (compared to no change)	
Major negative stress change	**2.64 (0.000)**
Minor negative stress change	**1.71 (0.007)**
Minor positive stress change	**1.70 (0.005)**
Major positive stress change	**1.68 (0.026)**
Unplanned and Unintended Pregnancy (compared to no change)	
Major negative stress change	**2.73(0.000)**
Minor negative stress change	**1.81 (0.007)**
Minor positive stress change	**1.80 (0.004)**
Major positive stress change	**1.76 (0.027)**

Table 3.3 Adjusted models

	Unplanned Pregnancy	**Unintended Pregnancy**	**Unplanned and Unintended Pregnancy**
	Hazard Ratio (p-value)	Hazard Ratio (p-value)	Hazard Ratio (p-value)
Stress Change (compared to no stress change)			
Major negative stress change	**1.90 (0.006)**	**2.34 (0.001)**	**2.26 (0.003)**
Minor negative stress change	**1.68 (0.004)**	**1.66 (0.012)**	**1.73 (0.013)**
Minor positive stress change	**1.40 (0.054)**	**1.60 (0.013)**	**1.67 (0.014)**
Major positive stress change	1.16 (0.63)	1.46 (0.122)	1.41 (0.194)
Maternal Age (compared to 18 – 24 years old)			
25 – 29 years old	0.86 (0.43)	0.95 (0.811)	0.85 (0.453)
Over 30 years old	**0.59 (0.017)**	0.73 (0.164)	0.62 (0.046)
Race (compared to white, non-Hispanic)			
Black non-Hispanic	1.18 (0.702)	1.29 (0.51)	1.20 (0.660)
Hispanic	1.16 (0.678)	0.66 (0.331)	0.73 (0.454)
Other	1.03 (0.953)	1.05 (0.939)	1.22 (0.731)
Marital Status (compared to married and living with husband)			
Not married, but living with a partner	1.05 (0.850)	1.06 (0.807)	1.15 (0.592)
Partnered, but not living together	0.26 (0.068)	0.30 (0.105)	0.34 (0.141)
Baseline Parity (compared to 1)			
2	1.29 (0.123)	1.29 (0.139)	1.39 (0.07)
Greater than 2	1.43 (0.184)	1.03 (0.913)	1.11 (0.762)
Poverty Status (Compared to Not Poverty)			
Poverty	0.67 (0.240)	0.62 (0.211)	0.66 (0.291)
Near poverty	0.90 (0.632)	0.88 (0.614)	0.94 (0.818)
Social Support	0.98 (0.084)	0.98 (0.063)	**0.97 (0.010)**
Partner Support	0.99 (0.685)	0.98 (0.290)	0.98 (0.331)
Ease of Accessing Care (Compared to extremely or somewhat easy) Somewhat difficult or extremely difficult	0.79 (0.446)	0.68 (0.257)	0.70 (0.310)
Insurance Status (Compared to no time without insurance) Time without insurance	0.96 (0.872)	0.90 (0.680)	0.90 (0.690)
Trouble Paying for Basic Needs (Compared to trouble paying) No trouble paying	0.79 (0.143)	**0.83 (0.056)**	**0.70 (0.047)**

Discussion

This is a well-powered longitudinal survival analysis that examines the influence of changes in stress levels on unintended and unplanned pregnancies for the three years following a first birth in a large sample of primarily white, married, highly educated women recruited in the northeast United States. The use of survival analysis in this way is an innovative means of measuring risk over time. Minor and major decreases in stress were shown to increase the risk of all three outcomes of interest (unintended, unplanned, and both unintended and unplanned pregnancies), with major decreases in stress having the largest effect. This relationship may be related to decreases in stress leading to less vigilance in the prevention of an unintended pregnancy. Similarly, minor increases in stress were associated with an increased risk of unintended and unplanned pregnancies, although to a less extent than increases in stress. This too may be related to minor stress changes leading to decreased contraceptive use.

Major increases in stress were associated with no statistically significant changes in risk of unintended and unplanned pregnancy. This finding may be associated with improved vigilance in reproductive planning, or stress-related decreases in intercourse leading to fewer exposures for risk of an unintended or unplanned pregnancy. Previous literature has found that women experiencing higher levels are stress are more likely to elect to use a highly effective form of birth control following an abortion (Steinberg et al., 2013), in contrast to literature which has demonstrated that women experiencing distress and stress are more likely to participate in high-risk sexual behaviors including contraceptive nonuse and use of less effective contraceptive methods (Kelli Hall et al., 2013a). These findings suggest that current reproductive realities,

including pregnancy status, mediate the relationship between stress and contraceptive use, potentially having a subsequent effect on risk of an unintended pregnancy.

This study is unique in its evaluation of stress from the vantage point of stress change over time. Debate exists on whether the outcome of stress should be measured with objective stressors or perception of stress (Schetter, 2011; Hobfoll, Schwarzer, & Koo Chon, 1998; Schwarzer, Schulz, Schwarzer, & Schulz, 2003). Perception of stress was used for analysis rather than developing variables for individual stressful events. Due to the dynamic nature of stressful events, and the ways in which event intensity, duration, predictability, and controllability work to influence the cognitive appraisal of the stressor, evaluating the perception of stress was deemed the most appropriate way to evaluate the effect that stressors may have on pregnancy outcomes (Cohen, Kessler, & Underwood, 1997; Schwarzer et al., 2003). However, this study does not distinguish between positive (eustress) and negative (distress) stressors (Selye, 1978). While participants are asked to rate their stress, there is no assessment regarding how this stress influences the participant's ability to cope with, or respond to, the stressful event in a way that might be positive. Additionally, participant's belief in their perceived control may mitigate the negative relationship between life stress and their effects on health (Becker, Israel, Schulz, Parker, & Klem, 2005). While this study does not distinguish between stressors that may be acute and those that may be chronic, by analyzing the change in stress over time this study demonstrates the relationship between acute changes in stress and the outcomes of interest.

Utilizing both affective and behavioral constructs in analysis allows for a more comprehensive evaluation of where stressors may create the most challenge in relation to risk for unintended and unplanned pregnancies. The overall percentage of pregnancies that were qualified as unintended in this study was lower than the approximate half of pregnancies reported

nationally in the United States overall (Mosher, Jones, Abma, & Department of Vital Statistics, 2012). However, as many of the participants in this study are low-risk of having an unintended pregnancy given their socioeconomic statuses, the prevalence of unplanned and unintended pregnancies is less surprising.

Pregnancy intention and planning are measured retrospectively, although within six months, potentially resulting in recall bias or social desirability bias (A Aiken, 2015; Abigail Aiken & Trussell, 2017), or incongruencies between pre- and post-conception qualifications (Guzzo & Hayford, 2014; T Joyce, Kaestner, & Korenman, 2000; Yeatman & Sennott, 2015). The pregnancy intention measurement utilized here is consistently used in the scientific literature, therefore enabling comparison with other literature examining risk and opportunities for improvement. However, the measurement of pregnancy planning, as a two-question behavioral question regarding behavior to prevent and work towards pregnancy, was constructed for use in this study and therefore cannot be used as a comparison with other literature.

While this study examines stress as a primary exposure for risk of pregnancy, there are many confounding variables outside of stress and a woman's desires that influence an unintended and unplanned pregnancy. The most proximal influences on pregnancy as an outcome include sexual behavior and contraceptives use, including the frequency and timing of sexual intercourse and (mis-/non-)use of contraception. The use of pregnancy planning as an outcome attempts to approach some of these behaviors, with the report of "trying" assumed to be associated with having sex. Additionally, it can be assumed that all women were fecund at baseline as they were all pregnant, and women who were decidedly no longer fecund through sterilization were censored in the model.

The ability to control for many sociodemographic and potentially moderating variables was a strength of this project. Using pregnancy intention or planning as a sole analytic factor when looking at health outcomes has been critiqued for ignoring the structural factors that may play significant roles in negative maternal, fetal, and child health outcomes (Macleod, 2016). Having three outcomes of interest allows for a more nuanced analysis of how affective and behavioral outcomes may respond differently to changes in stress levels. This is particularly relevant given the ways in which covariates have played an important role in better understanding reproductive health outcomes. However, apart from maternal age, social support, and trouble paying for basic needs, no other covariates were statistically significant for our three outcomes of interest. This is of particular interest given previous literature which has found that sociodemographic factors predict approximately 20% of unintended pregnancies, particularly when looking at factors beyond race (Kemet, Lundsberg, & Gariepy, 2018; Kim et al., 2016; Metcalfe, Talavlikar, du Prey, & Tough, 2016a). Social support was the most frequently statistically significant covariate in the models constructed, consistent with published literature demonstrating social support to be a moderator on the effect of stress on health outcomes (Bellman, Forster, Still, & Cooper, 2003; Devereux, Hastings, Noone, Firth, & Totsika, 2009; Dunn, Burbine, Bowers, & Tantleff-Dunn, 2001; Pengilly & Dowd, 2000; Viswesvaran, Sanchez, & Fisher, 1999; Wilks & Croom, 2008).

Limitations

While this study had strengths in the size of its longitudinal analysis, the demographic breakdown of participants means that results may not be generalizable. Those that participated in this study were predominantly older, married, well-educated, and not living at or near poverty; these attributes all being generally protective of both life stressors and unintended and unplanned

pregnancies (Afable-Munsuz & Braveman, 2008; Mosher, Jones, Abma, & Department of Vital Statistics, 2012). Additionally, the participants in the analysis sample were less diverse, older, and higher educated that the overall population of women pregnant with their first babies in the state at the time of data collection (Kjerulff et al., 2013), and when compared to those who were dropped from the sample for missing data. The demographics of the analysis sample may limit external validity. As this sample is theoretically less likely to experience an unintended and unplanned pregnancy than a sample that is more representative of the United States more generally, it is plausible that a more diverse sample would result in stronger conclusions drawn regarding the relationship between stress and pregnancy outcome. Further work should be done to explore stress and pregnancy outcomes in a more diverse sample.

A significant limitation of this study is only capturing pregnancies that are current, not those who have miscarried or been terminated between the six-month intervals of data collection. The pregnancies that occurred between data collection timepoints and were not maintained, namely through terminations, are arguably much more likely to be unintended and unplanned. Therefore, had these pregnancies been included the ratio of unintended to intended pregnancies would have been higher, potentially resulting in greater significance of findings.

Additionally, our model does not consider frequency of sex. Stress has been found to have a complicated relationship with frequency of sex. While women with stress symptoms are more likely to have sex in a week than women without stress (K. S. Hall, Kusunoki, Gatny, & Barber, 2014), this may be moderated by the level of satisfaction that a woman has in the relationship (Bodenmann, Ledermann, & Bradbury, 2007). While participants who reported not having any sex since the previous data collection were censored for that time point, the data set did not allow for quantifying heterosexual intercourse. A better understanding of how frequently

participants were having sex, as well as the frequency of unprotected sex, would better inform our models regarding the relationship between stress and unintended and unplanned pregnancies.

Conclusion

While an unintended pregnancy is recognized as a potential stressful event in and of itself, ours is the first study of which we are aware to examine the effects of changes in stress levels over time on the risk of unintended and unplanned pregnancy. While there have been declines in unintended pregnancies in all studied strata of age, income, race, and education since 1981, it remains a persistent public health problem (Finer & Zolna, 2016). Declines in rates of unintended pregnancy are likely related to increased use of effective, long-acting contraceptives, particularly intrauterine devices (Finer & Zolna, 2016). Additionally, recent rates of decline are also related to improvements to access of reproductive healthcare generally, secondary to increased coverage through Medicaid expansion and the Affordable Care Act (Burlone et al., 2013; Jones & Sonfield, 2016), although not a factor in this study population. However, better understanding the influence of stress change on pregnancy outcome can guide stress-related interventions to better and more holistically address attempts to reduce rates of unintended pregnancy. Future work will more clearly measure positive and negative stress, to assess how they may uniquely impact risk of unintended and unplanned pregnancy, as well as include measures of sex frequency. Additionally, the collection of objective measures of stress, such as inflammatory biomarkers, in addition to subjective self-reports of the experience of stress, may give a more nuanced view of the relationship between stress and pregnancy outcome.

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Chapter Four Reproductive Decision-Making in Women from Syria who are Refugees (Paper Two)

Introduction

More than 65 million people worldwide have been forcibly displaced from their homes secondary to conflict (United Nations High Commissioner for Refugees, 2016), with the United States resettling approximately 700,000 refugees in the past ten years (The UN Refugee Agency, 2016c; Zong & Batalova, 2017). Half of these refugees are women, whose reproductive healthcare needs and desires are poorly understood, despite the recognition of barriers to quality and culturally congruent care (A. J. Gagnon et al., 2002). Given that one in five refugee women of reproductive age are pregnant at any time, and the noted incongruence between reproductive desires and outcomes frequent in women who are refugees, this provides significant opportunity for an improvement in reproductive healthcare access and outcome globally (Inter-Agency Working Group on Reproductive Health in Crises, 2014).

The delivery of comprehensive family planning services could avert up to 32% of maternal deaths and nearly 10% of childhood deaths worldwide (Inter-Agency Working Group on Reproductive Health in Crises, 2010b), with family planning services having been declared to be a life-saving intervention in humanitarian settings (Inter-Agency Working Group on Reproductive Health in Crises, 2010a). Since March 2011 when civil unrest began in Syria, approximately 4.9 million Syrians have registered as refugees, resulting in more refugees from Syria than any other country in the world (The UN Refugee Agency, 2016c). Roughly half of Syrian refugees are women, with approximately 50% being of reproductive age (The UN Refugee Agency, 2016c). Mounting unrest in Syria directly impacted healthcare access and

delivery, with access to family planning, considered a non-emergency service, frequently unavailable (Medecins Sans Frontieres & Armstrong, 2016). While approximately 60% of women in pre-conflict Syria were using some form of family planning, contraceptive use is much lower following displacement due to barriers involving cost and access (Benage et al., 2015; Masterson et al., 2014). A 2015 field-based survey of Syrians living in Lebanon showed more than half of pregnant refugees did not desire their current pregnancy and approximately 75% wished to prevent future pregnancy (Benage et al., 2015). Additionally, the majority of non-pregnant women reported that they would attempt to self-abort if they experienced an unwanted pregnancy (S Krause et al., 2015).

While gaps in reproductive care are prevalent throughout displacement, no literature is available to address how reproductive decision-making evolves throughout the resettlement process for women from Syria who are refugees. Additionally, no research studies are available that have examined the reproductive experiences of Syrian refugees after resettlement in the United States in particular. A better understanding of the care that Syrian women who are refugees desire, and the points in the migratory process where they have felt most hindered in their reproductive decision-making, may help establish congruence between reproductive intentions and outcomes.

Purpose and Specific Aims

The purpose of this project was to examine reproductive decision-making in Syrian refugee women throughout the resettlement process. This research is guided by the desire to improve policy and healthcare access for refugees in the United States and globally. The project's specific aims are to explore: (1) reproductive intentions and behaviors throughout the

resettlement process, (2) factors influencing the unmet need for contraception post-resettlement, and (3) facilitators and barriers to reproductive healthcare access post-resettlement.

Theoretical Framework

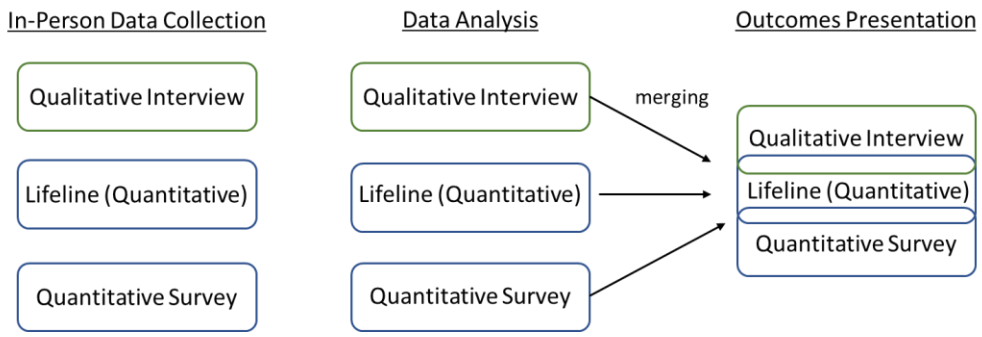
Grieco and Boyd's (1998) gender-informed migrant framework was utilized to inform the development of this project. This three-stage analytical framework evaluates how gender relations, roles, and hierarches influence the decision-making of migrants during pre-migration, the act of migrating, and post-migration. This framework highlights issues that are specific to the intersection of gender and migration, emphasizing the multi-faceted influence of migration that goes beyond the essentialization of culture. This lens was used to develop questioning within the interviews to better understand how the critical intersections of gender, migratory status, and social and political structures influence reproductive decision-making. Factors to contextualize decision-making as specified within this framework, including gender relations, status and roles of women, policies within the country of origin and country of destination, the influence of intermediary institutions and organizations, and financial and employment concerns, were addressed directly and indirectly through interview questions. Additionally, these factors were treated as themes deductively derived from theory in the coding process. This framework worked in conjunction with the authors' feminist perspectives on conducting research, highlighting the importance of the intersection of social and cultural identities to inform behavior and decision-making. An awareness of the centrality of the participant's voices to the research, reflexivity amongst all researchers, and collaborations with local community partners were priorities within this framework.

Methods

Design

A concurrent mixed-methods approach was utilized (Creswell & Plano Clark, 2017) to best understand reproductive decision-making in this population. With the goal of utilizing the integration of qualitative and quantitative data to generate insights that would not have been possible with only one method, mixed-methods is an ideal approach for this project as it allows for both quantifying and contextualizing experiences, situating women's unique voices central to the research. The concurrent study design, in which qualitative interviews and quantitative surveys were completed by the same participant at the same interaction, is outlined in Figure 4.1.

Figure 4.1 Mixed methods design



Pilot Testing Procedures

The recruitment process and study methodology were piloted prior to this study. The London Measure of Unplanned Pregnancy was used in conjunction with qualitative interviews structured around a reproductive event history calendar. The purpose of this pilot was to test acceptability and feasibility of these methods to assess reproductive decision-making in this population. Improvements on the pilot study have been made to better facilitate recruitment and data collection.

During the pilot study multiple women mentioned being unable to recall data with the specificity that is required with an event history calendar. This challenge with recall and accurately situating events in time is to be expected given high levels of trauma in refugee populations and the impact of trauma on memory and recall (Alpak et al., 2015; De Haene, Grietens, & Verschueren, 2010; Van Der Kolk, 1998). Because the purpose of the calendar was to facilitate discussion and story-telling as opposed to producing quantitative data that needed to be directly related to time, alternative means of structuring the interviews were sought. After an initial five interviews with a by-month calendar, a by-location calendar was trialed. While this calendar was less cumbersome to both the interviewer and the interviewee, participants continued to mention concern regarding specific recall. For this reason, qualitative interviews structured around a timeline were utilized in this project. Modifications to the research process secondary to feedback from participants is discussed elsewhere (Chuey, Wu, Ali, & Kane Low, 2019).

Procedures and Measures

Quantitative Data Collection

All participants who had experienced a pregnancy since the start of the Syrian Civil War completed a London Measure of Unplanned Pregnancy (LUMP) survey, a six-item multiple choice survey measure of pregnancy planning. Survey items explore contraceptive use immediately prior to conception, timing of the pregnancy, intention of the pregnancy, wantedness of the pregnancy, discussions with a partner about timing of children, and steps taken prior to the pregnancy to prepare (e.g. folic acid use, quitting smoking). Each question answer is scored as a 0, 1, or a 2 with an established rating scale, for a total LMUP score of 0-12. The higher the score, the higher pregnancy planning and intention. The original English LMUP

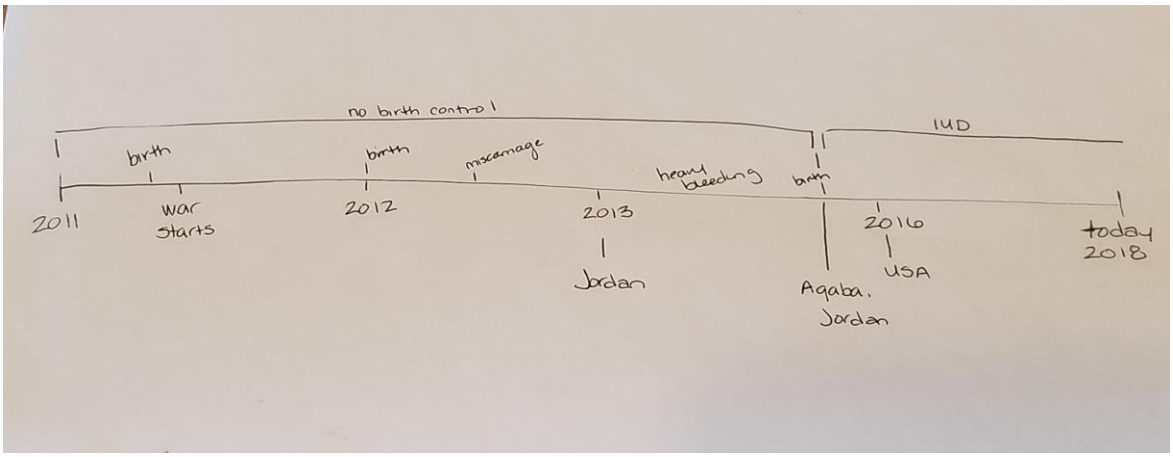
recommends using the full range of scores in analysis but also reports, as does the Arabic LMUP, that a score of less than 3 indicates unplanned pregnancy, more than 10 indicates planned pregnancy, and scores of 4-9 indicate ambivalence of pregnancy planning. The LMUP has been validated in Arabic with demonstrated face validity, internal consistency reliability, stability reliability, content validity, substantive validity, and structural validity (Almaghaslah, Rochat, & Farhat, 2017).

Qualitative Data Collection

Following completion of the survey(s), an Arabic-speaking research assistant conducted an in-depth interview structured around a timeline. Interviews lasted approximately one hour and were conducted at a location of the participant's choosing; all participants elected to have the interview take place in their home. Interviews were audio recorded, transcribed into written Arabic, and then translated to written English for the purpose of analysis.

A timeline was used to facilitate the qualitative interview process. A line was drawn horizontally from end-to-end on an 11x17 inch sheet of paper. One end of the line represented the start of the Syrian Civil War in March 2011 and the other end represented present day. This line was developed cooperatively between the interviewer and interviewee as a timeline of events and reproductive decision-making that has occurred since the start of the Syrian conflict to the present. The use of a large printed timeline allowed for the visualization of how events and decisions are related. Throughout the interview relevant notes were written on the timeline by the research assistant in Arabic. Co-creation of the timeline acted to engage the participant more fully in the interview and provided a visual stimulus for remembering retrospective data and making connections between life events and decision-making. See Figure 4.2 for sample timeline.

Figure 4.2 Sample timeline



Recruitment

Relationships with multiple community partners were cultivated for input on recruitment techniques. Community partners provided insight and advised on culturally appropriate and most effective means of recruitment for this population. Recruitment took place in southeastern Michigan. This area was chosen as Michigan is noted for accepting the second highest number of refugees from Syria in the United States (Refugee Processing Center, n.d.). In addition to refugees initially resettled in Michigan, many Syrian refugees who have been resettled in other parts of the United States then migrate to southeastern Michigan due to a large Arab and Arab-American community (Shryock & Abraham, 2000).

Fliers in Arabic were posted in locations where Syrian refugee women were likely to frequent, including classrooms that host English as a Second Language classes and in the buildings of local organizations that assist in the resettlement of refugees. A number of these organizations utilize messaging systems for communication with refugees, and in these instances study information was distributed to refugee networks via these messaging systems. At the

request of one of the community partners, a reproductive health workshop was offered by the researchers, and attendees of the workshop were informed of the opportunity to participate in the project.

Inclusion Criteria

Women were included in the project if they had left Syria since the 2011 conflict started, self-identified as a refugee, and were living in southeastern Michigan. Women needed to be 18-44 years old, be married, and report being able to read, write, and speak Arabic. Including women who were married captured participants most likely to be sexually active and able to speak to reproductive decision-making. After discussions with Syrian community leaders, marriage was the most culturally appropriate proxy to assess if a woman is sexually active for this research. Marriage has been used as a proxy for women who are sexually active in other reproductive health research conducted in Syrian refugee populations (West et al., 2016).

Participant Protection

This project received approval from the University of Michigan's Health Sciences and Behavioral Sciences Institutional Review Board. The research team used trauma-informed approaches to assess the participant for distress during the interview process. Verbal consent was obtained for participation. Participants were provided with a list of mental health resources that were culturally- and linguistically-appropriate, should they decide they need continued support following the interview. All members of the research team were instructed on confidentiality and research ethics. The interviewer was also trained to recognize and attend to emotional distress in participants. To minimize the risks to privacy and confidentiality, no identifiers were used to link the participant with the data.

Reflexivity

Considering the cross-cultural and cross-language nature of this research, and the primary author's positionality as a white woman who does not speak Arabic and is not a refugee, reflexivity played a key role in awareness of the ways in which personal views, beliefs, and experiences influenced the research process. A reflexivity journal was maintained through the entirety of the project. Additionally, per the feminist understandings of reflexive research practice in cross-language research recommendations of Temple and Edwards (2008), research assistants were considered "key informants", and were interviewed regarding their own life experiences, what issues they regard as important in relation to the research being proposed, and their relationship with Syrian refugees as a population (Temple & Edwards, 2002). The primary research assistant on this project, who conducted all interviews and double-checked interview translation for accuracy to the spirit of the interview, is herself a refugee from the Middle East and a native speaker of Arabic. This research assistant's life experience, expertise, and insight served a significant role in validating the appropriateness, legitimacy, and process within this research. Immediately following every interview, the primary researcher and research assistant who conducted the interview debriefed the content of the interview and any thoughts or feelings that arose for the research assistant throughout the course of the interview.

Analysis

All interviews were conducted by a single research assistant, and all translations were conducted by a separate research assistant. Translations were all reviewed and found to be accurate by the research assistant who conducted the interviews. Thirty-six interviews were conducted, at which point it was decided that data saturation had been achieved. Audio recordings of interviews were transcribed in Arabic by a native-speaking research assistant, and

then were translated from written Arabic to written English by a second native-speaking Arabic research assistant for the purpose of analysis. This project utilized methodological triangulation (Denzin, 1978; Jick, 1979) through the collection of both quantitative and qualitative data. Further, investigator triangulation was accomplished using Syrian and non-Syrian researchers establishing inter-rater reliability in coding of qualitative data. An audit trail was maintained through the research process, providing documentation regarding procedural and analytical decision-making (Rodgers & Cowles, 1993). Survey questions were analyzed independently to provide assessments for planning, intention, and family planning use and nonuse. Descriptive statistics were used to examine pregnancy information and overall measures of unplanned and unintended pregnancy. An interpretive phenomenological approach to qualitative analysis was utilized (Heidegger, 1962), recognizing the interpretation of participants' narratives as essential to drawing conclusions in research (Lopez & Willis, 2004). Interviews were first read in full for a narrative understanding, and then analyzed for emerging themes using thematic analysis. A codebook was established with two independent researchers. Level 1 and level 2 themes were assessed, with level 1 themes deductively derived from specific aims and the guiding theoretical framework, and additional themes inductively derived from interviews. Coding was conducted by a native Arabic-speaking research assistant, with a random coding of 20% of interviews conducted by a second researcher to confirm inter-rater reliability. Analysis was conducted through line by line coding, the collapsing of codes, and identifying themes. These themes were examined for prevalence, uniqueness to the pre- or post- resettlement experience, and application to the specific aims of the project. Any issues or questions in analysis that arose were reviewed with Syrian research assistants.

Results

Thirty-six women participated in the project, providing data on their experiences of 69 combined pregnancies. Women experienced zero to four pregnancies in the time since the Syrian conflict (average: 2 pregnancies), with pregnancies conceived in Jordan (N=29), USA (N=17), Syria (N=13), Turkey (N=9), and Libya (N=1). See Table 4.1 for further demographic information. Four women did not experience any pregnancies since the start of the Syrian conflict; one's husband had been kidnapped in Syria and she was unaware of his current status, one's husband had left her to move to Egypt, one's husband had a car accident that left him infertile, and one's husband had died. All women who experienced partner absence or changes reported that they would have wanted to have more children in the time frame discussed if they had a partner present.

Table 4.1 Demographic information

Demographics of Participants	Total N = 36
Age range in years (Mean)	22 – 46 (32)
Number of pregnancies since Syrian conflict range (Mean)	0 – 4 (2)
Number of countries resided between Syria and United States (Mean)	1 – 2 (1.03)
Length of time in US at time of interview in months (Mean)	9 – 25 (19.3)
Countries in which pregnancies were experienced	
Jordan	29 (38.67%)
USA	17 (22.67%)
Syria	14 (18.67%)
Turkey	10 (13.33%)
Libya	1 (1.33%)

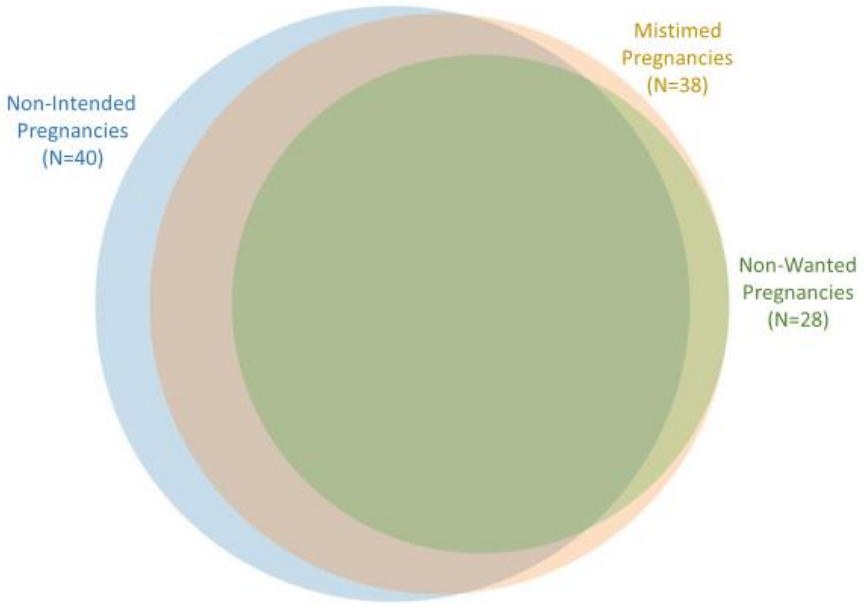
Two participants had missing survey data, one each not answering questions regarding contraception use at conception and pregnancy intendedness. Of the 69 reported pregnancies for which London Measure data is available, total survey scores demonstrated that 20 (28.99%) qualified as unplanned, 24 (34.78%) pregnancies were ambivalent, and 25 (36.23%) were planned. Of 31 (44.93%) women who reported they did not intend to get pregnant, 15 (48.39%)

were not using birth control regularly. Women were much more likely to report a pregnancy being wanted (N=41, 59.42%) than intended (N=29, 42.03%). Of pregnancies conceived inside of the United States, 35.3% (N=6) were unplanned, 23.5% (N=4) were ambivalent, and 41.2% (N=7) were planned. Of the 52 pregnancies that were conceived outside of the United States, 26.9% (N=14) were unplanned, 38.5% (N=20) ambivalent, and 34.6% (N=18) were planned. See Table 4.2 for all survey results. See Figure 4.3 for intersection of pregnancy constructs.

Table 4.2 Survey results

Survey Response (Total N = 69)	Number of Pregnancies (Percent)
Contraception use at conception	
Not using contraception	39 (56.52%)
Using contraception, but not every occasion	11 (15.94%)
Using contraception, but known failure	9 (13.04%)
Always used contraception	10 (14.49%)
Pregnancy timing	
Right time	31 (44.93%)
Okay, but not quite right time	15 (21.74%)
Wrong time	23 (33.33%)
Pregnancy intendedness	
Intended to get pregnant	29 (42.03%)
Intentions kept changing	9 (13.04%)
Did not intend to get pregnant	31 (44.93%)
Pregnancy wantedness	
Wanted to have a baby	41 (59.42%)
Had mixed feelings about having a baby	17 (24.64%)
Did not want to have a baby	11 (15.94%)
Partner conversations	
Partner and I agreed we would like me to be pregnant	33 (47.83%)
Partner and I discussed having a baby, but hadn't agreed for me to get pregnant	10 (14.49%)
We never discussed having children together	26 (37.68%)

Figure 4.3 Intersection of Pregnancy Constructs



Non-Intended and Mistimed: N = 35
Non-Intended and Non-Wanted: N = 28
Non-Wanted and Mistimed: N = 26
Non-Intended and Non-Wanted and Mistimed: N = 26

Qualitative Findings

Interviews provided deep insight into experiences related to reproductive decision-making in women from Syria who are refugees. A summary of findings, organized by specific aims, from the in-depth qualitative interviews can be found in Table 4.3 followed by a detailed description of themes identified.

Table 4.3 Summary of findings

Specific Aim	Findings

Specific Aim 1: Reproductive intentions and behaviors throughout the resettlement process	• Influence of conflict
	  ○ Fertility intentions
	  ○ Reproductive health resources
	  ○ Mental health status
	• Influence of uprooting
	  ○ Racism throughout uprooting
	• Reproductive care outside US
	• Other factors influencing decision-making

Specific Aim 2: Factors influencing the unmet need for contraception post-resettlement	• Challenges accessing care • Cost of care
Specific Aim 3: Facilitators and barriers to reproductive healthcare access post-resettlement	• Social network • Knowledge regarding care access points and care options • Healthcare provider options • Resource availability

Specific Aim 1: Reproductive Intentions and Behaviors Throughout the Resettlement Process

Influence of the Conflict

War's impact on fertility intentions

Women had one of four responses regarding how the war in Syria impacted their fertility intentions: an increased desire or a decreased desire to have a child explicitly linked to the war itself, a desire that was unchanged by the war due to a constant and unwavering interest in desiring children, or an attitude that any child is a gift from God and therefore she would be accepting. While one woman reported that the stress of the war resulted in an increased desire to

have a child because it would provide something joyful in her life, overwhelmingly women reported that the realities of the conflict resulted in decreased intentions to have a child.

While some women reported an unwavering intention to have a child regardless of circumstances including conflict, these were frequently women who had trouble conceiving children and linked their intention with a desire to have children whenever their body was able. Some women who, when asked about their intentions would respond that they were accepting if God gave them a child, cited their belief in Islam and the need to accept a child as taking precedence over their own feelings of pregnancy (un)intendedness. Stating that one would be accepting of any pregnancy as a gift from God was sometimes presented alone as a response to questions regarding intention, or in conjunction with a report of having or not having an intent to have a child. Unintended pregnancies were described as sent from God both in the context of hypothetical and actual pregnancies experienced. However, an important distinction remained, as some women referred to accepting pregnancies from God as a "gift", while others spoke of an unintended child as "fate" from God. This variation in positioning towards an unintended pregnancy demonstrates that while women may view pregnancy, even unintended, as willed by God, their attitudinal reference towards the pregnancy vary given the circumstance.

> *Researcher: If you had pregnancies by accident what would you have done?*
> *Participant: What would I do, I'd say thank God.* – Participant 11

> *Researcher: Okay and what caused you to accept [your pregnancy]?*
> *Participant: Religiously, first off. They always say that [abortion] is forbidden and God has blessed us with this. God gave you a gift in the foreignness, but if you do your time maybe God will bless you and your children […] Yes, little by little once my stomach started to move, you know the lovingness of the mother. When he would move in my stomach and I would hear, it is always forbidden. It is forbidden because God gave you a blessing, you are opposing God's judgement. So, praise be to God I accepted and things ran smoothly*. – Participant 32

While marriage was an inclusion criterion, and participants affirmed being married, the opportunity to act on a desire for pregnancy within a marriage was not possible in three cases. These cases included a woman whose husband had been kidnapped years ago and she was unaware of his status, a woman whose husband had died in the war, and a woman whose husband left her in Michigan to reside in Egypt. In two of these cases, women reported feelings of sadness for not being able to fulfill their desire for further childbearing. In the third case, the woman and her husband had had two children, and together decided they did not want further children and proceeded to use the pull-out method for prevention.

> *Now the first thing is that they took my husband. I don't know anything about him. From this I left...and my son was at my parents', my parents left before me. And my son left with them. I stayed after that seven months, after my husband disappeared and then my daughter and I left, and we followed them to Jordan.* – Participant 28

> *I want children but God did not grant me.* – Participant 29

War's impact on reproductive health resources

Not only did the war influence intentions, but it also had an impact on behavior and decision-making, secondary to the conflict's impact on the availability of reproductive health resources. Women had irregular access to birth control and maternity services, with this leading to incongruence between intention and behavior, as well as resulting in unintended pregnancies. Additionally, one woman who had bleeding during her pregnancy reported not seeking care because it was too dangerous to leave her house due to the bombings. Women reported clinical decision-making in labor being impacted by the war and safety concerns, citing providers needing space in the hospital for people who were wounded, and therefore wanting postpartum women to be discharged as quickly as possible.

> *I was using birth control pills and after that I couldn't go into the village and the shops; they closed because of the firing and stuff. I no longer got birth control pills and pregnancy happened*. – Participant 19

> *They were scared...the doctor was scared. He said maybe you might enter labor and the hospital can be filled with [security] officers and injured people and such, so he delivered me before the date, before I entered my [last] month [of pregnancy]*. – Participant 31

War's impact on mental health status

Additionally, multiple women mentioned how war-related trauma has negatively impacted their mental health, directly linking mental and physical health. Several of these women verbalized a connection between mental health and reproductive health specifically, believing that stress and trauma have led to menstrual regularity and pelvic pain.

> *Yes, my mental state. The doctor told me there is nothing wrong with you, your heart is normal, your blood pressure is normal, there is nothing. What is wrong then? Your body after a period of time imagines an illness. There were many methods of treatment he discussed. There are treatments they cannot properly provide, they send you to a psychiatrist. The physician speaks and tells us when someone has in their mind that they are ill, he tells her that you aren't ill. There is nothing wrong with you. This is all because of your mental state.* – Participant 17

> *I felt that I wouldn't become pregnant; [my period] would be irregular due to my emotions at the time; it would come the first 10 days of the month and the last 10 days.* – Participant 1

In the case of Participant 3, the view of her body's capacity for childbearing was intimately tied to her experiences with war and trauma. Her son was kidnapped and then murdered, with the story being very publicized. After seeking refuge in Jordan, she experienced an unintended pregnancy that she described being thankful for in the interview but reported as unwanted via survey. After reporters pursued her family expecting her to publicly recount the details of her son's death she experienced a

miscarriage. Throughout her interview the responsibility for this miscarriage migrated from herself and her own mental health:

> *In Jordan my body relaxed, thankfully and I became pregnant. My period didn't come for another 3 months. But once the reporters came, I remembered how my son died and I would cry and I saw pictures of the kids and I would cry. Maybe he [the unborn child] died because my mental health was bad. The reporters were by us and I went to the bathroom and I saw blood running from me.* – Participant 3

to her deceased son:

> *[He] died and he was the cause of the miscarriage that happened to me in Syria.* – Participant 3

This participant also recounted the continued influence of God on the intersection of trauma and reproductive outcomes. While she spoke of God as delivering her family from Syria and giving her a reason to persevere in an abusive marriage, God was also the reason why she became pregnant when she did not want to.

> *[My husband] is not fit to have children; he doesn't have any money. Kids need money. I would become pregnant when I didn't want to. But it is fated from God.* – Participant 3

This presence of God in having ultimate control over reproductive outcomes did not solely result in thankfulness for these outcomes. However, the intersection of God with these outcomes goes beyond seeing God as having a good purpose for outcomes, but includes God being vengeful:

> *Do you know what, this is all revenge from God. When I got pregnant, I would put something heavy on my stomach, or I would carry something heavy, hit myself or jump from the stairs. My body and my stomach suffered.* – Participant 3

> *But my husband does not have any religion or anything. God took revenge on him and took his son. He has his son's name on his hand, he tattooed it, this was the one that he liked the most.* – Participant 3

This participant provided a demonstration of the complex relationship between a belief in God's sovereignty and reproductive and family outcomes. While faith in God had a positive impact on the relationship between woman and an unintended pregnancy in many participants, Participant 3 provided a view of her unintended pregnancies that challenges the narrative of a belief in God resulting in a more favorable attitude towards unintended pregnancies.

Influence of Uprooting

Several women reported making reproductive decisions based on instability and uprooting experienced as a refugee, including concern that a pregnancy would disrupt plans for resettlement travel. This led one woman to consider self-abortion because she and her husband thought being pregnant would mean they would lose their resettlement opportunity. Further, another woman reported that she did not desire a pregnancy that was confirmed shortly after being accepted for resettlement to the United States as she feared it would delay their ability to travel and she was desperate to relocate as quickly as possible. Beliefs surrounding uprooting and temporality of the conflict also influenced birth control decisions. Pregnancy was viewed as a complication with, or total barrier to, the opportunity to resettle, with one woman intentionally inserting an intrauterine device believing that she would have it removed in order to have another baby as soon as she returned to Syria post-conflict.

> *Honestly, at first, we weren't comfortable, there was no comfort in regard to it [finding out I was pregnant]. Not because of anything but that it was going to delay our travel. And truly there was a delay in travel because of the topic of pregnancy. But later it all worked out.* – Participant 22

Concerns regarding how reproductive decisions and outcomes may influence resettlement extended beyond the fears of the participant. As was seen in Participant 23, her husband had a strong desire for her to abort a pregnancy for fear that their travel plans for resettlement to the United States would be cancelled if authorities found out she was pregnant. However, these fears ended up being unfounded and the participant and her family were successfully able to relocate to the United States.

> *My husband wanted to abort the baby. He was scared that they would cancel the travel. He said abort, and he gave me things to drink and such. He said that's it, later we'll think about this [a baby]. He wanted to abort so that the travel would not be cancelled. But when we went to the medical exam, I asked a woman in charge there, she told me don't you dare abort. On the contrary, they will let you pass because you are in the first month and they won't tell you a thing. –*
> Participant 23

This scenario highlights the relevance of partner input and fear in reproductive decision-making. Despite her not wanting to abort the pregnancy, the participant's husband insisted on her drinking concoctions believed to induce an abortion and she complied. When pressed, she and other participants were unsure why some people believed that a pregnancy would interfere with being able to resettle to the United States, but it was a belief reiterated by multiple women. While negotiations regarding reproductive decision-making are common between partners, this participant highlights the influence that uprooting has on these decisions. For her partner, the opportunity to resettle was greater than the desire to have a child, saying "later we'll think about this".

Influence of Discrimination on Decision-Making Throughout Uprooting

The process of uprooting to new locations was also frequently accompanied by experiences of discrimination or prejudice that influenced reproductive decision-making. Women

voiced experiences with, and fears regarding, being judged by healthcare workers and community member if they had many children. Additionally, multiple women spoke of initiatives in countries of resettlement that targeted the reproductive behavior specifically of women who were Syrian refugees, encouraging or supplying solely long-acting forms of birth control. Many women spoke of negative experiences while being hospitalized, particularly while giving birth, that they attributed to being Syrian refugees in a country that was not hospitable to their arrival.

> *If I wasn't pregnant, I wouldn't even think [of pregnancy]. In Jordan, it was impossible for me to think of it. The first thing I told you was that life is difficult, living is difficult, and there was a lot of racism. Every time they said that the Syrians left Syria, they'd say that they've come to give birth here. You know what I mean. If I hadn't left while I was pregnant, I would've never thought of giving birth in Jordan at all.* – Participant 20

> *They [the hospital workers] would say, for example in Zaatari, "You've also become pregnant? You come...". They would say, for example, "We are flooded with pregnancies, blood, and deliveries". They can't keep up.* – Participant 27

Reproductive Care Outside of US

The reproductive healthcare that women received outside of the United States was highly variable, depending not only on the country but whether they received care from a public, private, or organizational (e.g. United Nations) hospital. Some women reported receiving high-quality care, while other women reported receiving care that was poor or disrespectful, or care that was influenced by discrimination. Complaints about care received included lack of affordability, challenges with accessing care, long wait times, and lacking the knowledge to navigate healthcare systems in the resettled areas. Women reported feeling an overall lack of control and agency regarding their reproductive choices and outcomes.

> *You'd go and go, maybe the entire day, to go into your doctor's appointment. And the Turks definitely have the priority. We are definitely after them. So I would go to the doctor that required money, it's better for me, easier*. – Participant 19

At the same time, some women reported feeling an increased burden of responsibility for their care, as they had limited support or education regarding how to access and secure reproductive healthcare throughout resettlement. This duality was partly due to the refugee-specific healthcare that women received both inside and outside of refugee camps, including reproductive health initiatives. Women reported having access to specific and limited reproductive care options, due to available initiatives of refugee assistance organizations in their location.

> *The IUD is on you, but at that time there was a campaign that came, a campaign from Europe, from America, I don't know, Westerners. They brought it, they made a program that if you would like to put in the IUD, they will put it for you free of charge* – Participant 20

Other Factors Influencing Reproductive Decision-Making

While many women reported reproductive intentions and behaviors being directly influenced by uprooting or the Syrian conflict, much of decision-making remained unrelated to refugee status. Women frequently reported not wanting to have children, or wanting to space pregnancies, for reasons that are common to women generally. Participants in this study reported not desiring children at a given moment for reasons such as not feeling supported or connected to their partners, a history of a challenging or complicated pregnancy or delivery, financial constraints, feeling overwhelmed with taking care of the children they already have, or that their mental health would suffer with the addition of more children. Some women reported 'just feeling done' regarding further childbearing, without explicit reasons as to a desire to not have

further children. Women reported attitudes regarding ideal spacing of children or ideal family size that were not influenced by their refugee status. Additionally, preferences for a specific gender of a child, or a specific gender distribution of children, influenced reproductive intentions.

> *I was intending to become pregnant because I said that I have one son and five daughters. I said maybe God will send me a son for my other son. I said two sons and three daughters are a blessing from God. But God gave me twins, thank God.* – Participant 21

> *Honestly… they were two children. And their ages were close to one another. And I was an employee. So I said when they get a bit older, when they've matured a bit more, we'll go back and think about the topic of children.* – Participant 22

> *I find the family nice as it is...two sons and two daughters...I want them to get education and grow. Honestly, I want to free myself up a bit, I want to learn the language, I want to work a bit here*. – Participant 22

> *In Jordan because the financial situation was difficult, even the one that wanted to give birth decided against it* – Participant 31

Many women who reported struggles with infertility referred to a pregnancy as being "precious" or "blessed". Fertility intentions did not always match outcome, however, as in the case of women who experienced forced celibacy. These women reported that they were not able to have children that they wanted secondary to a partner's lack of availability, due to death, kidnapping, or resettlement in a different location.

> *Researcher: Alright. Did you think of using any birth control?*
> *Participant: No, because my pregnancy is precious. I do not become pregnant quickly, I did not think about using birth control at all.* – Participant 36

> *They told me that my pregnancy is precious, I can get pregnant once every four years. Between my daughter and my son is 4 years. So I thought, I won't get pregnant for another 4 years after I had my daughter in Turkey. But I took the pills just to make sure, and also to fix my period, it would come every 15 days. And then the month of Ramadan*

came, and I wanted to fast so I took birth control to fix my period. And then it caused me headaches, and we slept together and I got pregnant. – Participant 5

A major theme in factors that influenced reproductive intentions was the health of existing children. Many women cited the mental or physical disabilities of their children or partners as being a reason to not have children in the immediate future. These women discussed how the work of caring for their current children made it unreasonable or irresponsible to have another child, even if they desired a larger family.

I have a child with a mental disability, I did not choose this. It is difficult for me. The child's situation was very difficult in Turkey. I would run after him from house to house, he would go out. The pregnancy that I had in Turkey that I lost was because of my son here. I didn't know. I used to always be running. I would search for him in any possible way, even here when we were intending to come I didn't intend to become pregnant, I was taking pills. And it happened suddenly but thank God, I continued with the pregnancy and I did not refuse because of God Almighty. Yes, but it was very, very, very hard. We were in four airports you have to go up and down and God bless them 6 kids. You have to watch over them, it was the hardest pregnancy I've ever had. – Participant 18

You see the state [disabilities] of my children, I was scared to become pregnant, the state of my children is difficult, I can't... yes I went to the doctor and told her I want protection.– Participant 19

Additionally, factors related to contraceptive decision-making also extended beyond those that were refugee-specific. Frustrations or fears about a specific form of birth control and potential side effects were frequently tied to personal past experiences or experiences of friends or family. Women reported only going to see a healthcare provider if they had acute concerns or contraceptive needs. Additionally, frustrations with the bureaucracy of the healthcare system, such as challenges in acquiring insurance, the high cost of care, or access being burdensome, were voiced as barriers to contraceptive use.

> *[The oral contraceptive pills] caused me a bit of problems but I handled it because my body grew tired and exhausted with the pregnancy. So I was obligated to stay on it and take it. Eight years I suffered from pain in my breast and stomach. Things like headaches and anger. So the doctor asked of me to stop taking the pills. But stop taking them in that I don't take them one month and take them another, don't take them for two months and take them for one, for the sake of my health. When I decided to stop taking them, I stopped. It was in this period of stopping from the pills, that's when the pregnancy happened to me. –* Participant 18

Women discussed negotiations with their families and partners regarding reproductive behaviors, particularly contraceptive use and abortion in the case of an unplanned pregnancy. While families may have played a stronger role in decision-making pre-uprooting, multiple women mentioned family playing a smaller role in decision-making due to the dispersion of families secondary to the war. However, negotiations with partners continued to play a large role in decision-making, with women varying greatly in the amount of agency they felt in making reproductive decisions. Most women reported being able to act on the decisions they want and being supported by their partners in their decision-making, while fewer women reported that their intentions and behaviors were incongruent because their partner was dictating behavior. In a few cases, particularly cases where a participant desired an abortion or attempted to self-abort, she reported not telling her partner she was pregnant or what her plans with the pregnancy were because she did not believe he would agree. In these cases, the women moved forward with decision-making based on their desires, demonstrating personal agency to both problem-solve and make decisions to maintain congruency between desire and outcome.

> *My husband's family don't intervene at all. But the reason is that I had [my son]. My mom at the end told me that I will be upset from you and will no longer talk to you at all if you no longer had more children. Yea, so a lot...my mom tried a lot with me, that you must have another child. My husband did not have any problem,*

[saying] "What makes you comfortable and what you want". There were no problems with regard to this topic at all. – Participant 12

Participant: We agree him and I, we completely agree, that we no longer wanted. Yes, we discussed that we no longer wanted, that's it, I immediately took precaution, from when I first came here. And we want to raise them, may God heal their days and move forward.
Researcher: Alright, and who suggested that you no longer want to have children, you or…
Participant: Him and I, him and I together. Partnership, no there isn't… everything is between him and I… – Participant 19

At the time I was not intending. I would have taken something [for birth control], but my husband did not allow this. – Participant 16

The complexities of factors influencing intention and behavior, with potential incongruencies between the two, resulted in several unplanned pregnancies in participants. Misinformation and myths held regarding birth control were common. Many participants reported believing, either because they were directed by a healthcare provider or they were of the understanding themselves, that they should not use oral contraceptives for long periods of time and their bodies needed to "rest" between months of using pills. This resulted in multiple women reporting becoming pregnant while "resting" from contraceptive pills.

A doctor in Turkey tried to stop me from using them, I was taking them for 8 years. The doctor told me that my body needed to rest. I stopped using them for a month, I used them the next month and I became pregnant and the pregnancy stayed continuously. My condition between travel here and there, you know when someone wants to travel he needs to prepare for travel, I was very, very tired, I became very tired in this pregnancy. I travelled but thank God when I had this pregnancy I did not travel to abort the baby, with God's ability, I left him and now we are happy with him. – Participant 18

Yes, I took birth control pills. After I came here, see, before we came to America they do a lot of procedures and [medical] exams and such. A foreign doctor heard that I take birth control pills, she didn't let me use them, why? Because birth control pills sometimes make you fatter, they make you tempered, sometimes they do a lot of things. But the doctor did not let me use them… She said because they make you fatter and tempered. – Participant 21

Decision-making regarding an unplanned pregnancy was complex. Women discussed feelings of loss associated with the miscarriage of an unplanned pregnancy, experiences with attempting to self-abort or seek an abortion performed by a health professional, or feelings surrounding maintaining an unplanned pregnancy. While many women reported that they saw all pregnancies as gifts from God and therefore would not consider the termination of an unintended pregnancy, there were also reports of desired or attempted abortions, both with and without the assistance of a healthcare provider or the knowledge of the woman's partner.

> *Look, my husband and I have a lot of kids. Should I tell you that I wasn't upset? I was upset, honestly. True, I am not in a situation to become pregnant, but truly I am upset towards everything that is gone. It's not just, thank God it left, no, on the contrary, I was upset because of it. Even my mother in law, she loves kids. She told me you should have been more careful. I told her that I didn't know. It was fate. We get upset, I won't tell you that we don't, we do.* – Participant 18
> *After about one year and a half, a year and a half yes, I was pregnant with the twins, I stayed around nine months pregnant with them. Listen, I did not want to be pregnant or anything; you saw the events, they were not normal. And when we first came to Jordan, our life was bad. We were refugees that didn't have anything, anything...I went and I ended up pregnant with the twins. I am the type where if I become pregnant, I don't like to abort. I stayed like this until I had the twins.* – Participant 21

Specific Aim 2: Factors Influencing the Unmet Need for Contraception Post-Resettlement

Two primary factors influenced the unmet need for contraception for women from Syria who resettled in the United States: challenges with accessing care and the cost of care. Women reported significant challenges in securing the care that they would prefer, often reporting barriers that explicitly stopped them from securing contraception. In multiple cases, women directly linked an unplanned pregnancy with challenges accessing care in the United States.

I am telling you that I went to her a couple of times for the IUD. She would tell me there isn't any, we don't have it here, there is none. [She said,] in Ramadan, the demand for it is less. Or whatever. I told her alright give me something else, but I want things for birth control, I don't want to be pregnant. She told me there is a shot, can you take it tomorrow? I told her I can, where? She told me in the pharmacy, you have to go buy it at the pharmacy. I told her give [the name] to me so that I can buy it. She gave me its name. We went and looked in two pharmacies, we did not find them. She said you have to register for it to come, it needs time. We went to the two pharmacies and we didn't find it. I went and said I have nothing but the doctor, even the doctor that I go to, she told me that Medicaid doesn't cover it. You have to pay 1000 dollars for the IUD. - Participant 26

Participant: And she put for me an appointment to go and put the IUD, at the doctor's, but when I went to the appointment, the girl that was there that day messed up with the card number. She told me that my Medicaid is closed. She said if you could pay 1000 dollars then we can continue.
Researcher: 1000 dollars?
Participant: The price of the IUD. If you can't then we'll delay it until the Medicaid opens. And I was sure that the Medicaid was open.
Researcher: Yeah.
Participant: I told her no, I'll go and speak with the insurance and you'll do another appointment for me. We went and spoke with the insurance, and he told me that there is full coverage, it is open.
Researcher: Yes and you can put the IUD.
Participant: Yes, but it turned out that the girl messed up with my number. They said take the card and say that they messed up with the number. Yes so she gave me the pills and said that I should stay on the pills, and till next month she'll put the IUD. Until the next period.
Researcher: Okay.
Participant: It came, and the pills did not work out for me, haha.
Researcher: And you ended up pregnant…
Participant: Yes haha.
Researcher: Because a girl messed up with the numbers…
Participant: Yes I swear…
Researcher: So you became pregnant again…
Participant: Now every time I go to her, I tell her this child is because of you.
- Participant 23

Specific Aim 3: Facilitators and Barriers to Reproductive Healthcare Access Post-Resettlement

Women spoke of several facilitators and barriers to reproductive healthcare post-resettlement in the United States. Women reported not knowing how to access care themselves.

Frequently husbands acted as a facilitator for accessing reproductive healthcare. In other situations, friends or a social network worked as a facilitator, in which a larger network would allow for more or different access. In just a few cases a resettlement agency itself acted as a facilitator for accessing care, typically if the women went directly to the agency with reproductive health concerns and then was directed to a healthcare provider. Most women reported not having any form of orientation on how to access reproductive health services in the United States. Additionally, this has resulted in women not being aware of recommended care schedules and the option for preventive care.

> *So we asked [what provider to see], so a woman came to us and told me that there is a doctor, she is Syrian, and I will take you to her. She took me to her. And all the children's doctors the same thing, the organization chose them for us.* – Participant 20

> *I asked a lot and I was referred to a couple of them here. She would say for example that she does not accept the insurance that I have or that she is full in terms of follow ups, that she does not need more. I searched a lot and I searched a lot. Last thing, God blessed me, the radio directed us to a doctor close by and I started to go to her.* – Participant 33

Women spoke of how their healthcare provider preferences were influencing the ways in which they engage with the healthcare system. While some women explicitly preferred an Arab or Arabic-speaking healthcare provider, more women spoke of preferring particular provider personality characteristics. Distance was also cited as being a relevant concern when choosing a healthcare provider due to transportation challenges immediately post-resettlement.

> *I would go to her. But the place is far and my husband said "I do not prefer to take you and bring you and you want to go every two weeks before your month comes. Go to this one she is closer to you." I stopped going to the other one and I registered at this doctor's.* – Participant 11

> *I heard a lot of problems about [Arab doctors], and they do not listen a lot. And they are quick. Why would I go to them? I will go to an American one. Yeah, we will give and take in regard to the language, but it is better.* – Participant 33

However, choice of provider was also noted to be a barrier to reproductive options, particularly in the case of abortion. One woman reported being told by a provider in the United States that they were not able to provide an abortion, and was unclear whether this was due to the provider's unwillingness to provide an abortion or the unavailability of abortion generally in the United States. Deterred in her desire for an abortion secondary to her provider's response, this participant continued with her unwanted pregnancy.

> *You know that in our country abortion is not permitted. I did not plan this plan before. Like you said, based on my conscience it should not be permitted. The baby has a soul, woe to the baby. I did not make a decision with regard to this topic. But when we first came, as you know, when they start out with someone here, look at my situation. There is no one starting with me, my children are young, and the twins are young, and my other daughter is sick. I'd look and say, who would want to start with me? Where do I go by myself? For this, when I told that I want to have an abortion, when I told her I didn't accept, she said it's a blessing that's it, a blessing. I didn't make a decision on this topic […] She told me I will not be able to abort the baby for you, here it is not allowed. She said here, at our clinic, it is not allowed […] I said that I would look, I'd say that is it possible in America to not be permitted? They don't ask about this here. Especially in America. They like one or two children. Even when they see you having a lot [of children] in any place that you go to now, they say that that's enough, why all these children, pity. I would look and say is it possible that this is forbidden? Is it possible that this is not permitted? She said you would harm me and harm yourself. That's what she told me and I no longer went back and forth with her.* – Participant 26

Participants had limited critiques of reproductive health services that they received in the United States. Most participants reported that the reproductive, maternity, and delivery care they have received post-resettlement has been high quality. These reports were often in conjunction

with discussions regarding the significantly lower level of care that they received at other points throughout the resettlement process.

> *There wasn't anything that was uncomfortable, it was all natural and fine. I told you, when I came I was in the seventh month and I went to the doctor and all was good. I gave birth in the hospital, and the same doctor that I went to, came to me at the hospital. So everything was, thank God, natural and facilitated.* – Participant 22

Reproductive health intentions post-resettlement in the United States were frequently guided by the perceived abundance or limitation of resources. Women cited the availability of education or the ability to achieve U.S. citizenship as reasons to desire a pregnancy. However, the lack of social/family support, and concerns regarding finances, were frequently cited as reasons to limit the number of children that were had in the United States. Additionally, regardless of an official status as "post-resettlement" after coming to the United States, many women report continued instability and concerns regarding citizenship as factors taken into consideration with reproductive decision-making.

> *I came here and the atmosphere also is difficult, they tell me to have kids but in this country I still don't know the language properly and I'm still quite far, we're alone, how can we predict this. Don't you want to know how to speak. If I have kids, don't I want to know how to speak with the doctor? Till now I have difficulty with my children and even your children their language is still starting. You tell them and they tell you don't you want to learn. How can one have children and children and she is sitting at home and she is not learning the language and [friend's name redacted] faces it, but she is the first and last who wants to go out. Maybe someone will be with the children, maybe a man, she needs to go out and face life. Is it possible for her not to know anything? How hard is it going to be? It will be [unclear], okay let her come to the country and start, and if she thinks of becoming pregnant, what happened to me I wouldn't think of pregnancy, but it could happen by mistake that you become pregnant, but I at least should have started learning the language, begun to learn how to work with this country, how I go out, if the circumstances put me alone, I should know how to raise and deal with my son who is mine. And here a child is a responsibility. In Jordan a child is raised with me but*

a child is a responsibility and for [husband's name], his obligation. – Participant 17

And then my husband said that's it, he wanted a little child, he said… I told him I as well want a child. He told me that here it is different than in Jordan, insurance covers, we have food thank God, I began working, so I had a little child. – Participant 20

Table 4.4 Points of opportunity for interventions

Social Networks	Supporting and fostering social networks of refugees to cultivate opportunities for information-sharing, assistance in navigating structures within the United States, and strategizing improvements
Reproductive Healthcare Orientations	Opportunity to build knowledge regarding healthcare provider options, points of access for care, and availability of reproductive healthcare options in the United States
Resource Availability	Create and facilitate transparent systems that improve knowledge of and access to resources available to recently resettled refugees

Discussion

This study explores reproductive decision-making in women from Syria who are refugees; examining factors that influence fertility intention and contraceptive behaviors from the time of the Syrian Civil War to the present. Important themes in reproductive decision-making were highlighted, including barriers and facilitators to accessing care in the United States, the influence of war and uprooting on decision-making, and the interplay between reproductive intentions and behaviors in women who are refugees. This project highlights important points of interest and potential intervention for the reproductive healthcare that Syrian refugee women receive throughout the resettlement process. Table 4.4 provides a summary of points of opportunity for interventions.

The use of the gender-informed migrant framework provided a lens to better understand the intersections of factors influencing reproductive decision-making as described by the participants. Experiences of instability and racism, as well as the necessity of frequent uprooting, speak to the geo-political influences on decision-making. Concerns with accessibility, cost, and

knowledge of availability of care highlight class struggles that refugees frequently face. Women navigating conversations and negotiations with their partners and families, as well as serving as primary caretakers and breadwinners of their families, demonstrate uniquely gendered experiences and the power structures within which they operate. These results viewed through the gender-informed migrant framework highlight the complex context through which reproductive decisions are made, and points of conflict between intention and behavior.

Primary barriers that participants reported in accessing and utilizing their reproductive healthcare of choice included cost, ease of access, and availability of an interpreter to facilitate care. These factors have all been well-documented in literature as concerns of non-refugee women in general (Peipert, Madden, Allsworth, & Secura, 2012; Raymond, Trussell, & Polis, 2007; Secura et al., 2010). While reduction of these general barriers for all women is important, the added challenges that refugee women face of navigating a new language and the bureaucracy of frequently changing insurance systems as newly resettled individuals is an important distinction. These findings are consistent with literature that has discussed how post-conflict contraceptive use is lower than pre-conflict use due to barriers to care, and is not reported to be related to changes in cultural or social attitudes towards contraception post-resettlement (Benage et al., 2015; Amelia Reese Masterson, Usta, Gupta, & Ettinger, 2014; West et al., 2016).

While barriers throughout uprooting may present unique challenges to care, contraceptive decisions and fertility intentions in the refugee migratory period are related to pre-migration reproductive knowledge and trends (Mcginn, 2000). In pre-conflict Syria the total fertility rate was 2.9 (World Bank, 2012), with contraceptive uptake primarily inhibited by misinformation regarding side effects and risks associated with family planning. Many Syrian women elect not to use family planning prior to a first pregnancy, under the concern that contraception may make

one infertile (Cherri et al., 2017). Another common approach to family planning in Syrian women is to wait until the ideal family size has been reached prior to initiating any contraceptive use (Cherri et al., 2017). In our sample all but two women had children prior to the start of the Syrian conflict. In the women who did not have children pre-conflict neither used birth control prior to their first conception and both reported their pregnancies to be intended despite their circumstances surrounding the conflict.

As has been demonstrated in other populations of women (Joseph B. Stanford et al., 2000), pregnancy intention is not the same construct as pregnancy wantedness or pregnancy planning. Like participant 36 who said, "I wanted to have a child but because the situation was chaotic, I got scared" – a desire to have a child was not always met with intention when circumstances were not ideal. Similarly, happiness about a child post-conception is not necessarily aligned with pregnancy intention or wantedness, as was seen in the many women who reported happiness regarding unplanned pregnancies. This too is consistent with other literature which has established that unintended pregnancies can be qualified as a wanted pregnancy and be a source of happiness and pleasure (A Aiken et al., 2015; Hartnett, 2012; Sable & Libbus, 2000). Refugee women who report not intending to become pregnant should be assumed to have the capacity or the desire to match their behavior with intention. Additionally, pregnancies that are unintended should not be assumed to be unwanted or a cause for distress.

It's important to recognize that women did not always link their refugee status to the reproductive intentions themselves, and when pressed some women did not report that their experiences as a refugee or their refugee status directly impacted their reproductive decision-making. Researchers and clinicians must take care not to essentialize the experiences of women who are refugees, or make assumptions regarding the degree of relevance, if any, that refugee

status has on reproductive decision-making. Reproductive decision-making consists of a complex intersection of affective and behavioral factors, with woman uniquely making value judgements regarding which factors play the largest roles in influencing decision-making. While refugee status may not influence intention directly, this study demonstrated how refugee status may influence reproductive outcomes by creating unique barriers to access and opportunity.

Difficulty accessing and engaging with the medical system has been recognized as a barrier to healthcare uptake for refugees in a number of countries post-resettlement (O'Donnell, Higgins, Chauhan, & Mullen, 2007). In the process of establishing guidelines for newly arriving immigrants and refugees in Canada, researchers found that immigrant and refugee women have higher rates of unmet need for contraception, unintended pregnancy, and abortion than native-born women (Aptekman, Rashid, Wright, & Dunn, 2014). These guidelines recommend that providers screen for unmet need early in resettlement, and provide contraceptive counselling that is sensitive to the many factors that influence decisions about contraception, including personal, socio-cultural, religious, and medical factors (Dunn et al., 2011). This work points to several recommendations for clinicians in providing improved reproductive healthcare both globally and domestically, including improving knowledge of access and availability of reproductive health options in the United States. An onboarding approach offering reproductive health information to newly resettled refugees would provide an opportunity to improve knowledge of services and access available to refugees and increase the early establishing of care with a women's health provider. This connection of woman and provider has the potential to increase congruence between reproductive intentions, desires, and behaviors, through providing access to contraceptive, preconception, or maternity care, where necessary.

Many refugee women reported physical embodiments of their experienced trauma, particularly in the form of menstrual irregularities. This is consistent with the findings of Cherri et al. (2017) regarding menstrual irregularities being noted frequently in Syrian refugee women as a point of concern regarding future fertility. Stress (Lin, Lin, & Shiao, 2007) and anxiety sensitivity (Sigmon, Dorhofer, Rohan, & Boulard, 2000) are associated with menstrual dysfunction, with menstrual dysfunction frequently associated with infertility (Rowland et al., 2002; Unuane, Tournaye, Velkeniers, & Poppe, 2011; Wellons et al., 2008). However, research regarding the impact of acute stress, or stress related to forced migration, on long-term fertility is lacking. Providers should be aware that a third of refugees from Syria meet criteria for PTSD (Alpak et al., 2015), and those that do not meet criteria for the diagnosis of PTSD may have or experience features secondary to the trauma they have experienced (Quosh, Eloul, & Ajlani, 2013). The impact of these experiences on reproductive health concerns, particularly menstrual irregularities or concerns regarding infertility, should be met with compassion and referrals to additional psychological or psychiatric care if needed.

Due to frequent travel throughout the refugee experience, there is potential for many points of vulnerability or misinformation to be provided to refugees. Lack of continuity with a healthcare provider due to frequent uprooting may lead to gaps in the provision of care. Additionally, experiences of prejudice and bias, as well lack of cultural alignment with providers throughout resettlement, may result in women less likely to obtain care. As oral contraceptive pills (OCP) do not need to be acquired with a healthcare provider in many countries, but rather can be obtained at a pharmacy, there may be fewer opportunities for misinformation to be corrected. Multiple women discussed believing that their bodies needed frequent breaks from OCP use, because their bodies were tired or because they believed that OCPs would make them

irritable or fat if taken consistently. This misinformation led to multiple unintended pregnancies in the participants.

The relationship between misinformation, both on the part of healthcare providers and patients, and contraceptive (mis)use, is certainly not unique to refugees and has been discussed in many populations both domestically and globally (Dehlendorf, Levy, Ruskin, & Steinauer, 2010; Diamond-Smith, Campbell, & Madan, 2012; Gilliam, Warden, Goldstein, & Tapia, 2004; Sokkary et al., 2013). However, as refugees may have variable reproductive health education prior to resettlement, this presents an opportunity for providers to initiate contraceptive counseling with the understanding that patients may be entering the conversation with limited or incorrect information.

Other considerations related to reproductive decision-making in refugees that should be acknowledged by healthcare providers and policy makers is the prevalence amongst refugees of having a disability themselves or being a caretaker of a child or partner with a significant mental or physical disability. Many women spoke of the work associated with being a caretaker of a disabled family member as greatly influencing reproductive decisions. The prevalence of disability in these interviews is in line with the United States' commitment to resettling the most vulnerable refugees (United States Department of State, n.d.). Generally, learning or cognitive disability, or clear mental retardation, is significantly more common in refugee children than in native-born children (Kinzie, Cheng, Tsai, & Riley, 2006). Additionally, disabled refugees have been found to have unmet disability-related needs and experience greater barriers in accessing resettlement resources (Mirza & Heinemann, 2012). Healthcare providers can better serve women who are refugees by being cognizant of the caretaking responsibilities these women may

be experiencing and being aware that reproductive decisions may be influenced by disabilities already experienced within the family.

Participants in this study had limited critiques of reproductive health services received within the United States. This is potentially related to the fact that the care in the U.S. is more comprehensive and of higher quality than other care along the journey, as participants had many critiques of care they received in other countries along their resettlement journey. However, given the interviews were conducted in the United States with an American researcher present, these responses may also be related to acquiescence bias. Critiques of reproductive health services obtained in the United States centered around provider availability and feelings of frustration with a specific provider. While many women reported a desire to see a healthcare provider who was a female Arabic-speaker, multiple women shared stories regarding not having easy access to the full range of reproductive healthcare options available in the United States when seeing these providers. The legality of abortion in the United States was not clearly shared by such a provider, as discussed with one participant, raising concerns regarding whether providers are providing comprehensive, informed care to their patients. As participants in this study frequently reported a desire for cultural or religious congruence with their healthcare provider, this represents an opportunity for improved education of such providers as an important intervention in improving healthcare access for women who are refugees.

When asked about their experiences with resettlement agencies providing information or direction regarding reproductive health and options, most women reported that no information was provided or was provided only after explicit request. This presents an opportunity for improving care of the refugee through standardizing reproductive health orientation for all arriving refugees. While refugees receive a domestic medical exam after arrival in the United

States, whether this exam includes discussion regarding contraception or referral to a gynecologist for such a conversation is highly variable.

This work aims to highlight points of opportunity in improving the care that Syrian refugee women receive, while avoiding the essentialism of these women in the reproductive decision-making process. Special care should be taken to not generalize the experiences of women who are Syrian, refugees, or Muslim. Namely, assumptions should not be made regarding women's attitudes to forms of contraception of reproductive choices, particularly abortion, or their agency or ability to navigate discussions of reproductive decision-making within their partnerships.

Women who identify as Muslim, as women who identify with other religions (Bartkowski, Ramos-Wada, Ellison, & Acevedo, 2012; Strickland, 2012), may not personally adhere to all of the restrictions or recommendations made by religious authorities. Religious texts cannot be assumed to be interpreted equally by all individuals in the context of lived experiences. While many religious scholars may state that Islam forbids abortion at any or past a particular gestational age, the majority of Syrian refugee women surveyed in Lebanon reported they would attempt to self-abort given an unwanted pregnancy (S Krause et al., 2015). A 2006 pre-conflict study conducted by the Syrian Ministry of Health found that the majority of women having abortions in Syria sought the help of a medical doctor and used safe methods, despite the illegality (Bashour et al., 2009). However, Syrian refugee women participating in focus groups in Lebanon frequently reported that Islam forbids abortion, and stated they would not consider it as an option in the case of unintended pregnancy (Cherri et al., 2017). Given the frequency with which abortion was discussed, considered, and attempted amongst our participants in individual interviews, it is possible that reports of being unwilling to consider an abortion as discussed in a

focus group may be a result of social desirability. No published literature could be found that survey women anonymously regarding abortion beliefs or that presented rates of abortion in pre-conflict Syria. Because of this, an assessment of acceptability and prevalence of abortion despite cultural bias or norms is difficult to conduct. However, the reports from our participants that abortions were considered, attempted themselves, and sought from a healthcare provider, highlights the need for safe, accessible provision of these services throughout the resettlement process.

It is well accepted that women in partnerships do not generally make contraceptive decisions unilaterally, but rather contraceptive and child-bearing decisions are made jointly with partners (Fennell, 2011; Raine et al., 2010; Zukoski, Harvey, Oakley, & Branch, 2011). Even in cases where women report that men have more power in a relationship, they frequently report having a voice in decision-making regarding contraception (Zukoski et al., 2011). While contraceptive negotiations may look different in different cultures, it should not be assumed that women from the Middle East or who identify as Muslim lack the ability to negotiate contraceptive choices. Most of the participants in this study reported having sole control over their reproductive decision-making or negotiating decisions with their partners. However, these negotiations may vary given experiences surrounding uprooting. Women in our study reported that husbands continued to have an influence on contraceptive nonuse post-migration as they did pre-migration. However, due to the frequency of couples migrating separately from extended family amid crisis, family had a smaller influence on reproductive decision-making outside of Syria than in pre-conflict Syria.

This research addresses clear gaps in current understanding of pregnancy intention and planning in refugee women. A major strength of this research is the situating of women's voices

at the center of the study. By examining women's views of their reproduction as contextualized by their lived experiences, a deeper understanding of the strengths and weakness of reproductive healthcare for refugees is achieved. More broadly, this research has applicability to a general understanding of how uprooting influences reproduction. Immigrants, women who are homeless, and women moving secondary to experiences of violence, are all vulnerable populations whose reproductive healthcare may benefit from a better understanding of the intersections of uprooting and reproduction.

Despite these strengths, there are acknowledged limitations to this study. It is noted that an interview structured around a timeline may demonstrate a literacy bias. However, pre-conflict Syria had one of the most robust education systems in the Middle East (United Nations Children's Fund, United Nations High Commissioner for Refugees, & Save the Children, n.d.), with approximately 91% of men and 81% of women being literate (CIA World Factbook, 2015). Of Syrian refugees resettled in the U.S., 38% are college educated (Refugee Processing Center, 2017b). In this study, women completed the quantitative survey independently, but 30% of women asked that the questions of the survey be read to them. Additionally, the use of a verbal consent process ensured that literacy limitations would not disrupt a participant's ability to appropriately consent to the project. Offering to conduct the interview with slight variations in methodology, including reading of survey questions, allowed that the greatest number of women could have their literacy needs met in the project. While too much variation may negatively impact internal validity of the research, a balance between serving the needs of participants and validity was maintained. Additionally, the use of a co-constructed timeline to structure the interview, while containing written components, also acted as a visual prompt. While this potential limitation is noted, the benefits of this methodology to assist with contextualization,

recall, and providing a visual prompt for the participant, provided benefits that were important in an initial research project in this population. Future work may specifically examine reproductive needs of refugee women who are illiterate.

Additionally, this study explicitly explored the experiences of women who are above the age of 18. This inclusion criteria excluded women below the age of 18 who are sexually active, a potentially significant number given the prevalence of child marriage in refugee populations. Approximately 60% of Syrian young women between the ages of 15 and 18 living in Lebanon as refugees were married (Cherri et al., 2017). While child marriage is understood to increase in crisis situations, particularly within the context of refugee camps, the experiences of child brides or children who are using sex as a means for survival, is beyond the scope of this study (Cherri et al., 2017). While the voices of these young women are important, valuable, and need to be shared, they deserve a study unto their own.

Conclusion

This study makes significant contributions to current understanding of reproductive decision-making in Syrian women who are resettled refugees in the United States. Providing culturally appropriate reproductive healthcare to refugees affords an opportunity for substantial cost-savings in prevention of unwanted pregnancy. This study identified points of vulnerability and opportunity in the reproductive care that Syrian refugee women desire and receive, both in refugee camps and domestically. An understanding of how Syrian women frame their reproduction considering their refugee status allows for improved reproductive healthcare delivery and uptake.

Through this work we seek to improve health care services for more than 350,000 women who are resettled refugees in the United States and many other women who reside in federally

funded refugee camps around the world. The results aim to improve healthcare policies and interventions, subsequently improving reproductive health outcomes, for refugees. Findings of this work are integral to healthcare delivery, approaches to contraceptive counseling, and future nursing-driven interventions to improve the reproductive health of women who are refugees.

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Chapter Five Using Extended Case Methodology to Develop a Theory of Refugee Decision-Making

Introduction

While more than 65 million people worldwide are refugees, approximately half of whom are women, no theory exists to guide exploratory or clinical research with women who are refugees (United Nations High Commissioner for Refugees, 2016; Zong & Batalova, 2017). Additionally, half of women refugees are of reproductive age, with 1 in 5 of these women being pregnant at any given time (Inter-Agency Working Group on Reproductive Health in Crises, 2014). Traditional migrant theory has failed to recognize both the contributions that gender has on decision-making, and the important distinctions between elective and forced migration (Boswell, 2002), with no theories that guide understanding of health decision-making in women who are refugees specifically.

This paper utilizes extended case methodology to reconstruct Grieco and Boyd's (1998) gender-informed migrant theory to address the needs and experiences of women who are refugees. Qualitative interviews with women from Syria who have resettled in Michigan as refugees will be analyzed for ways in which refugee decision-making is not encompassed within Grieco and Boyd's framework. This analysis will result in the proposal of a gender- and refugee-informed theory to guide research on refugee health decision-making.

Background

Importance of Theory

The importance of using theory to guide health and health services research has been well established, with health interventions that have theoretical grounding showing improved outcomes compared to interventions that are atheoretical (Brazil, Ozer, Cloutier, Levine, & Stryer, 2005). Theory can used to inform and improve health research at all stages of development, from identifying appropriate study questions and populations of interest to assisting in successful implementation of interventions. Theory is also of relevance to funders and implementation stakeholders who are looking not only for whether an intervention may improve health outcomes or health services delivery, but an understanding of the mechanism of action and whether interventions may be duplicated effectively in other contexts (Brazil et al., 2005; Wholey, Hatry, & Newcomer, 2010).

Gender-Informed Migration

Traditional migrant theories were developed as gender neutral, or considered migrant women as strictly passive dependents of male migrants (Farias, 1991; Grieco & Boyd, 1998; Muecke, 1992). Theories such as Lee's (1966) "push" and "pull," from which various macro- and micro-level explanations for migration were developed, ignored structural activities that impact women in particular, including childbearing and childrearing. In response to these gaps in understanding, a gender sensitive framework was developed by Grieco and Boyd (1998). This three-stage analytical framework evaluates how gender relations, roles, and hierarches influence the decision-making of migrants during pre-migration, the act of migrating, and post-migration. Their theory examines the intersection of gender and migration, highlighting the multi-faceted influence of migration that goes beyond the essentialization of culture. While this theory has

been used to describe decision-making of refugees (Andrews Gale, 2007; Claveau, 2010; Gale, 2006; Veney, 2007), this literature does not address or examine critically how the framework may be inadequate in addressing the unique experiences of refugees in contrast to elective migrants.

Forced migrants are migrants who are coerced to leave their homes and move, either within or outside of their home country, due to violence, disaster, or climate change. However, "forced migrant" is not a legal term and does not have a universally recognized definition. Refugees are a legally recognized category of forced migrant, and includes individuals who require international protections due to feared persecution (The UN Refugee Agency, 2016b). For the purpose of this paper *forced migrant* and *refugee* are used interchangeably, with the recognition that the experiences of refugees overlap significantly with those who encounter similar experiences and trauma but are not granted, or do not desire, the ability to resettle internationally.

Migrant Health Theory

While few health theories explicit to migrants exist, theories such as acculturation have been used to describe and explain migrant decision-making in many arenas. Acculturation is "the dual process of cultural and psychological change that takes place as a result of contact between two or more cultural groups and their individual members" (Berry, 2005). Acculturation considers micro-, meso-, and macro-level factors as influencing migrant behavior. The leading model of acculturation argues that there are two behavioral changes for migrants: losing behaviors, beliefs, practices, and values specific to migrant culture, and the gaining of behaviors, beliefs, practices, and values of the host culture (Berry, 1997). Acculturation has been used to

explain several migrant health phenomena, demonstrating how migrant health may improve as well as deteriorate secondary to migration. Padilla and Perez (2003) demonstrated that the longer that an immigrant was in the US, the less healthy that immigrant became. This is explained by the adoption of poor health behaviors in the US that leads to chronic illness such as obesity, diabetes, and hypertension. Acculturation has also been used to explain how birth outcomes worsen with subsequent generations of migrants, with the compounding impact of systemic racism believed to result in poor birth outcomes (Fox, Entringer, Buss, DeHaene, & Wadhwa, 2015). Within acculturation improvements in healthcare access have also been theorized, with Leduc and Proulx (2004) demonstrating that as migrants become more familiar with a culture, they are more likely to be aware of, and incentivized to, engage in typical standards of preventative care.

Refugee Health Theory

Migrant health work has rarely theorized refugee health and decision making. Early migrant health theory viewed refugees simply as "medical phenomenon" (Muecke, 1992). This medical paradigm focuses refugee health efforts on curing infectious diseases present in the refugee, treating mental health disorders developed secondary to the refugee experience, and preventing the refugee from developing chronic medical problems frequently found in the United States, all with the intent of quick establishment of economic independence of the refugee (Beiser, 2005). The traditional view of refugees as vectors of infectious disease frames the healthcare most frequently provided by clinics offering refugee intake health assessments. Services most frequently offered to refugees include infectious disease testing and treatment, whereas screening for diseases that are not infectious (such as papilomoua smears, breast exams,

and pelvic exams) are infrequently available (Vergara et al., 2003). This qualification has resulted in a call for a paradigm shift from refugee pathology to refugee health.

While theories have been developed to address specific experiences of the refugee, particularly mental health or trauma (Silove, Ventevogel, & Rees, 2017; Vostanis, 2016) and education interventions (Hamilton & Moore, 2004), a general theory to address decision-making or health decision-making is lacking. This lack of theoretical underpinning to guide interventions for refugees has been critiqued due to well established benefits of theory-informed health interventions. The use of theory to guide health interventions and public health initiatives have resulted in culturally appropriate and comprehensive research methodologies and improved intervention results (Brazil et al., 2005; Green, 2000; Threlfall et al., 2015).

In the absence of refugee-specific theory, some researchers have applied broader, non-specific theories to their work involving refugees. Important distinctions exist with forced migrants, including a smaller voice in migration location (The UN Refugee Agency, n.d.), higher likelihood of recent trauma (K. E. Miller & Rasmussen, 2010; Silove et al., 2017), and a lower likelihood of being of high socioeconomic status (Boswell, 2002) when compared to elective migrants. All these factors may play a significant role in health decision-making, in addition to social, cultural, and religious understandings that women carry. These limitations of previously established migrant theories result in an insufficient theoretical framework to guide research on refugee health decision-making. The lack of a guiding refugee health theoretical framework that is both gender- and refugee-informed has meant that interventions that have been developed to address refugee health and healthcare globally have been developed atheoretically, or without a framework that is refugee-specific. Given its strong focus on the influence of gender on decision-

making in migrants, Grieco and Boyd's gender-informed migrant theory provides an access point and framework for the development of a theory to guide interventions specific to refugees.

Intersectionality

The use of a gender-informed migrant theory highlights the relevance of gender on lived experiences; theorizing the decision-making of women who are experiencing forced migration, rather than the decision-making of refugees who happen to be women. The goal of this distinction is to recognize the process of forced migration and the implications of refugee status as being factors that influence, but do not define, the lived experiences of women (Indra, 1989). This project recognizes the importance of viewing the intersections of gender and migratory experience together, as opposed to parsing out their impacts separately, due to a belief that the experiences of refugee women are different from those of refugee men. This research is viewed through the lens of how both gender and migratory status are integral to the understanding of decision-making, not only individually but how these identities work in conjunction with one another (Bilge, 2010; Viruell-Fuentes, Miranda, & Abdulrahim, 2012).

Women from Syria who are Refugees

Health decision-making in regards to reproductive choices is particularly relevant in refugee populations given the high number of women who are refugees and of reproductive age (Inter-Agency Working Group on Reproductive Health in Crises, 2014; The UN Refugee Agency, 2016a). Access to reproductive health services in this population has significant barriers, with well-documented lack of access to family planning services, including elective terminations, throughout the migratory process (Inter-Agency Working Group on Reproductive Health in Crises, 2010a; Women's Commision for Refugee Women and Children, 2005). Additionally, reproductive decision-making is a complex interplay between intention and

behavior, with many social, cultural, and structural influences (Arousell & Carlbom, 2016; Kridli, 2002; Srikanthan & Reid, 2008). This unique complexity allows for interviews discussing reproductive decision-making to draw inferences regarding health decision-making more broadly and speaks to the intersections of social, political, and structural influences that are discussed in Grieco and Boyd's original framework. Given this interplay, discussions surrounding reproductive decision-making specifically allow for a deeper understanding of health decision-making more generally.

Syrian women in particular were the focus of this project secondary to the recent influx of refugees from Syria in the United States (Refugee Processing Center, 2017a), and their prevalence in the midwestern United States in which the lead researcher resides. While there is limited literature regarding reproductive decision-making in refugees in general (A. J. A. A. J. Gagnon et al., 2002), no research has been conducted regarding the distinct needs of women from Syria. While the health decision-making focus of this analysis is viewed through the lens of reproductive decision-making, we do not want to essentialize women to their reproductive capacity as has problematically been done in the past (Alhusen et al., 2016; Downing et al., 2007; Haider et al., 2013). As researchers we have a holistic feminist perspective in exploring the gendered aspects of reproductive health decision-making within a refugee population.

Purpose

The purpose of this study was to expand Grieco and Boyd's (1998) theoretical framework to encompass the unique needs and experiences of women who are refugees. This restructured theoretical framework will guide future research on refugee health decision-making throughout the migratory process, and its development will result in recommendations for the gender-

informed study of refugee decision-making. The end goal is intervention development to improve refugee health outcomes at all stages of the migratory process.

Methods

Use of Extended Case Methodology

For this project an extended case analysis was used to reconstruct Grieco and Boyd's (1998) gender-informed theoretical framework. Extended case methodology (ECM) is a case-based method to extend existing theories or understandings of concepts (Burawoy, 1998). As a method it was designed to build on the strengths of ethnography and grounded theory, while recognizing the unique methodological challenges and needs of working to develop or build upon existing theory (Burawoy, 2001). This method works to theorize the experiences and practices of a specific population as they relate to larger structures and processes. Rather than constructing a new theory, this method builds on existing theory, recognizing the contributions that other researchers have made in theory development.

As a methodology the theoretical underpinnings of extended case method resonate with the actual topic of this work itself. The goal of ECM is not to generalize, but rather to situate the experiences of participants among the wider social, political, and global context. Importantly, ECM is closely associated with critical theory, and was initially conceived to be able to uncover power structures in multilevel analysis (Wadham & Warren, 2014). This goal is shared by Grieco and Boyd's original framework which emphasizes the intersections of gender, class, power structures, and geopolitical conditions as being relevant and influential to the multi-faceted decisions that are made by migrants.

Extended case methodology has an explicit multilevel focus, and as such is an ideal means of reconstructing theory for refugees. At its core, this method seeks to understand the

power structures that interact between local, national, transnational, and global sources (Barata, 2010). Considering the journey that resettled refugees undergo, this multilevel perspective is essential to understanding refugee decision-making. Extended case methodology allows for participant interactions to be situated within the larger political, social, and economic context of the time (Burawoy, 1998). While typically conducted with ethnographic participant observation, all forms of data collection can be used with this methodology, including interviews, policy papers, media, and historical documents to extend theory (S. H. Lopez, 2006; Luck, Jackson, & Usher, 2006; Marion & Uhl-Bien, 2001; Pratt & Rafaeli, 1997; Samuels, 2009b, 2009a; Wadham & Warren, 2014; Wong, 1998).

Additionally, in health research ECM has been used to extend theory on nursing home care work (S. H. Lopez, 2006), nurse migration (Smith & Mackintosh, 2007), and the nurse manager as a profession-managerial class (Wong, 1998). Utilizing both inductive and deductive means to draw conclusions (Samuels, 2009a), Extended case methodology is an optimal lens through which to view health decision-making, given well-established understandings regarding the clinical context of how the migrant experience impacts access to healthcare, in addition to established understandings of overarching barriers to reproductive healthcare that women face in the United States.

Wadham and Warren's (2014) three steps for extended case methodology were followed: Identify a "good" theory and a case that is likely to both confirm and challenge the theory, examine the lives of people within the setting and identify any anomalies, and rebuild the theory to accommodate anomalies. Identified anomalies that challenge the theory, also known as trouble cases, are instances in interviews that are not encompassed in the existing theoretical framework. Additionally, a fourth step of member-checking was employed to confirm the accuracy and

completeness of the theory development process with the population of interest (Krefting, 1991; Mays & Pope, 2000).

Procedure

Sample: The Case

In the summer of 2017 to summer 2018, thirty-six in-depth, semi-structured qualitative interviews were conducted with women who had resettled in southeast Michigan as refugees from Syria. The purpose of these interviews was to deepen an understanding of how the uprooting process of a refugee influences reproductive decision-making across resettlement. Interviews were retrospective, inquiring about reproductive intentions, family planning use, and pregnancies since the start of the Syrian conflict, March 2011, to the present. Participants were asked to discuss the major life events that influence their reproductive intentions and decisions, as well as the facilitators and barriers to accomplishing congruence between reproductive intentions and behavior. Interviews were audiotaped, lasted approximately one hour, and were conducted one-on-one by a native Arabic-speaking woman who herself is a refugee from the Middle East. Results of the qualitative analysis of these interviews focusing on the dynamic nature of reproductive intentions and behaviors are presented elsewhere. A two-stage process was utilized, including initial interviews to inform theory construction followed by member-checking to confirm the initial analysis. In the member-checking phase of the project, participants were presented with the preliminary conceptual model of the theory which was informed by the initial 20 interviews. Participants were asked for their thoughts about the conceptual model, if it encompassed what influenced their decision-making, and if the model was deficient in any way. These discussions followed interviews regarding reproductive decision-making and lasted approximately 10 – 15 minutes. In the case when a participant did

not feel confident in her reading abilities, the conceptual model was read and/or explained to the her.

The first author was present at all interviews in case of any arising questions or concerns. Immediately following the interview, the research assistant and primary author conducted a debrief regarding impressions from the interview. Interviews were transcribed into written Arabic, and then translated to written English for analysis. Transcription and translation were conducted by native speakers of Arabic. Participants were given $50 gift cards for their participation in the project.

Participants were recruited through fliers posted in locations in southeastern Michigan where Syrian refugee women were likely to frequent, including English as a Second Language classrooms, mosques, refugee resettlement and refugee assistance organizations. Additionally, in conjunction with a local refugee resettlement agency, a reproductive health workshop was organized for recently resettled Syrian refugee women. During this workshop, women were informed of the opportunity to take part in the research project. Inclusion criteria included women who have left Syria since the 2011 conflict started, self-report as refugees, currently reside in southeastern Michigan, are 18-44 years old, can read, write, and understand Arabic, and are married. Excluding women who are not married is the most culturally appropriate way to sample from women who are sexually active. Using marriage as inclusion has been used in other studies that look at family planning use in Syrian women who are refugees, and was recommended by community partners as the most appropriate way to sample (West et al., 2016). Adolescent women were not included in this study given the unique needs and experiences of these young women. Post hoc review of the sample demographics did identify participants were

representative of the range of reproductive decision-making, including no pregnancy, unintended pregnancy, or intended pregnancy since leaving Syria.

Refugees are a vulnerable population within which to conduct research (De Haene et al., 2010; Leaning, 2001; Pittaway, Bartolomei, & Hugman, 2010). Institutional Review Board (IRB) approval was obtained through full board review by the University of Michigan's Health Sciences and Behavioral Sciences IRB prior to initiation of the project. Additionally, a verbal consent process was used so that no identifiers could link the participant with her data, and an informational sheet was left with the participant outlining available language- and culturally-appropriate mental health service resources. Participants were monitored for signs of distress during interview and voice recordings from interviews were destroyed following transcription.

Grieco and Boyd's Gender-Informed Theoretical Framework: The Theory

The first step of this process was to identify a good theory, and a case that was likely to both confirm and challenge the theory. For the purpose of this method, a "good" theory was one that had value for the work that was being conducted, but also likely limitations in addressing the case of interest. Rather than abandoning a theory because it does not fully encompass the experiences of the sample, this method works to build upon theory by examining trouble cases and extending its application to additional cases. See Appendix IV for a table of Grieco and Boyd's framework.

Reflexivity

Extended case methodology highlights the importance of reflexivity (Burawoy, 1998), and seeks the aware engagement of researcher with the research. The first author recognizes her positionality as a white woman who does not speak Arabic and is not a member of the refugee community. While a fully community-based participatory research approach was not taken with

this project, extensive community support was obtained, including the involvement of multiple community partners. Four research assistants participated in this work, all native speakers of Arabic and two of whom were refugees from the Middle East themselves. All members of the research team were encouraged to be cognizant of the effects of power dynamics on all aspects of the research process, including design, execution, and analysis (Barata, 2010). A reflexivity journal was maintained through the entirety of the research process. Research assistants were interviewed regarding their own life experiences and their position within the research as interviewers, transcriptionists, translators, and analysts.

Analysis

MAXQDA was the software used for analysis. An interpretive phenomenological approach was used in analysis, recognizing the interpretation of participants' narratives as essential to drawing conclusions (K. A. Lopez & Willis, 2004). Coding and analysis were conducted using the MaxQDA software. English transcripts were all read and verified by the research assistant who conducted the interviews to assure accuracy to the nature of the interview. Codebook was developed by two independent researchers. Initial codes were developed a priori, guided by the research question and aims, as well as clinical and theoretical understandings of pregnancy decision-making. Further codes were developed inductively through the transcripts. Analysis was conducted through line by line coding, the collapsing of codes, and identifying themes and subthemes. Coding of English transcription of the interviews initially took place by two independent coders, until 80% agreement between coders on 95% of the codes. After this point, one individual coded the rest of the interviews.

Established themes in the interviews were then assessed for being "trouble cases" that do not conform to Grieco and Boyd's established framework. Themes that emerged from these

interviews were examined for tensions and contradictions with the theory that might indicate points of opportunity for further development of a gender-informed refugee theory. Each interview was debriefed fully between the research assistant conducting the interview and the primary author, and field notes were written down. This process informed subsequent interviews and directed future lines of questioning surrounding potential theoretical points of interest.

Results

Twenty participants were interviewed for Phase 1 of this project, in which interviews were analyzed for theory development. Following this, 16 participants were presented with the modified theory as a means of member-checking. The participants in both phases of the project were similar, with a slightly wider age range while pregnant in Phase 1, and participants in Phase 2 able to speak to experiencing more pregnancies throughout the time of resettlement. See Table 5.1 for participant demographics. Major themes of trouble cases in the interview transcripts can be found in Table 5.2.

Table 5.1 Demographic information

	Phase 1 participants (N = 20)	Phase 2 participants (N = 16)
Age at time of pregnancy	17 – 42 years old	19 – 39 years old
Age at time of interview	22 – 46 years old (mean 32.4)	23 – 40 (mean 33.5)
Number of pregnancies experienced throughout time of resettlement	0 – 3 (average: 1.5)	0 – 4 (average: 2)
Countries in which pregnancies were experienced	Syria, Turkey, Libya, USA, Jordan	Syria, Turkey, Lebanon, Jordan, USA
Number of countries resided between Syria and United States	1 – 2 (mean 1.1)	1
Length of time in the United States (in months)	9 – 24 (mean 18.1)	12 – 25 (20.8)

Table 5.2 Major themes

Major Themes of Trouble Cases
Workload of women o Responsibilities in parenthood o Disability as a means of accessing resources o Competing pressures
Temporality of the refugee o Living in community o Overlap of receiving and origin countries o Desire to dis-engage from the geo-political o Challenges in navigating different laws o False understandings of opportunities
Women's agency o Negotiating new opportunities

Temporality of the Refugee

On average, participants resided in two countries between leaving Syria and resettling in Michigan as a refugee. Housing instability and insecurity were frequent concerns throughout resettlement. Participants reported concerns about cost and safety of housing, as well as lack of feeling settled in the places they were living.

> *In the year 2012 we lived all of it in terror and fear. Until the war was completely in our area did we leave it. You have from after 2012 till 2014, here there was a separation. 2013 was a period of moving from one place to another because of the war. We even moved to places that are not safe, and we were obligated to change it several times. This definitely affected our well-being a lot and in general the well-being of my young son because he has autism.* – Participant 12

Additionally, decision-making was influenced by what participants or their spouses believed would help them obtain full citizenship in the future, raising the question of whether "post-migration" is achieved with a change in location or a sense of resettlement or belonging, or having achieved a specific categorization, like citizenship.

> *Here [in the United States] you feel like the situation is very stable. Our life as refugees, you feel like it is stable more than Jordan. And the past situation in Jordan was below zero. Here it is in the middle […] Their future is better in terms of living, in terms of education, in terms of… until [the children] have grown and can stabilize themselves. Even the citizenship, it assures it to them, not here in the Arab countries. The American citizenship, when they take it when they are older, I feel like it secures their lives in Arab countries.* – Participant 25

> *We also think of these things. Because you are Arab, but you have an American citizenship, and you have a degree. You studied in America. When we were in Arab countries, when the doctor would come and he had studied abroad, you'd feel like they are on a higher level. His treatment with other people is different. So this also encourages me to stay here for my children.* – Participant 25

Emotional connections to Syria, or to other locations experienced throughout the resettlement process, played an active role in emotional states and decision-making post-resettlement.

> *It's just the emotional state stays difficult, you've left your family, you've left your people...there was still a connection in Syria and Jordan. You would feel like you are still a part of the country. But when we came here, the idea is difficult that we are far from our family, we are far from the Arab countries, we are far.*
> - Participant 25

Numerous participants mentioned that they had felt hurt or disenchanted by political engagement or political discussions in the past, and therefore did not have any interest in engaging with politics post-resettlement. This highlights that while certain factors may influence

decision-making in migrants at specific points throughout the journey (e.g. pre-displacement), the weight or priority given to factors may evolve throughout the resettlement process.

> *In politics we, because we were involved in politics in Syria, it came over our heads. So here any Syrian who enters into politics, he'll tell you, I stay away from politics because it destroyed us, we destroyed ourselves with our own hands.* – Participant 20

> *Why did I go out? Because I want my girls to be exposed to the world, because I felt like sheep being slaughtered, as though we had no value. As if a human being has no value. This is the point we reached. Despite me having nothing to do with it, neither my children, nor my daughters, nor my husband, even my husband did not serve the army […] They tell you it has nothing to do with us. All my relatives went outside the country because they tell you we have nothing to do with it. No, we have nothing to do with this or that.* – Participant 17

The frequent movement of refugees, as well as the lack of control in deciding a final resettlement location, resulted in challenges navigating laws in different countries.

> *In Jordan, everything in it is difficult, difficult, difficult. How do I tell you? Very difficult. Here in America, there is a bit of difficulty with regard to the laws, but the life is a bit easier with regard to medicine and education. But with laws, there are laws that you must follow for the child only, so everything is different from the next. Every country is different than the next. So the best thing, when this, definitely in Syria everything was easy, everything was easy. Everything was, how do I tell you, life was very easy. We were very happy. It was probably Syria that was the most secure and safe. This is impossible for America, it is impossible for it to be over Syria.* – Participant 20

This overlap in the influence of the sending, transient, and receiving countries also played a role in experiences adapting to, and attempts to integrate within, these countries. Social, cultural, and religious beliefs and norms established or held in the country of origin continued to play a role, and at times come in conflict with, beliefs and norms within the receiving country.

> *Once someone goes to a new country everything changes, the language, the culture, everything… We feel deeply oppressed.* – Participant 7

> *When we first came my children started crying because they wanted to go back to Syria, I told the case worker that I only want to return to Syria. We came because of the war because it was a bad situation. When we were accepted to come to America we were happy, we said America ended up being better than the Arab countries who closed their doors on us, but America opened them. Now of course the trials that we went through do not represent the entire country, it doesn't mean that all the people want to make things harder on us.* – Participant 8

Women's Work

Many women spoke of experiencing unique forms of patriarchal and racial oppression throughout their resettlement journey, including in the United States. While a Western assumption may be that Arab women would have increased freedom in the US, this was not always the experience of women interviewed. Many women had a strong desire to work or learn the English language, but could not as they had to provide support for their families. Women mentioned that if they had the extended family or community support that they enjoyed while living elsewhere they would be better able to accomplish their goals of working outside the home and leaning English. This was also voiced in a frustration about the need for pregnant women to work in the United States, and of the lack of support for the pregnant, postpartum, or caregiver mother.

> *I mean [the caseworker] would ask me why I didn't want to work, and I would say, Because I am pregnant," and they said, "Americans work when they are pregnant".* – Participant 8

A lack of education, and the opportunity for better education for their children, were central to decision-making; this was even the case in women who lived in communities that were largely Arabic-speaking. An interest in education was particularly strong in relation to language development. Women stressed the lack of communication

ability as the hardest part of transitioning, and a factor that added a significant amount of work to their lives.

> *Yes, I want to learn the language. I regret it when I go out to a people that speak English. I did not study Arabic. In Syria we left a lot. We left in second grade. We did not study Arabic at all, at all. But I would like for someone to come and teach me English, to teach me, because life here is all English, English. You don't find anyone here that can speak some Arabic. And I like to learn. I called several people and several organizations, I told them I want to learn. It is not good for me to stay like this […] I cannot stay like this staring at the wall, to stay imprisoning myself. I like to go out and see people and learn, read, write like the people, work...and I like to go out and work. Even if it is four or five hours, to help my husband […] It is very difficult for me not to know how to write nor do I know how to read. I don't know if one comes to the door and speaks, I don't understand him. I find it very difficult. He said let's secure for them, but I came for my children. Let them learn, read, write, go out. This is better than having them stay in Jordan. They would stay in the streets all over the place*
> – Participant 11

> *We came here, in the first year, it was as if you started a new life. New rules, new education. You'd come as if you were blind, you don't know anything, you didn't imagine that you'd go out [of Syria]. You don't even know how to say the word "hi".* – Participant 20

Caring for children in the United States, as compared to Syria or other countries along their resettlement journey, presented increased challenges, pressures, and responsibilities.

> *Our life is here in America and life is difficult in America. We can barely survive with these six children. If we were in the country [Syria], my husband would not permit the tubal ligation, he loves children. But here, the entire life is difficult. Every child needs a start up on their own* – Participant 23

While the responsibilities of raising children were frequently identified as challenging, children were also seen as being a source of strength in decision-making.

> *God gives strength. Listen, [I] don't say this, because I am a coward, you need more than this, I am a coward. To the point where I sit in my house, I can't even*

sit, I am scared. But praise be to God, at the time it comes, in other words at a time when you see something that will take your children, you become just like a lion or a bolt, you become capable of fighting your enemy, you don't have a problem, God gives you strength. – Participant 17

Thank God. Life is filled with situations and one must be stronger than them. If you become weaker, it will win over you. And if you strengthened yourself, you'll overcome it God willing. All our endeavors are for our children. God willing. – Participant 20

Participants were aware of how resettlement priority is given to individuals considered to be the most vulnerable, including those with physical and mental disabilities.

Now in Turkey...when we first went to Turkey there was an incredible wave of optimism. My husband's health condition was very difficult, he has a lot of problem, so it would be expected that the UN would sympathize with this condition and it would not delay the leaving and such. – Participant 12

However, the presence of children or a spouse who are physically or mentally disabled added significantly to the workload of women.

I had the girl and she was sick, we went with her, we left Jordan. There was a lot of war, strikes, and there was chaos. We would take my sick daughter to be treated in Sham, from when the events first started. We were no longer able to go out with her, so we all went to Jordan maybe we'll be able to help this girl, to treat her...we did not benefit at all. **–** Participant 26

The difficult emotional labor experienced throughout the process of resettlement was noted. This was particularly evident when women were unhappy with the location of resettlement that had been chosen for them.

I tell my husband I have seen a lot in my life. I am 33 years old now, my brother died, a barrel bomb fell on him, such a hard situation. Imagine, here in America I felt more depressed than that. – Participant 8

Women's Agency

The workload of women was mediated by experiences that represented an increase or a decrease in agency.

> *We have been living all our lives there [in Syria] and we've never travelled abroad, but we came here. America is the best thing with regard to children, and women's rights, and that's enough. And here truly if one wants to work they work. For example my son is 16 years old, sometimes he works in the summer even if it is two days a week, he is allowed… over there can they? No, they can't...they teach them things and they follow and that… my husband is working thank God. In my life, I have become 36 years old. In my life I never worked, I worked here. I went and recorded time and everything. Thank God.* – Participant 21

> *He [my husband] showed me struggle in all colors... [He'd say], "You want me to love you here? You do not open your mouth, I do not want to hear your voice at all." Imagine that I am not in your life brother. As you wish, I will clean for you, I will cook for you. I will serve you because you are the father of my children but besides this, speak with you or sit with you, don't dream of it. You stay in your business and I will stay in mine.* – Participant 13

Some women embraced the opportunity to challenge gendered and cultural assumptions and to educate others about their contrasting experiences.

> *[A researcher] wants to know about how Syrian women left Syria and resisted. So, I would help her with this. I don't mind, on the contrary, I like to talk, and I like studying.* – Participant 20

New-found agency throughout the process of resettlement supported women's autonomy in negotiating new opportunities. Participants recognized the significance of language skills to navigate these new opportunities. Having language skills was a priority over, or entry-point for, several benchmarks of resettlement, including driving a car, employment, feeling represented, growing a family, and establishing community.

Additionally, migration provided the need to achieve a balance between new opportunities to negotiate for power and interacting with gendered limitations within the new country. Resettlement in the U.S. provided an opportunity for renegotiating power within marriage relationships. One participant reported feeling safer with her husband because she would threaten to call the police if he hit her, and his fear of the repercussions of police or government-involvement resulted in her no longer experiencing domestic violence post-resettlement.

> *Imagine, we saw a lot of difficult things [in Syria] but here we saw that they do not know how to teach refugees, truthfully. You need to not put pressure on me right at the start. Set aside one year so we can learn the language. I told the case worker that once I am sitting in the resettlement agency and I am learning I will gain the language. Imagine, I am working with Arabs that speak Arabic to me. I mean, I need to learn the language.* - Participant 8

> *I feel safe [from domestic violence] because of the government. When I was in in Syria when I would go to my sister's house, I would envy the chair leg [as something that is irrelevant and unnoticed] that was in her house because it lives in safety. I have been living with him for 25 years, in fear and terror.*
> – Participant 3

> *Participant: Now here, you feel like there is more care for women, if you are tired, sick, emotionally/mentally tired, you are bothered, someone will…*
> *Participant's friend: Here if you gave birth to a child, the child comes and is a citizen of this country, he has rights. In Jordan, no matter how many [children] you have, he doesn't have anything…*
> *Participant: Whereas over there, no. I came here and they did not accept to register my son, they want a passport and the passport [was destroyed in bombing] with the house. You know? You gave birth in Jordan, he is a citizen in Jordan, he does not have rights no. Whereas over here, the care before the child is to the mother. If you are pregnant, your emotional/mental well-being is at ease, you aren't bothered, they might go for father for the sake of the mother, you know?*
> *Researcher: Yeah.*
> *Participant: Whereas in our country? The mother was nothing at all...and in Jordan, zero from the woman's side, it is all whispered, she doesn't have any...the woman is at home cooking and cleaning for the husband and that's it...you know…*
> *Researcher: Yeah.*

> *Participant: Now [in the United States] you can tell him I am tired, I am bothered, I want to go out. Whereas in the country [Syria], no. Go out? You don't go out. That's it for you and him there is no going out, the children I mean...here you tell her we have to go out, we have to have fun, the child must have this, I must have my rights, I must...here you can talk. Whereas in the country [in Syria] you cannot, nor in Jordan.* – Participant 27

The negotiating of new opportunities, or the workload of the woman in general, was relieved by the presence of community.

> *Now here the area for example, are friends; there is people, there are Arabs. The place where I stayed at in [metro Detroit city], the houses were very far from each other and there was no one. I did not know anyone at all. So truly the situation was very hard. At night I did not know how to sleep at all. And I had all the windows and the doors locked, I was scared and horrified. Yes, until they brought me here [current city] was when I felt a bit of safety honestly.* – Participant 12

Initial Model Conceptualization

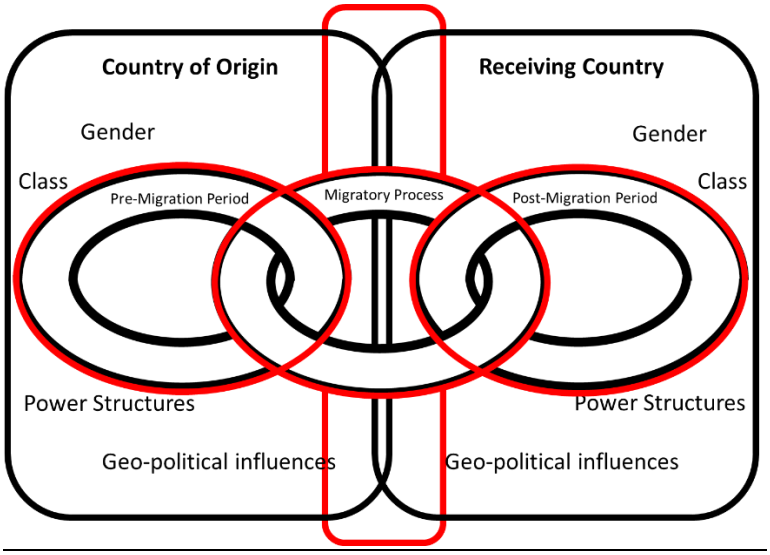
Based on analysis of the first 20 interviews conducted, an initial conceptualization of the modified gender-informed framework was developed (see Figure 5.1, distinctions in red). Given these interviews, the themes that emerged from them, and points of opportunity for theory development that were found within them, a conceptual model was constructed to depict a modified gender-informed migrant theory that took into consideration the experiences of forced migrants.

The gender-informed migrant theory has been restructured in two primary ways as a means of better encompassing the experiences and voices of individuals who are refugees. First, Grieco and Boyd discussed the influence of country of origin and the receiving country as separate, despite how many refugees continue to be influenced by country of origin power

structures, gender roles, and class implications post migration. Because of this, in the restructured framework the country of origin and receiving country overlap.

Secondly, Grieco and Boyd's three phase migratory process does not hold for most refugees, who experience frequent uprooting and instability both pre- and post- leaving their country of origin. As refugees may spend time in many locations before, if ever, they consider themselves to be "settled" in a post-migration period, this migratory process is represented as a chain of time, as opposed to distinct locations.

Figure 5.1 Initial model conceptualization



Following Member Checking

While most participants reported that they agreed with the theory depiction or reiterated the parts that they felt were the most relevant to themselves, multiple women discussed how the education of themselves and their children was missing from the model. Education in general, and the knowledge of the English language specifically, was noted repeatedly to be a primary resource and a guiding factor in decision-making.

> *I came here and the atmosphere also is difficult, they tell me to have kids but I in this country still don't know the language properly and I'm still quite far, we're alone, how can we predict this. Don't you want to know how to speak. If I have kids, don't I want to know* how *to speak with the doctor [..] I wouldn't think of pregnancy, but it could happen by mistake that you become pregnant, but I at least [if I became pregnant] should have started learning the language, begun to learn how to work with this country, how I go out. If the circumstances put me alone, I should know how to raise and deal with my son who is mine.*
> - Participant 17

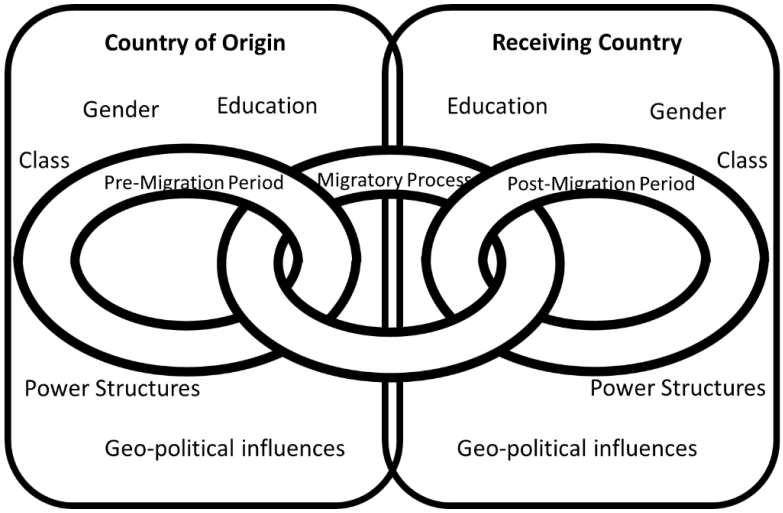
This woman was not alone in voicing a belief that she had a responsibility in this new country to learn the language, and that her reproductive options were limited until she had first achieved basic language skills.

> *My husband wants a daughter. But I don't feel like it is the right time, because I want to learn the language. Now I can't learn how to drive. Now it is difficult leaving the house.* – Participant 4

> *This is the reality, true. It's true just like you said. There are people, from their financial situation, there are people from the political situation. There are people, it depends...but I, no thank God, our matters are good thank God, there is none of this.* – Participant 26

Because of the further emphasis on the importance of education on decision-making as discussed through member-checking, *education* as a major influence was added to the conceptual model. See Figure 5.2 for final conceptual model.

Figure 5.2 Final conceptual model



Discussion

The development of a gender-informed refugee theory makes important strides in pushing against the dominant paradigm of migrant theory constructing migration as a primarily voluntary and male-driven or genderless process. Themes of women's work and the temporality of the refugee map well on critiques and development of migrant theory for assuming elective migration and failing to highlight the unique needs of migrants who are women. The goal of this theory development is to guide research on refugee health decision-making throughout the migratory process. Specifically, given the dearth of health-related theories used in refugee health research, this theory hopes to guide health decision-making research and interventions.

The frequent uprooting and instability voiced by participants in this study is congruent with findings by Espiritu and Duong's expansion of Tang's (2015) concept of "refugee temporality" (Espiritu & Duong, 2018). Espiritu and Duong conceptualize temporality as fluid and dynamic, linking time to power. Refugees interviewed noted housing instability to be a primary barrier to feeling settled throughout the migratory process, with substantial emotional

energy going towards finding homes. Cost of housing, and the associated or resulting poverty for many interviewees was a factor in decision-making regardless of location.

It's important to note that the location of resettlement provided to the family is not always the last place that the family resettled in the United States. Multiple women reported relocating to Dearborn, Michigan from other locations after hearing about the prominent Arab community there. This raises question about how we consider people to be "resettled," both academically and in resettlement policy. Many other participants discussed, after residing in the United States for a minimum of nine months, not feeling "settled" in the United States, and having ongoing challenges in their transitions to new locations.

The influence of social, cultural, and religious norms and beliefs of the origin country continue to have an influence throughout the migratory process and into post-migration. As has been found to be true with elective migrants, the opportunities available to a forced migrant may be dependent on education or other training received in the country of origin pre-migration (Iredale, 2005; Roggeband & Verloo, 2007). A lack of formal education, job training, and English language instruction pre-conflict provides a significant barrier to women post-migration. Additionally, social norms regarding what a woman's access to these resources ought to be continue to carry weight post-migration, with several women reporting partners who look unfavorably on them accessing services available in the United States. This relationship between norms and beliefs in the origin country contrasted with the receiving country is further complicated in refugees given the lack of decision-making power they frequently have over the designation of their country of resettlement. Where elective migrants may choose a country of immigration due to a compatibility with culture, language, education, or employment

opportunities, refugees do not have the opportunity to prioritize these factors in a receiving country prior to migration.

Limitations

While this study makes important contributions to refugee decision-making theory development, there are some limitations. This project examined the health decision-making of refugees using interviews centered on reproductive health. Reproductive health may be considered a less pathologized healthcare need of women, therefore leading to biased findings. However, women who were interviewed commonly reported experiences of discrimination and exclusion that were directly in response to their pregnancy and family planning decisions, and interviews also discussed abortion and unwanted pregnancies, two topics that are frequently stigmatized or pathologized. Therefore, a focus on reproductive health in these interviews can be viewed as a means of eliciting both stigmatizing and non-stigmatizing heath decision-making thought processes.

The decision to exclude women who were not married resulted in missing the voices of women who are sexually active and are not currently or have never been married. Consistent with a community engagement approach, researchers were advised by local agencies to use this criterion to avoid the research being negatively perceived by the community, as we worked to secure trust and support of our work. A separate study seeking participants who are sexually active but not married may be appropriate.

Additionally, while extended case methodology has been used to extend the concept of *migrant* to include forced migration in this project, there is still room for further improvement on the theory by exploring other migrant populations, including those forced to leave their homes for reasons besides conflict (e.g., natural disasters), or who originate from places besides Syria.

Conclusion

This theory-development project makes important contributions in better understanding the unique needs and desires of women who are refugees. In highlighting the workload of women refugees, as well as the temporality uniquely experienced by refugees, a better understanding of decision-making can be gleaned. Utilizing interviews regarding reproductive decision-making throughout the migratory process with women from Syria who are refugees, a gender-informed theory of refugee decision-making was constructed. This theory presents a framework for guiding future research on refugee decision-making, as well as interventions for refugee health. While this paper presents a restructured framework to be used to better understand refugee decision-making, more work needs to be done to confirm generalizability to refugees who have resettled from other countries, and who are experiencing other forms of decision-making. Additionally, future work should look at the operationalization of gender norms, class, power structures, and geo-political influences in order to increase the framework's utility in research. This project will inform future work to implement interventions to better meet the reproductive health needs of women who are refugees domestically and globally, with the theoretical framework informing points of opportunities and potential challenges in implementation.

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Chapter Six Discussion

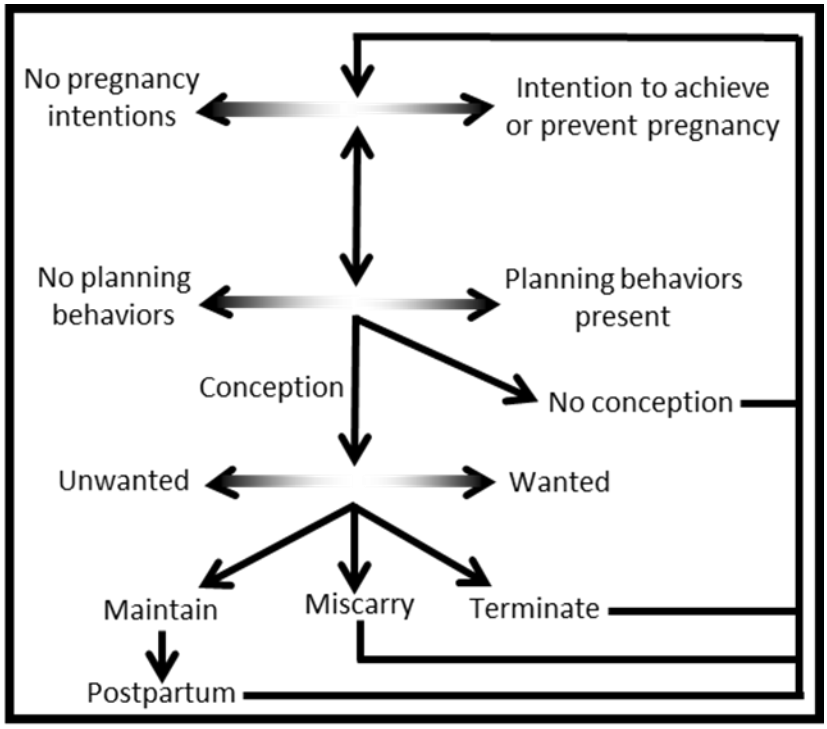
These three projects work towards furthering current understandings of the relationships between life stressors and unintended pregnancy. Taken together, this dissertation presents an examination of stress from two unique vantage points: generally, and as a specific life experience. Viewing stress through these lenses, both quantitatively and qualitatively, allows for unique conclusions to be drawn. Project 1 utilized a novel approach to assess the impact of changes in life stress on unintended and unplanned pregnancies over time. Project 2 worked to expand current understandings of the reproductive health experiences, needs, and desires of Syrian women who are refugees resettled in the United States. Lastly, Project 3 reconstructed existing theory to extend current thinking of migration from a strictly elective process to a more nuanced understanding of the influence of resettlement as a woman who is a refugee. Together, this work aims to be used towards the development of interventions to effectively improve access to pregnancy planning for women who desire it.

These projects examined the complexities of, and relationships between, constructs of reproductive decision-making and their intersections with life stressors. As seen through the Cycle of Reproductive Decision-Making (see Chapter 2; Cycle presented again in Figure 6.1), pregnancy intention, planning, wantedness, and outcomes are related yet act as independent constructs. In Project 1, using intention and planning as outcomes in the model recognizes the distinction between affective and behavioral constructs in reproductive decision-making, acknowledging that while they may be related these constructs operate independently, and may have unique relationships with stress. Results demonstrated that the risk of unintended and

unplanned pregnancies was different in response to stress over time, demonstrating how stress may interact uniquely with intention and planning. Women from Syria who were interviewed in Project 2 spoke of pregnancies that were wanted but unplanned, as well as intended but unwanted. While pregnancy constructs were generally consistent (either intended, planned, and wanted, or none of the three) when reported in a survey, recounting of feelings, behaviors, and responses to pregnancy in qualitative interviews provided further context, nuance, and at times conflicting reports on these constructs. Following survey questions with a qualitative interview allowed for the contextualization of the experiences, and a richer, deeper understanding of how women understood these pregnancies beyond the dichotomized terminology typically used with pregnancy constructs. Further analysis of these interviews for Project 3 highlighted the social, cultural, and political context within which this Cycle operates.

Taken together, these projects present opportunities for improved clinical care of women seeking to increase control over their fertility outcomes. They speak to new avenues for reproductive health research to further improve congruence between reproductive intentions and outcomes, both for domestic-born and women experiencing forced migration. This work contributes to a body of literature that recognizes that understanding the context within which pregnancies take place, for example the stressors a woman is experiencing, is essential to improving congruence between intention and outcome. Health policies and interventions in the past have prioritized birth in some women above others, and populations such as refugees and women more likely to be experiencing stress are groups where pregnancy has been less supported. This dissertation highlights opportunities not just for reducing unwanted pregnancy, but for achieving congruence between reproductive intention and , for all women.

Figure 6.1 Cycle of Reproductive Decision-Making



Stress as it Influences Unintended and Unplanned Pregnancies

Project One presented a survival analysis in which stress change over time was examined for its influence on the risk of pregnancies that were unintended, unplanned, or both unintended and unplanned. Minor and major decreases in stress over time were shown to increase the risk of all three outcomes of interest, with the greatest effect seen in major decreases in stress. Minor increases in stress were also shown to have an increased risk of the outcomes, although to a lesser extent than decreases. Major increases in stress were not shown to have a statistically significant impact on risk of the outcomes of interest.

This project was unique in its study population of women pregnant with their first babies. Experiencing parenthood for the first time is itself a uniquely stressful life event, and may result in financial strains, changes in employment, reconsiderations of health insurance, and new

negotiations with partners. Examining stress in this context provides an understanding of how stress operates for women recently experiencing parenthood for the first time, and its influence on whether women go on to experience another pregnancy in the three years postpartum.

Clinical and Policy Implications:

This study presents an example of how contextualized life experiences, such as stress, may influence pregnancy outcomes when controlling for sociodemographic factors known to also influence outcomes. Contraceptive counseling that bears in mind a woman's current life experiences may allow for women to make better informed decisions regarding their actual risk of an unintended pregnancy. This is particularly relevant for women who may not consider that decreases in stress may influence risk. These findings support future development of contraceptive counseling tools that include either a measure of stress or a specific prompt to discuss how changes in stress may impact pregnancy risk.

Creating an environment in which women can achieve congruence between reproductive intentions and outcomes requires more than healthcare policy to improve access to contraception (Abigail Aiken, Borrero, Callegari, & Dehlendorf, 2016). Reproductive healthcare policy that utilizes a framework of reproductive justice recognizes the contextualized and intersecting life experiences and identities of individuals as influencing reproductive outcomes. Attempts to decrease unintended or unplanned pregnancies related to stress must take into consideration longstanding social policies that lead to common stressors, often disproportionately effecting women of color in the United States. Education, housing, and financial policies that maintain systemic racism and oppression create stress and sustain inequalities that have downstream impacts on reproductive healthcare access, uptake, and outcomes.

The Refugee Experience as a Unique Stressor

Project Two collected thirty-sex in-depth interviews with women from Syria who are refugees resettled in southeast Michigan. These interviews discussed reproductive decision-making within the context of the refugee experience, using a timeline to frame reproductive intentions, planning, and outcomes from the start of the Syrian conflict to the present. Major themes in the interviews related to reproductive intentions and behaviors included the influence of conflict and uprooting. Major influences on unmet need for contraception post-resettlement included challenges in accessing care and the cost of care. Social networks, knowledge of access points, healthcare provider options, and resource availability were factors that acted as facilitators or barriers to reproductive healthcare.

Clinical and Policy Implications:

Interviews highlighted differences in how women engage with their refugee status, with the healthcare system, and with conversations regarding reproductive choices. This highlights the need for healthcare providers to avoid stereotyping or generalizing immigrant women's contraceptive use or patterns (Srikanthan & Reid, 2008). Not all women who are refugees engage with their lived experiences uniformly. Some women have expressed that their experiences are relevant to their medical care (particularly in the case of a history of rape), and others that their experiences are unimportant or irrelevant to their care (Ascoly, Van Halsema, & Keysers, 2001).

Additionally, consistent with other literature, interviews highlighted the need for more Arab refugee health research in the United States, including the impact of poverty, lack of health insurance, language barriers, discrimination and distrust (Inhorn & Serour, 2011). This study confirmed past findings that when residing in non-Muslim dominate countries, Muslim women from the Middle East give a high priority to gender and cultural congruence with their healthcare

providers (Hammoud, White, & Fetters, 2005; Odeh Yosef, 2008), however cultural congruence can create unique challenges in potentially sustaining cultural narratives that may discourage options such as abortion

Significant work must be done to improve the reproductive health access and availability of services for women who are refugees. Access points for reproductive healthcare and reproductive options available in the United States (e.g. intrauterine devices and abortion) were unknown to many interviewed. Future work should include designing and implementing an optional reproductive health orientation for women who are refugees resettled in the United States. By creating standard education resources for newly resettled refugees a baseline knowledge of reproductive options and access points can be achieved. Such an orientation may also result in more prompt connections of women with reproductive healthcare providers, establishing care for those interested in fertility assistance or contraception quickly post-resettlement.

Mandating a health orientation for newly resettled refugees is challenging due to variation in resettlement experiences based on which of the nine refugee resettlement agencies handle the refugee's case. Religious foundations of these agencies may already influence the reproductive health information that is relayed to refugees post-resettlement. Given current social and political conversations regarding religious exemptions to the provision of contraceptives and abortions, a health orientation that provides information on the full spectrum of available of reproductive healthcare options available in the United States may not be embraced by all resettlement organizations.

Provision of reproductive health information that bypasses potential religious exemptions of resettlement organizations and includes standardized reproductive healthcare to all women

who are refugees resettled in the United States should be the goal. The most recent analysis of care provided at intake medical exams has found that women's preventative care is not provided to most women who are refugees (Vergara et al., 2003). While the CDC provides checklists for the care that refugees should receive in these exams, the only care specific to women includes the provision of a pregnancy test and referral to prenatal care if the test is positive (United States Department of Health and Human Services et al., 2012). Standardizing the provision of, or referral to, the full scope of reproductive healthcare options in the United States, including fertility assistance, contraception, and terminations as desired, provides another point at which the care of women who are refugees could be improved.

Developing a Framework for Health Decision-Making in Women who are Refugees

In a field that primarily views migrants through a lens of elective migration, Project Three presented a restructured gender-informed migrant theory that encompasses the experiences of women who are refugees discussing reproductive health decision-making. The use of Extended case methodology and the analysis of trouble cases highlighted points of tension and contradiction between the elective and forced migrant experience. In a qualitative investigation of reproductive health that centered women's voices, trouble cases in the interviews explicated an understanding of this particularly gendered topic. The developed framework leans into the intersection of two identities that individually have associated challenges. Forced migrants face unique barriers in navigating healthcare secondary to uprooting and experienced trauma. Additionally, women operate distinctly within cultural, social, economic, and geopolitical structures. Together, these identities influence decision-making in ways that are important to understand for the development of health research and interventions.

Relevant trouble cases that were found to lead to changes in the original framework include themes related to the workload of women and the temporality of refugees. Education was also added to the framework after member-checking with participants. This is in line with current understandings of how the labor of women, particularly in regards to labor associated with reproductive contributions, has been established to be "undervalued, uncounted, and unpaid" (Tanyag, 2018) in the recovery of disaster and displacement.

As encompassed in the framework, reproductive behaviors are the outcome of women operating within a myriad of power structures, with behavior being the outcome of the form and type of power she possesses (Greenhalgh, 1995). Because of the ways in which power dynamics operate within sexual relationships, healthcare provider relationships, and insurance and financial systems, it is theoretically grounded that behavior alone would not predict health outcomes. Because of this, it is essential to measure reproductive decisions within the context of an individual's life, including her position within greater social, financial, pollical, and relational power structures.

Clinical and Policy Implications:

The framework developed in this Project can be used as an analytical tool to better understand research outcomes. In viewing the results of Project Two through the lens of this new framework, a better understanding can be achieved of the decision-making of women who are refugees. The workload of women refugees as well as the temporality of the refugee are factors which overlay with the reproductive decision-making process. The lack of community support women frequently experience subsequent to forced migration and forced resettlement location results in many women being uncertain if they want to have more children. The United States' commitment to resettling the most vulnerable refugees results in many refugee families having

members who are physically or mentally disabled. The prominence of disability, and the added workload that this produced for women, has also been cited as influencing reproductive decisions.

Additionally, this framework can provide guidance for future research and the development of healthcare policies and interventions for women who are refugees. In highlighting the facets that women speak to as being most influential in decision-making, researchers can better understand how to navigate conversations surrounding decision-making. As only 3% of publicly available databases specifically identify refugees, evaluations of refugee behavior and health outcomes as compared to other populations in the United States are challenging to conduct (Semere, Yun, Ahalt, Williams, & Wang, 2016). Publicly available databases that uniquely identify refugees are the National Epidemiologic Survey on Alcohol and Related Conditions, and the New Immigrant Survey. Lack of large data sets to evaluate health behaviors and outcomes creates a significant gap in understanding refugee decision-making and health in the United States. Published research about refugee health outcomes and experiences are predominantly small, descriptive studies recruiting refugees of one cultural population. Increasing publicly available databases that identify refugees may help in recognizing health and healthcare needs for individuals who are refugees. This research can be used to advocate for improvements in data collection practices, including considering the factors that women report to influence their health decision-making.

Further, as theoretical foundation can improve the effectiveness and cultural appropriateness of clinical interventions, this framework can guide the development and implementation of health interventions for women who are refugees. Interventions aiming to

improve uptake or access to care may be met with less resistance if they consider the complex social, cultural, and political context in which refugees operate.

Moving Forward

Further work evaluating the relationships between levels of stress or unique stressors should consider different or innovative ways to measure stress, both cross-sectionally and over time. Biomarkers of stress such as cortisol could be considered as an objective measure of stress within the body and its impact on pregnancy outcomes (Staufenbiel, Penninx, Spijker, Elzinga, & van Rossum, 2013). Future quantitative work should have a more nuanced view of the many factors that influence reproductive decision-making. Having a strict focus on pregnancy intention or planning as an indicator of health outcomes has been criticized as solely looking at individual-level affects or behaviors, consequently ignoring or minimizing the underlying social, cultural and political structures that in and of themselves may be responsible for negative health outcomes (Ellen Wallace, Goldin Evans, & Theall, 2017; Macleod, 2016). Additionally, future work with women who are elective and forced migrants may operationalize the theory presented in Project Three to assess healthcare access and use.

Given the limitations in Paper One regarding an analysis sample that is primarily higher educated, not living in poverty, and married, a subsequent study examining the influence of stress change on unintended and unplanned pregnancy in a more diverse sample would be appropriate. Additionally, developing a longitudinal study with direct questions of pregnancy planning, as well as measuring stress in multiple ways, would allow for a more nuanced view of how stress influences unintended and unplanned pregnancy.

The three projects of this dissertation focus on the experiences, desires, and impact of pregnancy on women. While a limited amount of literature has examined men's reproductive

decision-making and related outcomes, the vast majority of literature examines the attitudes, behaviors, and experiences of women (Gipson et al., 2008; Hohmann-Marriott, 2009; Korenman, Kaestner, & Joyce, 2002). Because of significant gaps in the literature regarding the experiences of men, future work may additionally examine reproductive decision-making in partnered dyads and/or from a male perspective.

While Project Two examines the experiences of a very specific population, refugees from Syria only make up a small portion of all of the refugees in the United States (Refugee Processing Center, 2017a). A better understanding of the refugee experience in the United States generally may highlight current failures and opportunities in the refugee resettlement process and delivery of healthcare. The revised framework developed in Paper Three can be used to develop a quantitative survey regarding refugee health-seeking behavior in the United States and distributed to refugees broadly, giving insights into the needs of refugees broadly, or individual refugee communities specifically.

These projects aim to improve the ability of women to achieve congruence between reproductive intentions and outcomes. However, the focus of these projects has been achieving congruence when the desired outcome is the prevention of an unwanted pregnancy. Exploring the ways in which women may achieve congruence in becoming pregnant when they have struggled to do so, or navigating infertility services throughout the refugee experience, is not explored in these projects. Future work may focus on this aspect of achieving congruence in reproductive outcomes.

Conclusion

Throughout these three projects I have worked to improve understandings between stress and reproductive decision-making, as well as aimed to move the theoretical underpinnings

forward regarding migration and reproductive health decision-making. These projects inform future research, healthcare interventions, and the reproductive health counseling of women both domestically and globally. Through examining stress through both stress change and a specific stressful life experience, this dissertation produces a complex view of how stress and stressors interact with life experiences to influence health and outcomes. Together, these papers make important strides in working towards ensuring that women who are interested in planning pregnancies can do so, with the goal of assisting women in achieving congruence between their reproductive desires and outcomes in a variety of life contexts and despite stressful events.

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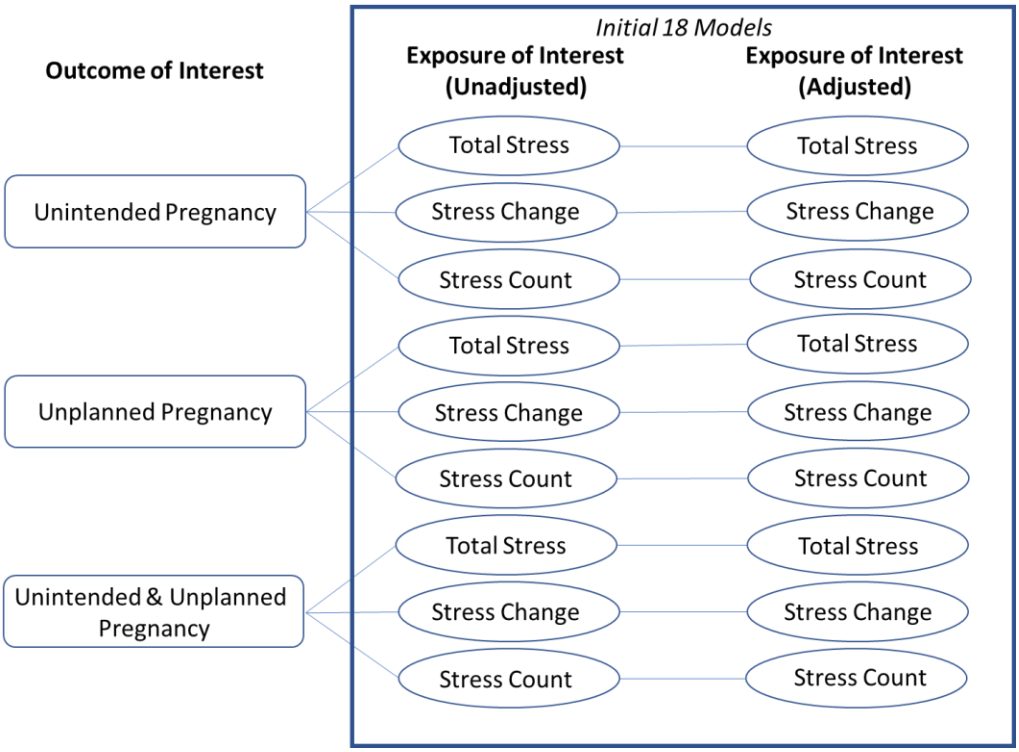
Paper One Addendum

An Andersen-Gill analysis was chosen due to the unique properties of pregnancy as an outcome of interest: the ability to have multiple pregnancies within the three-year follow-up period of interest (multiple failures), and the importance of pregnancies being ordered given the analysis of time-variant variables. As originally conceptualized, primary exposures of interest (total stress, stress change, and stress count) were analyzed as continuous variables.

Eighteen models were initially created:

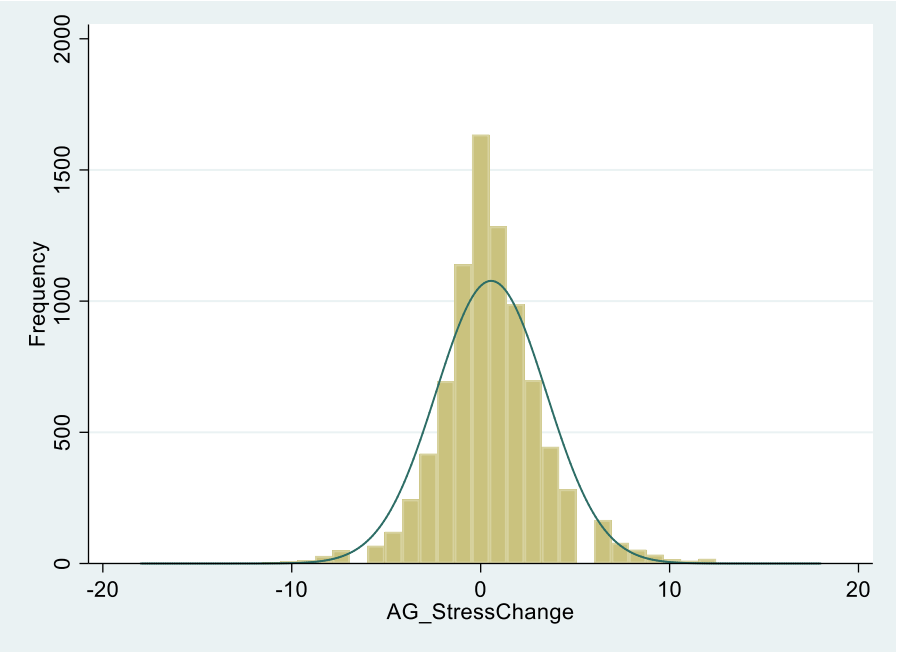
Figure Addendum.1: Initial 18 models



In the adjusted models, the only exposure of interest that was statistically significant was stress change. Output from the eighteen adjusted and unadjusted models can be found in Appendix 1. Because of this, the other two exposures, total stress and stress count, were dropped from further analysis. Analytically, a focus on stress change over time is congruent with the choice to use the Andersen-Gill survival analysis, given its focus on change and time-variance in variables.

Given significant findings when examining stress change as a continuous variable, several models analyzing stress change as a categorical were examined. The total distribution of stress change range was first assessed (See Appendix 2). A histogram of the distribution is as follows:

Figure Addendum.2: Stress change histogram



What is relevant to note here is that large swings in stress from one time point to the next are very uncommon. Based on this distribution, multiple categorizations of stress change were

trialed, including three categories, two versions of five categories, and seven categories of stress change. The distributions of the stress change categories within each of these categorizations was as follows. The output code for each category can be found in Appendix 3.

Table Addendum.1: Three categories

Range	**Frequency**	**Percent**	**Cumulative**
-18 – 0	2,801	32.86	32.86
0	1,635	19.18	52.05
0 – 18	4,087	47.95	100.00

Table Addendum.2: Five categories v1

Range	**Frequency**	**Percent**	**Cumulative**
-18 - -12	8	0.09	0.09
-11 - -1	2,793	32.77	32.86
0	1,635	19.18	52.05
1 – 11	4,060	47.64	99.68
12 – 18	27	0.32	100.00

Table Addendum.3: Five Categories v2

Range	**Frequency**	**Percent**	**Cumulative**
-18 – -4	547	6.42	6.42
-3 – -1	2,254	26.45	32.86
0	1,635	19.18	52.05
1 – 3	2,973	34.88	86.93
4 – 18	1,114	13.07	100.00

Table Addendum.4: Seven Categories

Range	**Frequency**	**Percent**	**Cumulative**
-18 – -8	62	0.75	0.75
-7 – -4	483	5.67	6.42
-3 – -1	2,254	26.45	32.86
0	1,635	19.18	52.05
1 – 3	2,973	34.88	86.93
4 – 7	973	11.42	98.35
8 – 18	141	1.65	100.00

When using Five Categories v.1 the coefficients for the extremes of stress change (categories one and five) were extremely large and negative (e.g. 2.8e-16), compared to the use of three categories which resulted in much smaller and positive coefficients. This was likely associated with the small frequency values associated with the extreme stress change associated with groups 1 and 5 in Five Categories v.1.

When Seven Categories was run, there were no longer very large negative coefficients associated with extreme stress change categories (category 1 and category 7), however these categories continued to have very small numbers.

To create a more balanced model the Five Category v2 model was run. This model's category 1 and category 5 had a wider range with higher frequencies of representation. This model was conceptualized as representing minor positive and negative changes in stress (plus or minus 1 – 3 stress points), and major changes in stress as being anything larger than plus or minus 3 stress points from the prior data collection timepoint. This model resulted in no extremely negative coefficients at the poles, but rather smaller positive coefficients in all groups when compared to zero change.

Given a more equitable distribution, and the ability to theoretically argue for the importance of analyzing minor and major positive and negative stress change over time, the decision was made to use the Five Category V2 was the categories for analysis and presentation in this project.

Appendix I

Unintended Pregnancy and Total Stress

```
stcox AG_TotalStress, nohr nolog efron vce(robust)

Cox regression -- Efron method for ties

No. of subjects      =       1,730           Number of obs    =      10,380
No. of failures      =         332
Time at risk         =       62280
                                     Wald chi2(1)     =       14.03
Log pseudolikelihood =   -2467.1495           Prob > chi2      =      0.0002

                          (Std. Err. adjusted for 1,730 clusters in MREC)
------------------------------------------------------------------------------
             |               Robust
          _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
AG_TotalSt~s |  -.0121829    .003252    -3.75   0.000    -.0185567   -.0058091
```

Unintended Pregnancy and Total Stress and Covariates

```
stcox AG_TotalStress AG_MaternalAge AG_Race AG_MaritalStatus AG_Parity AG_Po
> verty AG_PregPlanningBaseline AG_PregIntention_Baseline AG_SocialSupport AG_
> PartnerSupport AG_EaseCare AG_Insurance AG_TroublePaying, nohr nolog efron v
> ce(robust)

Cox regression -- Efron method for ties

No. of subjects      =       1,730           Number of obs    =      10,380
No. of failures      =         332
Time at risk         =       62280
                                     Wald chi2(13)    =       40.35
Log pseudolikelihood =    -2438.194           Prob > chi2      =      0.0001

                          (Std. Err. adjusted for 1,730 clusters in MREC)
------------------------------------------------------------------------------
             |               Robust
          _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
AG_TotalSt~s |   .0113467   .0192972     0.59   0.557    -.0264751    .0491685
AG_Materna~e |  -.1451948   .0996531    -1.46   0.145    -.3405113    .0501218
    AG_Race  |   .0432706   .1229152     0.35   0.725    -.1976388    .2841801
AG_Marital~s |  -.2634536   .1662486    -1.58   0.113    -.5892948    .0623876
  AG_Parity  |   .0823824    .112449     0.73   0.464    -.1380137    .3027784
 AG_Poverty  |   .1873499   .1244286     1.51   0.132    -.0565257    .4312255
AG~gBaseline |   .2704729   .2110253     1.28   0.200    -.1431291     .684075
AG_PregInt~e |   .2496207   .2163996     1.15   0.249    -.1745147    .6737562
AG_SocialS~t |   -.020962   .0094434    -2.22   0.026    -.0394707   -.0024534
AG_Partner~t |  -.0000671   .0089203    -0.01   0.994    -.0175506    .0174164
```

```
 AG_EaseCare |  -.4523536   .3056521    -1.48   0.139    -1.051421    .1467135
AG_Insuran~s |  -.1550123   .2197974    -0.71   0.481    -.5858072    .2757827
AG_Trouble~g |  -.3139607   .1557055    -2.02   0.044    -.6191378   -.0087836
```

Unintended Pregnancy and Stressor Count

stcox AG_StressorCount, nohr nolog efron vce(robust)

Cox regression -- Efron method for ties

```
No. of subjects      =        1,730           Number of obs    =      10,380
No. of failures      =          332
Time at risk         =        62280
                                     Wald chi2(1)     =       32.61
Log pseudolikelihood =   -2465.6834           Prob > chi2      =      0.0000

                              (Std. Err. adjusted for 1,730 clusters in MREC)
------------------------------------------------------------------------------
             |               Robust
          _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
AG_StressorCount |  -.0164935   .0028884    -5.71   0.000    -.0221547   -.0108322
```

Unintended Pregnancy and Stressor Count and All Covariates

stcox AG_StressorCount AG_MaternalAge AG_Race AG_MaritalStatus AG_Parity AG_Poverty AG_PregPlanningBaseline AG_PregIntention_Baseline AG_SocialSupport AG_PartnerSupport AG
> _EaseCare AG_Insurance AG_TroublePaying, nohr nolog efron vce(robust)

Cox regression -- Efron method for ties

```
No. of subjects      =        1,730           Number of obs    =      10,380
No. of failures      =          332
Time at risk         =        62280
                                     Wald chi2(13)    =       41.12
Log pseudolikelihood =   -2437.9957           Prob > chi2      =      0.0001

                                  (Std. Err. adjusted for 1,730 clusters in MREC)
------------------------------------------------------------------------------------------
                         |               Robust
                      _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------------------+----------------------------------------------------------------
       AG_StressorCount |   .0238006   .0285656     0.83   0.405     -.032187    .0797882
         AG_MaternalAge |  -.1449774   .0995537    -1.46   0.145     -.340099    .0501441
                AG_Race |   .0444756   .1230388     0.36   0.718     -.196676    .2856272
       AG_MaritalStatus |  -.2643024   .1654343    -1.60   0.110    -.5885477     .059943
             AG_Parity |   .0850077   .1123844     0.76   0.449    -.1352616     .305277
            AG_Poverty |   .1889502   .1250634     1.51   0.131    -.0561695    .4340698
  AG_PregPlanningBaseline |    .269991   .2107306     1.28   0.200    -.1430334    .6830153
AG_PregIntention_Baseline |   .2483715   .2159953     1.15   0.250    -.1749715    .6717145
       AG_SocialSupport |  -.0204663   .0092802    -2.21   0.027    -.0386552   -.0022774
      AG_PartnerSupport |    .000209   .0089499     0.02   0.981    -.0173324    .0177504
          AG_EaseCare |  -.4475825   .3049482    -1.47   0.142     -1.04527     .150105
```

AG_InsuranceStatus	-.1564696	.219989	-0.71	0.477	-.58764	.2747009
AG_TroublePaying	-.3084547	.1533247	-2.01	0.044	-.6089656	-.0079437

Unintended Pregnancy and Stress Change

```
stcox AG_StressChange, nohr nolog efron vce(robust)

Cox regression -- Efron method for ties

No. of subjects      =        1,730          Number of obs    =      10,380
No. of failures      =          332
Time at risk         =        62280
                                    Wald chi2(1)     =       8.48
Log pseudolikelihood =   -2464.2074          Prob > chi2      =     0.0036

                          (Std. Err. adjusted for 1,730 clusters in MREC)
------------------------------------------------------------------------------
             |               Robust
          _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
AG_StressChange |  -.0302396   .0103823    -2.91   0.004    -.0505885   -.0098908
```

Unintended Pregnancy and Stress Change and All Covariates

```
stcox AG_StressChange AG_MaternalAge AG_Race AG_MaritalStatus AG_Parity AG_Poverty AG_PregPlanningBaseline
AG_PregIntention_Baseline AG_SocialSupport AG_PartnerSupport AG_
> EaseCare AG_Insurance AG_TroublePaying, nohr nolog efron vce(robust)

Cox regression -- Efron method for ties

No. of subjects      =        1,730          Number of obs    =      10,380
No. of failures      =          332
Time at risk         =        62280
                                    Wald chi2(13)    =      39.23
Log pseudolikelihood =   -2437.7108          Prob > chi2      =     0.0002

                                  (Std. Err. adjusted for 1,730 clusters in MREC)
------------------------------------------------------------------------------------------
                           |               Robust
                        _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
---------------------------+--------------------------------------------------------------
       AG_StressChange |  -.0229723   .0194639    -1.18   0.238    -.0611208    .0151761
         AG_MaternalAge |  -.1465389   .0992707    -1.48   0.140    -.3411058     .048028
              AG_Race |   .0415761   .1225004     0.34   0.734    -.1985202    .2816724
        AG_MaritalStatus |  -.2447043   .1627618    -1.50   0.133    -.5637115     .074303
            AG_Parity |   .0823499   .1125222     0.73   0.464    -.1381897    .3028894
           AG_Poverty |   .1862332    .124007     1.50   0.133    -.0568161    .4292825
  AG_PregPlanningBaseline |   .2653038   .2113176     1.26   0.209     -.148871    .6794785
AG_PregIntention_Baseline |   .2557808   .2155942     1.19   0.235    -.1667761    .6783376
        AG_SocialSupport |  -.0234855   .0086584    -2.71   0.007    -.0404557   -.0065154
       AG_PartnerSupport |  -.0011145   .0089222    -0.12   0.901    -.0186016    .0163726
           AG_EaseCare |  -.4421783   .3049082    -1.45   0.147    -1.039787    .1554309
      AG_InsuranceStatus |   -.157664   .2199443    -0.72   0.473    -.5887469     .273419
        AG_TroublePaying |  -.3502915   .1469109    -2.38   0.017    -.6382316   -.0623514
```

Unintended Pregnancy and All Stressors and All Covariates

```
stcox AG_TotalStress AG_MaternalAge AG_Race AG_MaritalStatus AG_Parity AG_Poverty AG_PregPlanningBaseline
AG_PregIntention_Baseline AG_SocialSupport AG_StressorCount AG_St
> ressChange AG_PartnerSupport AG_EaseCare AG_Insurance AG_TroublePaying, nohr nolog efron vce(robust)

Cox regression -- Efron method for ties

No. of subjects      =        1,730          Number of obs    =      10,380
No. of failures      =          332
Time at risk         =        62280
                                    Wald chi2(15)    =       42.95
Log pseudolikelihood =   -2436.6681          Prob > chi2      =      0.0002

                                  (Std. Err. adjusted for 1,730 clusters in MREC)
------------------------------------------------------------------------------------------
                   |               Robust
                _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------------+----------------------------------------------------------------------
        AG_TotalStress |   .0056796   .0392106     0.14   0.885    -.0711717    .0825309
        AG_MaternalAge |  -.1433528   .0996286    -1.44   0.150    -.3386213    .0519156
             AG_Race |   .0450029   .1230945     0.37   0.715    -.1962579    .2862637
       AG_MaritalStatus |  -.2718623   .1677473    -1.62   0.105     -.600641    .0569165
            AG_Parity |   .0856725   .1124869     0.76   0.446    -.1347977    .3061427
           AG_Poverty |   .1903308    .124808     1.52   0.127    -.0542883     .43495
 AG_PregPlanningBaseline |   .2707079   .2108537     1.28   0.199    -.1425578    .6839735
AG_PregIntention_Baseline |   .2388899   .2163321     1.10   0.269    -.1851133    .6628931
       AG_SocialSupport |   -.018829   .0096807    -1.95   0.052    -.0378028    .0001447
       AG_StressorCount |   .0336368   .0553495     0.61   0.543    -.0748462    .1421198
        AG_StressChange |  -.0343728   .0208596    -1.65   0.099    -.0752569    .0065113
      AG_PartnerSupport |    .000751   .0089873     0.08   0.933    -.0168638    .0183658
          AG_EaseCare |   -.449967   .3046432    -1.48   0.140    -1.047057    .1471228
     AG_InsuranceStatus |  -.1495989   .2191263    -0.68   0.495    -.5790785    .2798807
       AG_TroublePaying |  -.2975489   .1554109    -1.91   0.056    -.6021487    .0070509
```

Unplanned Pregnancy and Total Stress

```
stcox AG_TotalStress, nohr nolog efron vce(robust)

Cox regression -- Efron method for ties

No. of subjects      =        1,730          Number of obs    =      10,380
No. of failures      =          372
Time at risk         =        62280
                                    Wald chi2(1)     =       17.45
Log pseudolikelihood =   -2761.5828          Prob > chi2      =      0.0000

                                  (Std. Err. adjusted for 1,730 clusters in MREC)
------------------------------------------------------------------------------
             |               Robust
          _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
AG_TotalStress |  -.0175204   .0041938    -4.18   0.000    -.0257402   -.0093006
```

Unplanned Pregnancy and Total Stress and Covariates

```
stcox AG_TotalStress AG_MaternalAge AG_Race AG_MaritalStatus AG_Parity AG_Poverty AG_PregPlanningBaseline
AG_PregIntention_Baseline AG_SocialSupport AG_PartnerSupport AG_E
> aseCare AG_Insurance AG_TroublePaying, nohr nolog efron vce(robust)

No. of subjects      =       1,730          Number of obs    =      10,380
No. of failures      =         372
Time at risk         =       62280
                                    Wald chi2(13)    =      48.06
Log pseudolikelihood =   -2726.6346          Prob > chi2      =     0.0000

                                  (Std. Err. adjusted for 1,730 clusters in MREC)
------------------------------------------------------------------------------------------
                     |               Robust
                  _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
---------------------+--------------------------------------------------------------------
         AG_TotalStress |  -.0105328   .0188695    -0.56   0.577    -.0475164    .0264507
         AG_MaternalAge |  -.2315265   .0926287    -2.50   0.012    -.4130754   -.0499776
              AG_Race |   .0689549   .1045235     0.66   0.509    -.1359074    .2738171
        AG_MaritalStatus |  -.3387848   .1641749    -2.06   0.039    -.6605617    -.017008
            AG_Parity |   .1709123   .1062295     1.61   0.108    -.0372937    .3791184
           AG_Poverty |     .18401   .1155047     1.59   0.111     -.042375    .4103949
  AG_PregPlanningBaseline |   .6097858   .1744764     3.49   0.000     .2678184    .9517532
AG_PregIntention_Baseline |  -.0003535   .1801911    -0.00   0.998    -.3535216    .3528146
        AG_SocialSupport |  -.0199145   .0086595    -2.30   0.021    -.0368868   -.0029422
       AG_PartnerSupport |   .0024455   .0084682     0.29   0.773    -.0141518    .0190428
           AG_EaseCare |  -.2965443   .2756646    -1.08   0.282    -.8368369    .2437484
      AG_InsuranceStatus |  -.0935976   .2029322    -0.46   0.645    -.4913375    .3041423
        AG_TroublePaying |  -.2528708   .1523189    -1.66   0.097    -.5514103    .0456687
```

Unplanned Pregnancy and Stressor Count

```
stcox AG_StressorCount, nohr nolog efron vce(robust)

Cox regression -- Efron method for ties

No. of subjects      =       1,730          Number of obs    =      10,380
No. of failures      =         372
Time at risk         =       62280
                                    Wald chi2(1)     =      27.78
Log pseudolikelihood =   -2760.1118          Prob > chi2      =     0.0000

                                (Std. Err. adjusted for 1,730 clusters in MREC)
------------------------------------------------------------------------------
                |               Robust
             _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
----------------+-------------------------------------------------------------
AG_StressorCount |  -.0218977    .004155    -5.27   0.000    -.0300413   -.0137541
```

Unplanned Pregnancy and Stressor Count and All Covariates

```
stcox AG_StressorCount AG_MaternalAge AG_Race AG_MaritalStatus AG_Parity AG_Poverty AG_PregPlanningBaseline
AG_PregIntention_Baseline AG_SocialSupport AG_PartnerSupport AG
> _EaseCare AG_Insurance AG_TroublePaying, nohr nolog efron vce(robust)

Cox regression -- Efron method for ties

No. of subjects      =        1,730          Number of obs    =      10,380
No. of failures      =          372
Time at risk         =        62280
                                    Wald chi2(13)    =       47.86
Log pseudolikelihood =   -2726.7195          Prob > chi2      =      0.0000

                                  (Std. Err. adjusted for 1,730 clusters in MREC)
------------------------------------------------------------------------------------------
                   |               Robust
                _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------------+----------------------------------------------------------------------
      AG_StressorCount |  -.0116784   .0271271    -0.43   0.667    -.0648466    .0414898
       AG_MaternalAge |  -.2310716   .0925606    -2.50   0.013     -.412487   -.0496562
            AG_Race |   .0688302   .1047759     0.66   0.511    -.1365268    .2741873
      AG_MaritalStatus |  -.3442573   .1634487    -2.11   0.035    -.6646108   -.0239038
          AG_Parity |   .1698826   .1061233     1.60   0.109    -.0381153    .3778805
         AG_Poverty |   .1835562   .1156857     1.59   0.113    -.0431837     .410296
 AG_PregPlanningBaseline |   .6109452   .1738111     3.51   0.000     .2702818    .9516087
AG_PregIntention_Baseline |  -.0025382   .1792041    -0.01   0.989    -.3537717    .3486954
      AG_SocialSupport |  -.0192769   .0085405    -2.26   0.024    -.0360161   -.0025378
     AG_PartnerSupport |   .0026492   .0084658     0.31   0.754    -.0139435    .0192419
         AG_EaseCare |  -.3025887   .2743678    -1.10   0.270    -.8403396    .2351623
    AG_InsuranceStatus |  -.0913225   .2025921    -0.45   0.652    -.4883957    .3057507
      AG_TroublePaying |  -.2447121   .1510895    -1.62   0.105     -.540842    .0514179
```

Unplanned Pregnancy and Stress Change

```
stcox AG_StressChange, nohr nolog efron vce(robust)

Cox regression -- Efron method for ties

No. of subjects      =        1,730          Number of obs    =      10,380
No. of failures      =          372
Time at risk         =        62280
                                    Wald chi2(1)     =        8.49
Log pseudolikelihood =   -2757.9818          Prob > chi2      =      0.0036

                                (Std. Err. adjusted for 1,730 clusters in MREC)
------------------------------------------------------------------------------
             |               Robust
          _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
AG_StressChange |  -.0415896   .0142711    -2.91   0.004    -.0695605   -.0136187
------------------------------------------------------------------------------
```

Unplanned Pregnancy and Stress Change and All Covariates

```
stcox AG_StressChange AG_MaternalAge AG_Race AG_MaritalStatus AG_Parity AG_Poverty AG_PregPlanningBaseline
AG_PregIntention_Baseline AG_SocialSupport AG_PartnerSupport AG_
> EaseCare AG_Insurance AG_TroublePaying, nohr nolog efron vce(robust)

Cox regression -- Efron method for ties

No. of subjects      =        1,730           Number of obs    =      10,380
No. of failures      =          372
Time at risk         =        62280
                                        Wald chi2(13)    =       51.02
Log pseudolikelihood =   -2724.6759           Prob > chi2      =      0.0000

                                  (Std. Err. adjusted for 1,730 clusters in MREC)
------------------------------------------------------------------------------------------
                   |               Robust
                _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------------+----------------------------------------------------------------------
      AG_StressChange |  -.0382216   .0177004    -2.16   0.031    -.0729137   -.0035295
       AG_MaternalAge |  -.2303459   .0924739    -2.49   0.013    -.4115913   -.0491005
            AG_Race |   .0684368   .1043019     0.66   0.512    -.1359912    .2728649
      AG_MaritalStatus |  -.3462648   .1613652    -2.15   0.032    -.6625348   -.0299947
          AG_Parity |   .1708195   .1057257     1.62   0.106    -.0363991    .3780381
         AG_Poverty |   .1856315    .115043     1.61   0.107    -.0398486    .4111116
AG_PregPlanningBaseline |   .6094073   .1734847     3.51   0.000     .2693836     .949431
AG_PregIntention_Baseline |  -.0091819   .1775582    -0.05   0.959    -.3571896    .3388259
      AG_SocialSupport |  -.0184785   .0081172    -2.28   0.023    -.0343878   -.0025692
     AG_PartnerSupport |   .0029334   .0082987     0.35   0.724    -.0133317    .0191985
         AG_EaseCare |  -.3039288   .2732209    -1.11   0.266    -.8394318    .2315743
    AG_InsuranceStatus |  -.0870174   .2016387    -0.43   0.666    -.4822219    .3081872
      AG_TroublePaying |  -.2449864   .1442896    -1.70   0.090    -.5277888     .037816
```

Unplanned Pregnancy and All Stressors and All Covariates

```
stcox AG_TotalStress AG_MaternalAge AG_Race AG_MaritalStatus AG_Parity AG_Poverty AG_PregPlanningBaseline
AG_PregIntention_Baseline AG_SocialSupport AG_StressorCount AG_St
> ressChange AG_PartnerSupport AG_EaseCare AG_Insurance AG_TroublePaying, nohr nolog efron vce(robust)

Cox regression -- Efron method for ties

No. of subjects      =        1,730          Number of obs    =      10,380
No. of failures      =          372
Time at risk         =        62280
                                    Wald chi2(15)    =       51.18
Log pseudolikelihood =   -2724.6268          Prob > chi2      =      0.0000

                                  (Std. Err. adjusted for 1,730 clusters in MREC)
------------------------------------------------------------------------------------------
                     |               Robust
                  _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
---------------------+--------------------------------------------------------------------
         AG_TotalStress |   .0031989     .03801     0.08   0.933    -.0712993    .0776971
         AG_MaternalAge |  -.2297933   .0925568    -2.48   0.013    -.4112013   -.0483854
              AG_Race |   .0690612   .1047371     0.66   0.510    -.1362198    .2743422
        AG_MaritalStatus |  -.3527291   .1656378    -2.13   0.033    -.6773732   -.0280849
            AG_Parity |   .1714325   .1059254     1.62   0.106    -.0361775    .3790425
           AG_Poverty |   .1862939    .115723     1.61   0.107    -.0405191    .4131069
  AG_PregPlanningBaseline |   .6104804   .1739464     3.51   0.000     .2695517    .9514091
AG_PregIntention_Baseline |  -.0128118   .1798797    -0.07   0.943    -.3653695     .339746
        AG_SocialSupport |  -.0174588    .008897    -1.96   0.050    -.0348967    -.000021
        AG_StressorCount |   .0040838    .052454     0.08   0.938    -.0987242    .1068918
         AG_StressChange |  -.0406745   .0195778    -2.08   0.038    -.0790464   -.0023027
       AG_PartnerSupport |   .0033503   .0085115     0.39   0.694    -.0133319    .0200326
            AG_EaseCare |  -.3068887   .2748333    -1.12   0.264    -.8455522    .2317748
      AG_InsuranceStatus |  -.0851272   .2013435    -0.42   0.672    -.4797531    .3094987
        AG_TroublePaying |  -.2331352   .1522733    -1.53   0.126    -.5315855     .065315
```

UIP/UPP and Total Stress

```
stcox AG_TotalStress, nohr nolog efron vce(robust)

Cox regression -- Efron method for ties

No. of subjects      =        1,730          Number of obs    =      10,380
No. of failures      =          287
Time at risk         =        62280
                                    Wald chi2(1)     =        9.65
Log pseudolikelihood =   -2134.0147          Prob > chi2      =      0.0019

                                (Std. Err. adjusted for 1,730 clusters in MREC)
------------------------------------------------------------------------------
             |               Robust
          _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
AG_TotalStress |   -.010147   .0032657    -3.11   0.002    -.0165477   -.0037463
```

UIP/UPP and Total Stress and All Covariates

```
stcox AG_TotalStress AG_MaternalAge AG_Race AG_MaritalStatus AG_Parity AG_Poverty AG_PregPlanningBaseline
AG_PregIntention_Baseline AG_SocialSupport AG_PartnerSupport AG_E
> aseCare AG_Insurance AG_TroublePaying, nohr nolog efron vce(robust)

Cox regression -- Efron method for ties

No. of subjects      =        1,730           Number of obs    =      10,380
No. of failures      =          287
Time at risk         =        62280
                                  Wald chi2(13)    =       55.55
Log pseudolikelihood =     -2098.54           Prob > chi2      =      0.0000

                                  (Std. Err. adjusted for 1,730 clusters in MREC)
------------------------------------------------------------------------------
                    |               Robust
                 _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
--------------------+---------------------------------------------------------------
        AG_TotalStress |   .0076064   .0206691     0.37   0.713    -.0329043    .0481172
        AG_MaternalAge |    -.22924   .1060454    -2.16   0.031    -.4370852   -.0213948
             AG_Race |   .0842951   .1257177     0.67   0.503    -.1621071    .3306973
       AG_MaritalStatus |  -.2303604   .1732873    -1.33   0.184    -.5699974    .1092766
           AG_Parity |   .1338827   .1189977     1.13   0.261    -.0993485    .3671138
          AG_Poverty |   .1779031   .1265974     1.41   0.160    -.0702233    .4260295
  AG_PregPlanningBaseline |   .5340008   .2080011     2.57   0.010     .1263261    .9416755
AG_PregIntention_Baseline |  -.0031036   .2127004    -0.01   0.988    -.4199888    .4137816
       AG_SocialSupport |  -.0297425   .0096484    -3.08   0.002    -.0486531   -.0108319
      AG_PartnerSupport |  -.0006907   .0088608    -0.08   0.938    -.0180576    .0166761
          AG_EaseCare |   -.421807   .3113507    -1.35   0.175    -1.032043    .1884291
     AG_InsuranceStatus |  -.1694854   .2269584    -0.75   0.455    -.6143156    .2753448
       AG_TroublePaying |  -.3695451   .1633674    -2.26   0.024    -.6897393    -.049351
```

UIP/UPP and Stressor Count

```
stcox AG_StressorCount, nohr nolog efron vce(robust)

Cox regression -- Efron method for ties

No. of subjects      =        1,730           Number of obs    =      10,380
No. of failures      =          287
Time at risk         =        62280
                                  Wald chi2(1)     =       26.96
Log pseudolikelihood =   -2132.6033           Prob > chi2      =      0.0000

                                  (Std. Err. adjusted for 1,730 clusters in MREC)
------------------------------------------------------------------------------
                    |               Robust
                 _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
--------------------+---------------------------------------------------------------
AG_StressorCount |  -.0153246   .0029516    -5.19   0.000    -.0211095   -.0095396
```

UIP/UPP and Stressor Count and All Covariates

```
stcox AG_StressorCount AG_MaternalAge AG_Race AG_MaritalStatus AG_Parity AG_Poverty AG_PregPlanningBaseline
AG_PregIntention_Baseline AG_SocialSupport AG_PartnerSupport AG
> _EaseCare AG_Insurance AG_TroublePaying, nohr nolog efron vce(robust)

Cox regression -- Efron method for ties

No. of subjects      =        1,730          Number of obs    =      10,380
No. of failures      =          287
Time at risk         =        62280
                                    Wald chi2(13)    =       55.76
Log pseudolikelihood =   -2098.5009          Prob > chi2      =      0.0000

                                  (Std. Err. adjusted for 1,730 clusters in MREC)
------------------------------------------------------------------------------------------
                   |               Robust
                _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------------+----------------------------------------------------------------------
       AG_StressorCount |   .0140485   .0309281     0.45   0.650    -.0465695    .0746665
         AG_MaternalAge |  -.2294018   .1058908    -2.17   0.030     -.436944   -.0218597
              AG_Race |   .0848968   .1258878     0.67   0.500    -.1618388    .3316324
       AG_MaritalStatus |  -.2294298    .172053    -1.33   0.182    -.5666475    .1077879
            AG_Parity |   .1354354   .1189893     1.14   0.255    -.0977795    .3686502
           AG_Poverty |   .1786307   .1270808     1.41   0.160    -.0704431    .4277046
 AG_PregPlanningBaseline |   .5334223   .2075437     2.57   0.010     .1266442    .9402004
AG_PregIntention_Baseline |  -.0033346   .2120455    -0.02   0.987    -.4189362     .412267
       AG_SocialSupport |  -.0296715   .0094482    -3.14   0.002    -.0481897   -.0111533
      AG_PartnerSupport |   -.000608   .0088908    -0.07   0.945    -.0180337    .0168177
          AG_EaseCare |  -.4182772   .3105383    -1.35   0.178    -1.026921    .1903667
     AG_InsuranceStatus |  -.1706619   .2270756    -0.75   0.452    -.6157219    .2743981
       AG_TroublePaying |  -.3681599   .1621308    -2.27   0.023    -.6859304   -.0503893
```

UIP/UPP and Stress Change

```
stcox AG_StressChange, nohr nolog efron vce(robust)

Cox regression -- Efron method for ties

No. of subjects      =        1,730          Number of obs    =      10,380
No. of failures      =          287
Time at risk         =        62280
                                    Wald chi2(1)     =       6.81
Log pseudolikelihood =   -2130.8947          Prob > chi2      =      0.0091

                                  (Std. Err. adjusted for 1,730 clusters in MREC)
------------------------------------------------------------------------------
                   |               Robust
                _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------------+----------------------------------------------------------------
AG_StressChange |  -.0317354   .0121618    -2.61   0.009    -.0555721   -.0078987
```

UIP/UPP and Stress Change and All Covariates

```
stcox AG_StressChange AG_MaternalAge AG_Race AG_MaritalStatus AG_Parity AG_Poverty AG_PregPlanningBaseline
AG_PregIntention_Baseline AG_SocialSupport AG_PartnerSupport AG_
> EaseCare AG_Insurance AG_TroublePaying, nohr nolog efron vce(robust)

Cox regression -- Efron method for ties

No. of subjects      =       1,730           Number of obs    =      10,380
No. of failures      =         287
Time at risk         =       62280
                                     Wald chi2(13)    =      56.33
Log pseudolikelihood =   -2097.7463           Prob > chi2      =     0.0000

                                  (Std. Err. adjusted for 1,730 clusters in MREC)
------------------------------------------------------------------------------------------
                   |               Robust
                _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------------+----------------------------------------------------------------------
      AG_StressChange |  -.0272532   .0198554    -1.37   0.170    -.0661691    .0116626
       AG_MaternalAge |  -.2300705   .1056678    -2.18   0.029    -.4371755   -.0229655
            AG_Race |   .0829867   .1252791     0.66   0.508    -.1625558    .3285292
     AG_MaritalStatus |  -.2155177   .1698298    -1.27   0.204    -.5483781    .1173427
          AG_Parity |    .133356   .1190326     1.12   0.263    -.0999437    .3666557
         AG_Poverty |   .1770177   .1260681     1.40   0.160    -.0700713    .4241067
AG_PregPlanningBaseline |    .529796    .207821     2.55   0.011     .1224744    .9371176
AG_PregIntention_Baseline |   .0003317   .2104078     0.00   0.999      -.41206    .4127234
     AG_SocialSupport |   -.031568   .0088906    -3.55   0.000    -.0489933   -.0141427
    AG_PartnerSupport |  -.0014806   .0088061    -0.17   0.866    -.0187402    .0157791
        AG_EaseCare |  -.4167617   .3100627    -1.34   0.179    -1.024473     .19095
   AG_InsuranceStatus |  -.1716295   .2267356    -0.76   0.449    -.6160231    .2727641
     AG_TroublePaying |  -.3985112   .1550491    -2.57   0.010    -.7024018   -.0946206
```

UIP/UPP and All Stressors and All Covariates

```
stcox AG_TotalStress AG_MaternalAge AG_Race AG_MaritalStatus AG_Parity AG_Poverty AG_PregPlanningBaseline
AG_PregIntention_Baseline AG_SocialSupport AG_StressorCount AG_St
> ressChange AG_PartnerSupport AG_EaseCare AG_Insurance AG_TroublePaying, nohr nolog efron vce(robust)

Cox regression -- Efron method for ties

No. of subjects      =        1,730           Number of obs    =      10,380
No. of failures      =          287
Time at risk         =        62280
                                    Wald chi2(15)    =       58.20
Log pseudolikelihood =   -2097.1084           Prob > chi2      =      0.0000

                                  (Std. Err. adjusted for 1,730 clusters in MREC)
------------------------------------------------------------------------------------------
                   |               Robust
                _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------------+----------------------------------------------------------------------
      AG_TotalStress |   .0158856   .0395934     0.40   0.688    -.0617161    .0934873
      AG_MaternalAge |  -.2275483   .1060379    -2.15   0.032    -.4353788   -.0197177
           AG_Race |   .0856051   .1259712     0.68   0.497    -.1612939    .3325042
     AG_MaritalStatus |  -.2414952   .1749518    -1.38   0.167    -.5843944     .101404
         AG_Parity |   .1351212   .1191103     1.13   0.257    -.0983307    .3685731
        AG_Poverty |   .1789032   .1265451     1.41   0.157    -.0691206    .4269271
AG_PregPlanningBaseline |   .5351885   .2077803     2.58   0.010     .1279466    .9424305
AG_PregIntention_Baseline |  -.0151051    .212467    -0.07   0.943    -.4315328    .4013225
     AG_SocialSupport |  -.0273832   .0099413    -2.75   0.006    -.0468677   -.0078987
     AG_StressorCount |   .0122983   .0566732     0.22   0.828    -.0987791    .1233758
      AG_StressChange |  -.0376607    .021611    -1.74   0.081    -.0800174     .004696
    AG_PartnerSupport |   .0000776    .008923     0.01   0.993    -.0174112    .0175664
        AG_EaseCare |  -.4300173   .3101315    -1.39   0.166    -1.037864    .1778294
   AG_InsuranceStatus |   -.162207   .2256636    -0.72   0.472    -.6044994    .2800854
     AG_TroublePaying |  -.3509404    .163746    -2.14   0.032    -.6718767    -.030004
```

Appendix II

Table Appendix II.1: Stress change distribution

Range	Frequency	Percent	Cumulative
-18	1	0.01	0.01
-16	1	0.01	0.02
-15	1	0.01	0.04
-14	2	0.02	0.06
-13	2	0.02	0.08
-12	1	0.01	0.09
-11	6	0.07	0.16
-10	8	0.09	0.26
-9	13	0.15	0.41
-8	29	0.34	0.75
-7	50	0.59	1.34
-6	68	0.80	2.14
-5	121	1.42	3.56
-4	244	2.86	6.42
-3	419	4.92	11.33
-2	695	8.15	19.49
-1	1,140	13.38	32.86
0	1,635	19.18	52.05
1	1,285	15.08	67.12
2	989	11.60	78.73
3	699	8.20	86.93
4	445	5.22	92.15
5	283	3.32	95.47

6	166	1.95	97.42
7	79	0.93	98.35
8	53	0.62	98.97
9	34	0.40	99.37
10	16	0.19	99.55
11	11	0.13	99.68
12	18	0.21	99.89
13	2	0.02	99.92
14	1	0.01	99.93
15	3	0.04	99.96
16	1	0.01	99.98
17	1	0.01	99.99
18	1	0.01	100.00

Appendix III

Three Categories

Unplanned Pregnancy

stcox ib3.AG_StressChange3cats ib2.AG_MaternalAge i.AG_Race i.AG_MaritalStatus i.AG_Parity AG_Poverty AG_SocialSupport AG_PartnerSupport AG_EaseCare AG_Insurance AG_TroublePaying, nohr nolog efron vce(robust)

Cox regression -- Efron method for ties

No. of subjects = 1,728 Number of obs = 8,333
No. of failures = 322
Time at risk = 49998
Wald chi2(17) = 37.05
Log pseudolikelihood = -2360.6376 Prob > chi2 = 0.0033

(Std. Err. adjusted for 1,728 clusters in MREC)

_t	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf. Interval]	
AG_Str~3cats						
1	**.5481804**	**.1735324**	**3.16**	**0.002**	**.2080631**	**.8882976**
3	.2916597	.172034	1.70	0.090	-.0455207	.6288401
AG_Materna~e						
2	-.1557521	.193559	-0.80	0.421	-.5351207	.2236165
3	**-.5207687**	**.2171619**	**-2.40**	**0.016**	**-.9463983**	**-.0951391**
AG_Race						
Black non..	.1754463	.4187229	0.42	0.675	-.6452355	.996128
Hispanic	.141774	.3360141	0.42	0.673	-.5168016	.8003496
Other	.0314087	.5265014	0.06	0.952	-1.000515	1.063332
AG_Marital~s						
2	.0459827	.241307	0.19	0.849	-.4269704	.5189358
3	-1.340397	.7344729	-1.82	0.068	-2.779937	.0991438
AG_Parity						
2	.2570599	.1645323	1.56	0.118	-.0654175	.5795373
3	.3680631	.2689613	1.37	0.171	-.1590913	.8952176
AG_Poverty	.1711796	.1404726	1.22	0.223	-.1041416	.4465008
AG_SocialS~t	-.0155652	.0092026	-1.69	0.091	-.0336019	.0024716
AG_Partner~t	-.0071267	.0198327	-0.36	0.719	-.045998	.0317446
AG_EaseCare	-.230525	.3013537	-0.76	0.444	-.8211675	.3601175
AG_Insuran~s	-.0394924	.227949	-0.17	0.862	-.4862642	.4072793
AG_Trouble~g	-.2342975	.1626499	-1.44	0.150	-.5530855	.0844905

Unintended Pregnancy

stcox ib2.AG_StressChange3cats i.AG_MaternalAge i.AG_Race i.AG_MaritalStatus i.AG_Parity AG_Poverty AG_SocialSupport AG_PartnerSupport AG_EaseCare AG_Insurance AG_TroublePaying, nohr nolog efron vce(robust)

Cox regression -- Efron method for ties

No. of subjects = 1,728 Number of obs = 8,333
No. of failures = 283
Time at risk = 49998
Wald chi2(17) = 44.28
Log pseudolikelihood = -2073.4776 Prob > chi2 = 0.0003

(Std. Err. adjusted for 1,728 clusters in MREC)

_t	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf. Interval]
AG_Str~3cats					
1	**.585628**	**.1916145**	**3.06**	**0.002**	**.2100704** **.9611856**
3	**.4447944**	**.1876651**	**2.37**	**0.018**	**.0769776** **.8126111**
AG_Materna~e					
2	-.0560759	.2008413	-0.28	0.780	-.4497176 .3375658
3	-.3252069	.2253131	-1.44	0.149	-.7668124 .1163986
AG_Race					
Black non..	.2789441	.3831479	0.73	0.467	-.472012 1.0299
Hispanic	-.4083433	.4310893	-0.95	0.344	-1.253263 .4365762
Other	.0556343	.5840506	0.10	0.924	-1.089084 1.200352
AG_Marital~s					
2	.0656357	.2506301	0.26	0.793	-.4255904 .5568617
3	-1.182008	.73437	-1.61	0.107	-2.621347 .2573305
AG_Parity					
2	.2631721	.1745571	1.51	0.132	-.0789536 .6052977
3	.062721	.3145926	0.20	0.842	-.5538692 .6793112
AG_Poverty	.197191	.1536594	1.28	0.199	-.103976 .4983579
AG_SocialS~t	-.0186457	.0100044	-1.86	0.062	-.0382541 .0009626
AG_Partner~t	-.0224586	.020772	-1.08	0.280	-.0631709 .0182537
AG_EaseCare	-.3738729	.3403913	-1.10	0.272	-1.041028 .2932818
AG_Insuran~s	-.1157398	.2506364	-0.46	0.644	-.6069781 .3754985
AG_Trouble~g	**-.322709**	**.1660246**	**-1.94**	**0.052**	**-.6481112** **.0026933**

Unintended and Unplanned Pregnancy

stcox ib2.AG_StressChange3cats i.AG_MaternalAge i.AG_Race i.AG_MaritalStatus i.AG_Parity AG_Poverty

AG_SocialSupport AG_PartnerSupport AG_EaseCare AG_Insurance AG_TroublePaying, nohr nolog efron vce(robust)

Cox regression -- Efron method for ties

No. of subjects = 1,728 Number of obs = 8,333
No. of failures = 243
Time at risk = 49998
Wald chi2(17) = 54.32
Log pseudolikelihood = -1774.7139 Prob > chi2 = 0.0000

(Std. Err. adjusted for 1,728 clusters in MREC)

_t	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
AG_Str~3cats						
1	**.610952**	**.2132303**	**2.87**	**0.004**	**.1930283**	**1.028876**
3	**.4671796**	**.2045275**	**2.28**	**0.022**	**.0663129**	**.8680462**
AG_Materna~e						
2	-.1674	.212015	-0.79	0.430	-.5829418	.2481418
3	**-.4924523**	**.2417109**	**-2.04**	**0.042**	**-.966197**	**-.0187077**
AG_Race						
Black non..	.2145023	.4169584	0.51	0.607	-.6027211	1.031726
Hispanic	-.3110126	.4273811	-0.73	0.467	-1.148664	.526639
Other	.2061449	.585888	0.35	0.725	-.9421744	1.354464
AG_Marital~s						
2	.1446118	.2608552	0.55	0.579	-.3666551	.6558786
3	-1.082264	.7384376	-1.47	0.143	-2.529575	.3650472
AG_Parity						
2	.3393103	.1884244	1.80	0.072	-.0299947	.7086154
3	.1241972	.3319293	0.37	0.708	-.5263723	.7747667
AG_Poverty	.1558319	.1562648	1.00	0.319	-.1504416	.4621053
AG_SocialS~t	**-.0266914**	**.0104247**	**-2.56**	**0.010**	**-.0471234**	**-.0062594**
AG_Partner~t	-.020826	.0219207	-0.95	0.342	-.0637897	.0221377
AG_EaseCare	-.3415575	.3460279	-0.99	0.324	-1.01976	.3366446
AG_Insuran~s	-.1104936	.2586991	-0.43	0.669	-.6175345	.3965472
AG_Trouble~g	**-.3516137**	**.1761894**	**-2.00**	**0.046**	**-.6969386**	**-.0062887**

Five Categories – Version 1

Unplanned Pregnancy

stcox ib3.AG_StressChange5cats i.AG_MaternalAge i.AG_Race i.AG_MaritalStatus i.AG_Parity AG_Poverty AG_SocialSupport AG_PartnerSupport AG_EaseCare AG_Insurance AG_TroublePaying, nohr nolog efron vce(robust)

Cox regression -- Efron method for ties

No. of subjects = 1,728 Number of obs = 8,333
No. of failures = 322
Time at risk = 49998
Wald chi2(19) = 22193.50
Log pseudolikelihood = -2359.4235 Prob > chi2 = 0.0000

(Std. Err. adjusted for 1,728 clusters in MREC)

_t	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf. Interval]	
AG_Str~5cats						
1	**-36.78802**	**.5515746**	**-66.70**	**0.000**	**-37.86908**	**-35.70695**
2	**.5495378**	**.1735368**	**3.17**	**0.002**	**.2094119**	**.8896637**
4	.295018	.1719282	1.72	0.086	-.041955	.631991
5	**-36.77713**	**.3347325**	**-109.87**	**0.000**	**-37.43319**	**-36.12107**
AG_Materna~e						
2	-.159183	.1931925	-0.82	0.410	-.5378333	.2194673
3	**-.5234933**	**.2166503**	**-2.42**	**0.016**	**-.9481201**	**-.0988665**
AG_Race						
Black non..	.1853747	.4216877	0.44	0.660	-.6411181	1.011867
Hispanic	.1571102	.3354536	0.47	0.640	-.5003668	.8145871
Other	.0279348	.5264494	0.05	0.958	-1.003887	1.059757
AG_Marital~s						
2	.055626	.2409999	0.23	0.817	-.4167251	.5279772
3	-1.318023	.7329691	-1.80	0.072	-2.754616	.1185702
AG_Parity						
2	.2536678	.1645436	1.54	0.123	-.0688318	.5761673
3	.3721919	.2695541	1.38	0.167	-.1561245	.9005083
AG_Poverty	.1684273	.1403644	1.20	0.230	-.1066817	.4435364
AG_SocialS~t	-.0159388	.0092083	-1.73	0.083	-.0339868	.0021092
AG_Partner~t	-.007744	.0197478	-0.39	0.695	-.0464489	.0309609
AG_EaseCare	-.2280948	.3021668	-0.75	0.450	-.8203308	.3641412
AG_Insuran~s	-.0444713	.2280883	-0.19	0.845	-.4915163	.4025736
AG_Trouble~g	-.2314573	.1630912	-1.42	0.156	-.5511101	.0881956

Unintended Pregnancy

stcox ib3.AG_StressChange5cats i.AG_MaternalAge i.AG_Race i.AG_MaritalStatus i.AG_Parity AG_Poverty AG_SocialSupport AG_PartnerSupport AG_EaseCare AG_Insurance AG_TroublePaying, nohr nolog efron vce(robust)

Cox regression -- Efron method for ties

No. of subjects = 1,728 Number of obs = 8,333
No. of failures = 283
Time at risk = 49998
Wald chi2(18) = 45.11
Log pseudolikelihood = -2073.0692 Prob > chi2 = 0.0004

(Std. Err. adjusted for 1,728 clusters in MREC)

_t	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf. Interval]	
AG_Str~5cats						
1	**-42.58014**	**.**	**.**	**.**	**.**	**.**
2	**.5886028**	**.1917103**	**3.07**	**0.002**	**.2128574**	**.9643482**
4	**.4428021**	**.1876654**	**2.36**	**0.018**	**.0749846**	**.8106196**
5	.8099368	1.058594	0.77	0.444	-1.26487	2.884743
AG_Materna~e						
2	-.0580387	.200822	-0.29	0.773	-.4516426	.3355652
3	-.3266469	.2255378	-1.45	0.148	-.7686929	.1153991
AG_Race						
Black non..	.2915087	.3856575	0.76	0.450	-.464366	1.047383
Hispanic	-.4149978	.4323094	-0.96	0.337	-1.262309	.4323131
Other	.0554595	.5839684	0.09	0.924	-1.089097	1.200016
AG_Marital~s						
2	.0727901	.2502308	0.29	0.771	-.4176532	.5632334
3	-1.180294	.7349872	-1.61	0.108	-2.620842	.2602547
AG_Parity						
2	.2637108	.1744579	1.51	0.131	-.0782203	.605642
3	.063782	.3149353	0.20	0.840	-.5534798	.6810437
AG_Poverty	.1970463	.1534447	1.28	0.199	-.1036999	.4977925
AG_SocialS~t	-.0186752	.0101027	-1.85	0.065	-.038476	.0011257
AG_Partner~t	-.0221953	.0206756	-1.07	0.283	-.0627187	.0183281
AG_EaseCare	-.383159	.3408264	-1.12	0.261	-1.051166	.2848484
AG_Insuran~s	-.1219839	.2506036	-0.49	0.626	-.6131578	.3691901
AG_Trouble~g	**-.318348**	**.1666632**	**-1.91**	**0.056**	**-.645002**	**.0083059**

Unintended and Unplanned Pregnancy

stcox ib3.AG_StressChange5cats i.AG_MaternalAge i.AG_Race i.AG_MaritalStatus i.AG_Parity AG_Poverty AG_SocialSupport AG_PartnerSupport AG_EaseCare AG_Insurance AG_TroublePaying, nohr nolog efron vce(robust)

Cox regression -- Efron method for ties

No. of subjects = 1,728 Number of obs = 8,333
No. of failures = 243
Time at risk = 49998
Wald chi2(18) = 25418.91
Log pseudolikelihood = -1773.6628 Prob > chi2 = 0.0000

(Std. Err. adjusted for 1,728 clusters in MREC)

_t	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf. Interval]	
AG_Str~5cats						
1	**-42.71618**	**.**	**.**	**.**	**.**	**.**
2	**.6125321**	**.2132332**	**2.87**	**0.004**	**.1946027**	**1.030462**
4	**.4708557**	**.2044051**	**2.30**	**0.021**	**.070229**	**.8714824**
5	**-42.77436**	**.3535374**	**-120.99**	**0.000**	**-43.46728**	**-42.08144**
AG_Materna~e						
2	-.1722539	.2115275	-0.81	0.415	-.5868402	.2423325
3	**-.496325**	**.2411048**	**-2.06**	**0.040**	**-.9688818**	**-.0237681**
AG_Race						
Black non..	.2243834	.4197377	0.53	0.593	-.5982875	1.047054
Hispanic	-.2904595	.4275395	-0.68	0.497	-1.128421	.5475025
Other	.202534	.5858274	0.35	0.730	-.9456667	1.350735
AG_Marital~s						
2	.1520176	.2603311	0.58	0.559	-.3582219	.6622571
3	-1.057298	.7366384	-1.44	0.151	-2.501083	.3864867
AG_Parity						
2	.3358663	.1883835	1.78	0.075	-.0333585	.7050912
3	.1279794	.3315741	0.39	0.700	-.5218938	.7778526
AG_Poverty	.1552337	.1560933	0.99	0.320	-.1507035	.4611708
AG_SocialS~t	**-.0271539**	**.0104124**	**-2.61**	**0.009**	**-.0475618**	**-.0067459**
AG_Partner~t	-.0214182	.0218054	-0.98	0.326	-.064156	.0213195
AG_EaseCare	-.3380486	.3469815	-0.97	0.330	-1.01812	.3420226
AG_Insuran~s	-.1155576	.2588938	-0.45	0.655	-.62298	.3918649
AG_Trouble~g	**-.3483876**	**.1767043**	**-1.97**	**0.049**	**-.6947217**	**-.0020536**

Five Categories – Version 2

Unplanned Pregnancy

stcox ib3.AG_StressChange5catsv2 i.AG_MaternalAge i.AG_Race i.AG_MaritalStatus i.AG_Parity AG_Poverty AG_SocialSupport AG_PartnerSupport AG_EaseCare AG_Insurance AG_TroublePaying, nohr nolog efron vce(robust)

Cox regression -- Efron method for ties

No. of subjects = 1,728 Number of obs = 8,333
No. of failures = 322
Time at risk = 49998
Wald chi2(19) = 39.31
Log pseudolikelihood = -2359.9746 Prob > chi2 = 0.0040

(Std. Err. adjusted for 1,728 clusters in MREC)

_t	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
AG_StressChange5catsv2						
1	**.6428032**	**.2331677**	**2.76**	**0.006**	**.1858029**	**1.099804**
2	**.5193282**	**.1803941**	**2.88**	**0.004**	**.1657624**	**.8728941**
4	**.3383373**	**.1760613**	**1.92**	**0.055**	**-.0067366**	**.6834112**
5	.1471634	.2314302	0.64	0.525	-.3064315	.6007583
AG_MaternalAge						
2	-.1556789	.1940325	-0.80	0.422	-.5359755	.2246178
3	**-.5209043**	**.2175996**	**-2.39**	**0.017**	**-.9473918**	**-.0944169**
AG_Race						
Black non-Hispanic	.1686808	.4181785	0.40	0.687	-.6509341	.9882956
Hispanic	.1469293	.3354953	0.44	0.661	-.5106295	.804488
Other	.028095	.5239673	0.05	0.957	-.9988622	1.055052
AG_MaritalStatus						
2	.0532204	.2417425	0.22	0.826	-.4205862	.527027
3	-1.337318	.735083	-1.82	0.069	-2.778054	.1034186
AG_Parity						
2	.2559302	.1648275	1.55	0.120	-.0671258	.5789863
3	.3610044	.2693709	1.34	0.180	-.1669529	.8889618
AG_Poverty	.1711649	.1408165	1.22	0.224	-.1048303	.4471601
AG_SocialSupport	-.0158102	.0091494	-1.73	0.084	-.0337427	.0021224
AG_PartnerSupport	-.0080777	.0198886	-0.41	0.685	-.0470586	.0309031
AG_EaseCare	-.2267092	.3003627	-0.75	0.450	-.8154092	.3619908
AG_InsuranceStatus	-.0353952	.2276603	-0.16	0.876	-.4816013	.4108109
AG_TroublePaying	-.2423134	.1626233	-1.49	0.136	-.5610492	.0764223

Unintended Pregnancy

stcox ib3.AG_StressChange5catsv2 i.AG_MaternalAge i.AG_Race i.AG_MaritalStatus i.AG_Parity ib3.AG_Poverty AG_SocialSupport AG_PartnerSupport AG_EaseCare AG_Insurance AG_TroublePaying, nolog efron vce(robust)

Cox regression -- Efron method for ties

No. of subjects = 1,728 Number of obs = 8,333
No. of failures = 283
Time at risk = 49998
Wald chi2(19) = 47.60
Log pseudolikelihood = -2072.1109 Prob > chi2 = 0.0003

(Std. Err. adjusted for 1,728 clusters in MREC)

_t	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
AG_StressC~2						
1	**.8495924**	**.2482808**	**3.42**	**0.001**	**.362971**	**1.336214**
2	**.505115**	**.1998358**	**2.53**	**0.011**	**.113444**	**.8967859**
4	**.4715373**	**.1911269**	**2.47**	**0.014**	**.0969355**	**.8461391**
5	.3781626	.2431099	1.56	0.120	-.098324	.8546493
AG_Materna~e						
2	-.0517961	.2015473	-0.26	0.797	-.4468216	.3432294
3	-.3180076	.2261854	-1.41	0.160	-.7613229	.1253076
AG_Race						
Black non..	.2658096	.379406	0.70	0.484	-.4778126	1.009432
Hispanic	-.4089183	.4286197	-0.95	0.340	-1.248997	.4311608
Other	.0401284	.5803114	0.07	0.945	-1.097261	1.177518
AG_Marital~s						
2	.0709647	.2511361	0.28	0.778	-.421253	.5631824
3	-1.187065	.7357919	-1.61	0.107	-2.629191	.2550607
AG_Parity						
2	.2604855	.1747563	1.49	0.136	-.0820306	.6030016
3	.0386304	.3152958	0.12	0.902	-.579338	.6565987
AG_Poverty	.2032868	.1543211	1.32	0.188	-.0991769	.5057505
AG_SocialS~t	-.0185485	.0099607	-1.86	0.063	-.0380712	.0009742
AG_Partner~t	-.0220957	.020877	-1.06	0.290	-.0630138	.0188224
AG_EaseCare	-.3815558	.338954	-1.13	0.260	-1.045893	.2827819
AG_Insuran~s	-.1021198	.2502766	-0.41	0.683	-.592653	.3884135
AG_Trouble~g	**-.3208908**	**.1660116**	**-1.93**	**0.053**	**-.6462675**	**.0044859**

Unintended and Unplanned Pregnancy

stcox ib3.AG_StressChange5catsv2 i.AG_MaternalAge i.AG_Race i.AG_MaritalStatus i.AG_Parity AG_Poverty AG_SocialSupport AG_PartnerSupport AG_EaseCare AG_Insurance AG_TroublePaying, nohr nolog efron vce(robust)

Cox regression -- Efron method for ties

No. of subjects = 1,728 Number of obs = 8,333
No. of failures = 243
Time at risk = 49998
Wald chi2(19) = 56.79
Log pseudolikelihood = -1773.7437 Prob > chi2 = 0.0000

(Std. Err. adjusted for 1,728 clusters in MREC)

_t	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
AG_StressC~2						
1	**.8169877**	**.2785105**	**2.93**	**0.003**	**.2711172**	**1.362858**
2	**.5463299**	**.2200891**	**2.48**	**0.013**	**.1149632**	**.9776967**
4	**.51105**	**.2078948**	**2.46**	**0.014**	**.1035836**	**.9185163**
5	.3469481	.2646504	1.31	0.190	-.1717572	.8656535
AG_Materna~e						
2	-.1642183	.2128187	-0.77	0.440	-.5813353	.2528987
3	**-.4879663**	**.2424649**	**-2.01**	**0.044**	**-.9631887**	**-.012744**
AG_Race						
Black non..	.1996145	.4146136	0.48	0.630	-.6130132	1.012242
Hispanic	-.3074482	.4249243	-0.72	0.469	-1.140285	.5253882
Other	.1941697	.582138	0.33	0.739	-.9467998	1.335139
AG_Marital~s						
2	.1539979	.2610311	0.59	0.555	-.3576137	.6656096
3	-1.080772	.7396594	-1.46	0.144	-2.530478	.3689334
AG_Parity						
2	.3371016	.1887706	1.79	0.074	-.032882	.7070853
3	.107029	.3326185	0.32	0.748	-.5448913	.7589493
AG_Poverty	.1587004	.1567466	1.01	0.311	-.1485173	.465918
AG_SocialS~t	**-.0267652**	**.0103703**	**-2.58**	**0.010**	**-.0470908**	**-.0064397**
AG_Partner~t	-.0213921	.0220399	-0.97	0.332	-.0645895	.0218053
AG_EaseCare	-.3460677	.3446896	-1.00	0.315	-1.021647	.3295114
AG_Insuran~s	-.1012138	.2580723	-0.39	0.695	-.6070262	.4045986
AG_Trouble~g	**-.355537**	**.1760994**	**-2.02**	**0.043**	**-.7006855**	**-.0103885**

Seven Categories

Unplanned Pregnancy

stcox ib4.AG_StressChange7cats i.AG_MaternalAge i.AG_Race i.AG_MaritalStatus i.AG_Parity AG_Poverty AG_SocialSupport AG_PartnerSupport AG_EaseCare AG_Insurance AG_TroublePaying, nohr nolog efron vce(robust)

```
failure _d:  status == 1
  analysis time _t:  time
 enter on or after:  time time0
 exit on or before:  time .
             id:  MREC

Cox regression -- Efron method for ties

No. of subjects      =       1,728           Number of obs    =      8,333
No. of failures      =         322
Time at risk         =       49998
                                             Wald chi2(21)    =      42.34
Log pseudolikelihood =   -2359.1586          Prob > chi2      =     0.0038

                                (Std. Err. adjusted for 1,728 clusters in MREC)
------------------------------------------------------------------------------
             |               Robust
          _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
AG_StressChange7cats |
          1  |   .6525341   .5251726     1.24   0.214    -.3767854    1.681854
          2  |   .6482333   .2447816     2.65   0.008     .1684703    1.127996
          3  |   .5206146   .1803727     2.89   0.004     .1670906    .8741387
          5  |   .3399166   .1760357     1.93   0.053     -.005107    .6849403
          6  |   .0585678   .2467838     0.24   0.812    -.4251195    .5422551
          7  |   .6385693   .4221683     1.51   0.130    -.1888653    1.466004
             |
  AG_MaternalAge |
          2  |  -.1563769   .1941717    -0.81   0.421    -.5369464    .2241926
          3  |  -.5203255   .2177752    -2.39   0.017    -.9471571   -.0934939
             |
       AG_Race |
Black non-Hispanic  |   .1744917    .414235     0.42   0.674    -.637394    .9863774
       Hispanic  |   .1275169   .3358332     0.38   0.704    -.5307042    .7857379
          Other  |   .0336282   .5242328     0.06   0.949    -.9938492    1.061106
             |
 AG_MaritalStatus |
          2  |   .0522534   .2422188     0.22   0.829    -.4224867    .5269936
          3  |  -1.349854   .7337147    -1.84   0.066    -2.787909    .0882003
             |
      AG_Parity |
          2  |   .2559398   .1648197     1.55   0.120    -.0671008    .5789804
          3  |   .3402427   .2714882     1.25   0.210    -.1918643    .8723498
             |
     AG_Poverty |   .1749495    .140891     1.24   0.214    -.1011918    .4510907
  AG_SocialSupport |   -.015421   .0091379    -1.69   0.091    -.0333309     .002489
 AG_PartnerSupport |  -.0073651   .0198401    -0.37   0.710    -.0462509    .0315208
     AG_EaseCare |  -.2295362   .2997099    -0.77   0.444    -.8169569    .3578845
AG_InsuranceStatus |  -.0250043   .2290293    -0.11   0.913    -.4738935     .423885
 AG_TroublePaying |   -.235375   .1634322    -1.44   0.150    -.5556963    .0849463
```

Unintended Pregnancy

stcox ib4.AG_StressChange7cats i.AG_MaternalAge i.AG_Race i.AG_MaritalStatus i.AG_Parity AG_Poverty AG_SocialSupport AG_PartnerSupport AG_EaseCare AG_Insurance AG_TroublePaying, nohr nolog efron vce(robust)

```
failure _d:  status == 1
  analysis time _t:  time
 enter on or after:  time time0
 exit on or before:  time .
             id:  MREC

Cox regression -- Efron method for ties

No. of subjects      =        1,728           Number of obs    =      8,333
No. of failures      =          283
Time at risk         =        49998
                                 Wald chi2(21)    =      51.03
Log pseudolikelihood =   -2071.2062           Prob > chi2      =     0.0003

                              (Std. Err. adjusted for 1,728 clusters in MREC)
------------------------------------------------------------------------------
                |               Robust
             _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
----------------+-------------------------------------------------------------------
AG_StressChange7cats |
              1 |   .6313179   .6232461     1.01   0.311    -.5902221    1.852858
              2 |   .8804564    .253923     3.47   0.001     .3827765    1.378136
              3 |   .5059819   .1998669     2.53   0.011      .11425    .8977138
              5 |    .472827   .1911389     2.47   0.013     .0982017    .8474523
              6 |    .291257   .2574964     1.13   0.258    -.2134266    .7959406
              7 |   .8665568   .4274602     2.03   0.043     .0287502    1.704363
                |
    AG_MaternalAge |
              2 |  -.0533145   .2016384    -0.26   0.791    -.4485185    .3418896
              3 |  -.3183696   .2262224    -1.41   0.159    -.7617573    .1250181
                |
         AG_Race |
 Black non-Hispanic |   .2721244   .3749445     0.73   0.468    -.4627533    1.007002
        Hispanic |  -.4306568   .4292883    -1.00   0.316    -1.272046    .4107329
           Other |   .0456089   .5801144     0.08   0.937    -1.091394    1.182612
                |
   AG_MaritalStatus |
              2 |   .0767539   .2507487     0.31   0.760    -.4147046    .5682123
              3 |  -1.188819   .7329343    -1.62   0.105    -2.625344     .247706
                |
        AG_Parity |
              2 |   .2590692   .1746517     1.48   0.138    -.0832418    .6013802
              3 |   .0245705   .3208857     0.08   0.939    -.6043538    .6534949
                |
      AG_Poverty |   .2072469   .1544947     1.34   0.180    -.0955571    .5100509
   AG_SocialSupport |  -.0183218   .0099572    -1.84   0.066    -.0378376    .001194
  AG_PartnerSupport |  -.0212835   .0207858    -1.02   0.306    -.0620228    .0194559
       AG_EaseCare |  -.3828409   .3376883    -1.13   0.257    -1.044698    .2790159
 AG_InsuranceStatus |  -.0953324   .2506957    -0.38   0.704    -.5866869    .3960222
  AG_TroublePaying |  -.3135881    .166568    -1.88   0.060    -.6400553    .0128791
```

Unintended and Unplanned Pregnancy

stcox ib4.AG_StressChange7cats i.AG_MaternalAge i.AG_Race i.AG_MaritalStatus i.AG_Parity AG_Poverty AG_SocialSupport AG_PartnerSupport AG_EaseCare AG_Insurance AG_TroublePaying, nohr nolog efron vce(robust)

```
failure _d:  status == 1
  analysis time _t:  time
 enter on or after:  time time0
 exit on or before:  time .
             id:  MREC

Cox regression -- Efron method for ties

No. of subjects      =       1,728           Number of obs    =      8,333
No. of failures      =         243
Time at risk         =       49998
                                             Wald chi2(21)    =      57.47
Log pseudolikelihood =   -1773.1601          Prob > chi2      =     0.0000

                                (Std. Err. adjusted for 1,728 clusters in MREC)
------------------------------------------------------------------------------
             |               Robust
          _t |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
AG_StressChange7cats |
          1  |   .7149401   .6354157     1.13   0.261    -.5304518    1.960332
          2  |   .8360729   .2866746     2.92   0.004     .274201    1.397945
          3  |   .5472417   .2200945     2.49   0.013     .1158645    .978619
          5  |   .5122365   .2079132     2.46   0.014     .1047341    .9197389
          6  |   .2679303   .2803118     0.96   0.339    -.2814706    .8173313
          7  |   .7823049   .4624237     1.69   0.091    -.1240289    1.688639
             |
  AG_MaternalAge |
          2  |  -.1653309   .2129223    -0.78   0.437    -.5826508    .2519891
          3  |  -.4878464   .2425005    -2.01   0.044    -.9631387   -.0125541
             |
       AG_Race |
Black non-Hispanic  |   .2053279   .4101174     0.50   0.617    -.5984875    1.009143
   Hispanic  |  -.3299959   .4262612    -0.77   0.439    -1.165452    .5054606
      Other  |   .1986576   .5820757     0.34   0.733    -.9421897    1.339505
             |
 AG_MaritalStatus |
          2  |   .1576054    .260732     0.60   0.546     -.35342    .6686308
          3  |  -1.08857    .7374113    -1.48   0.140    -2.53387    .3567294
             |
     AG_Parity |
          2  |    .336469   .1888027     1.78   0.075    -.0335774    .7065154
          3  |   .0886113   .3400989     0.26   0.794    -.5779703     .755193
             |
   AG_Poverty |   .1631478   .1568924     1.04   0.298    -.1443555    .4706512
AG_SocialSupport |  -.0265252   .0103431    -2.56   0.010    -.0467974   -.006253
AG_PartnerSupport |  -.0207396    .021977    -0.94   0.345    -.0638137    .0223344
  AG_EaseCare |  -.3488777   .3433129    -1.02   0.310    -1.021759    .3240032
AG_InsuranceStatus |  -.0954236   .2587588    -0.37   0.712    -.6025816    .4117344
AG_TroublePaying |  -.3493486   .1765705    -1.98   0.048    -.6954205   -.0032767
```

Appendix IV

Table Appendic IV.1 Grieco & Boyd's Gender-Informed Migrant Framework (Grieco & Boyd, 1998)

PRE-MIGRATION STAGE: FACTORS ASSOCIATED WITH THE SENDING SOCIETY		
Issue Specific to Gender and Migration	**General Summary/Explanation**	**Summary/Explanation Specific to Female Migrants**
Influence of Gender Relations on the Desire and Ability of Women and Men to Migrate	The likelihood that women and/or men will migrate is determined by their abilities to make the decision and to access resources to do so	Systems of gender stratification in families and in the societies of origin can circumscribe women's ability to make autonomous decisions (e.g. because of patriarchal power relations) and access both familial-based and public resources (e.g. family, income, wages from a job, education, information)
Status and Roles in the Sending Society and Their Impact on the Sex Selectivity of Migration	A woman's or man's status, roles and stage in the life-cycle interact to determine their positions in the sending society and therefore determine their "migratory probability". This interaction influences the opportunity women and men have to migrate and the point when the decision is being made.	Combined with gender relations and sex stratification, it also causes migration to be a sex selective process, shaping the sex composition of the migration flow and the type of migration leaving a sending society. It can also influence the reasons why women and men migrate.
The Impact of Country of Origin Factors on the Desire and Ability of Women and Men to Migrate	Macro/structural characteristics of the country of origin (e.g. level of economy, state of technologies, in industries, integration into world economy) influence the migratory decisions and behavior of both women and men.	Macro/structural characteristics of the country of origin combined with gender relations and the position of women sending society affect women and men differently, leading to an increase in the level of sex selectivity in migration flows.

Gender-Informed Migrant Framework (Grieco & Boyd, 1998) (cont.)

THE ACT OF MIGRATION: FACTORS ASSOCIATED WITH THE INTERFACE BETWEEN SENDING AND RECEIVING SOCIETIES		
Issue Specific to Gender and Migration	**General Summary/Explanation**	**Summary/Explanation Specific to Female Migrants**
The Policy of the Country of Origin	Policies of the country of origin can differentially condition women's and men's ability to exit and emigrate.	Policies can either implicitly or explicitly encourage or discourage women to emigrate. Policies are often influenced by assumptions about the status and roles of women in the family and society.
The Policy of the Country of Destination	Policies of the country of destination differentially condition: a) female and male abilities to emigrate and b) entry statuses of women and men.	Policies frequently define women as dependent family members, categorizing them into a "family role" rather than a "market role" and failing to view them as independent migrants. This can cause increased economic dependency and social vulnerability. Traditional sex roles and stereotypical images regarding the place of women in the labor force can determine occupational recruitment categories. This can, in turn, influence the sex composition of migration flows, curtailing women's ability to migrate.
The Role of Intermediary Organizations and Institutions	Both legal intermediaries that implement recruitment policies and illegal intermediaries that attempt to circumvent immigration policies increase the likelihood that women and men will migrate	The likelihood that women will migrate can increase because intermediaries act as networks linking potential female migrants with demands for female labor from destination countries. However, intermediaries operating illegally can exploit the disadvantaged position of women, discouraging migration

Gender-Informed Migrant Framework (Grieco & Boyd, 1998) (cont.)

POST-MIGRATION STAGE: FACTORS ASSOCIATED WITH THE RECEIVING SOCIETY		
Issue Specific to Gender and Migration	**General Summary/Explanation**	**Summary/Explanation Specific to Female Migrants**
The Impact of Entry Status on the Ability to Integrate and Settle	Immigration policy defines the entry status of migrants. Because entry status determines residency and employment rights and can determine eligibility for social welfare programs, it can affect the ability of women and men to integrate and settle.	Entry status is more likely to handicap female migrants because residency and employment and related entitlements often differ by gender. Because migrant women are often viewed by the state as "dependents", their rights may become legally dependent on other family members, making it difficult for them to obtain these rights and entitlements of their own.
Patterns of Incorporation into the Labor Market	Racial, birthplace and gender stereotypes exist in countries of destination, acting as powerful allocative mechanisms in the labor market, and helping create and maintain racial, birthplace and gender concentrations in select occupations	The sex roles and occupational stereotypes of the receiving society causes migrant women to be incorporated into traditional "female" occupations and industries. This contributes – and justifies – their low wages, low occupational status and poor and exploitative working conditions. Also, the human capital characteristics of women, which are influenced by their experience in their country of origin, influence their position in the labor force. The "double day" syndrome of work and housework can prevent migrant women from improving human capital skills.
The Impact of Intermediary Organizations and Institutions	Both legal intermediaries that implement recruitment policies and illegal intermediaries that attempt to circumvent immigration policies increase the likelihood that women and men will migrate	The likelihood that women will migrate can increase because intermediaries act as networks linking potential female migrants with demands for female labor from destination countries. However, intermediaries operating illegally can exploit the disadvantaged position of women, discouraging migration.

Reference

Grieco, E. M., & Boyd, M. (1998). *Women and migration: Incorporating gender into international migration theory* (3 No. 35).

Center for the Study of Population Working Papers.