

CONCEPTUALIZING AND TESTING A NEW MEASURE OF FERTILITY  
INTENTIONS: A MIXED METHODS EXPLORATION OF FACTORS THAT AFFECT  
THE ACHIEVEMENT OF CHILDBEARING PLANS

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## **ABSTRACT**

**EMILY McDONALD EVENS: Conceptualizing and Testing a New Measure of Fertility Intentions: A Mixed Methods Exploration of Factors that Affect the Achievement of Childbearing Plans**

(Under the direction of Sian Curtis and Herbert Peterson)

Understanding fertility intentions is crucial for reproductive health research and programs. While quantitative research has identified factors associated with fertility intentions and simple measures of intentions predict pregnancy moderately well, discrepancies between stated intentions and behavior are common and understanding of fertility decision making remains imperfect. Knowledge of factors that enable some women to achieve plans for pregnancy while others fail could advance understanding of unintended pregnancy, unmet need for family planning and contraceptive discontinuation. Two analyses were conducted to explore factors affecting the achievement of fertility intentions among Honduran women of reproductive age seeking health services in four Honduran cities.

First, focus group discussions and individual in-depth interviews were conducted to examine reproductive decision making and factors thought to affect intentions. Locus of motivation for fertility decision making, the ability to pursue educational and occupational opportunities and the ability to care for family were found to be relevant to childbearing decision making. Individual and community-level factors affecting intentions were identified and results provide evidence that the formation and operationalization of intentions are distinct processes, influenced by different factors.

Second, longitudinal data from 671 contraceptive users was used to explore aspects thought to influence the attainment of intentions. Using factor analysis, a multi-dimensional measure of motivation to avoid pregnancy was proposed and compared to the standard measure of fertility intentions using multivariate logistic regression to see which predicted contraceptive continuation and pregnancy better. Three dimensions of motivation were identified: Control Locus, Expectations and Feelings. Decreased expectations to use contraception were found to diminish the chances of continuing contraceptive use. Overall, the multidimensional measure performed similarly to the standard categories in the prediction of contraceptive use and pregnancy.

Findings suggest factors likely to influence fertility intentions in other developing country settings. Future research should explore the role of motivation among a wider population in order to further assess the role of attitudinal factors in fertility and contraceptive decision making. Improved knowledge of fertility decision making will increase understanding of unmet need for family planning, contraceptive discontinuation and unintended pregnancy and, ultimately, help determine how best to address these issues.

To my children—the cause for and result of my interest in fertility intentions.

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## CHAPTER 1

### Introduction

Desire for children is closely related to the reproductive health of individuals and couples. Whether and when an individual desires children can influence their use of contraception, chance of engaging in unprotected sex and the type of contraceptive method they select. Fertility intentions<sup>1</sup>—the desire for and desired timing of childbearing—are important drivers of key reproductive health outcomes including unintended pregnancy and unmet need for family planning. Measuring fertility preferences is important to family planning programs and researchers in order to: help individuals achieve their reproductive goals, approximate the need for contraception, predict pregnancy outcomes and estimate the extent of mistimed pregnancies.

There is an extensive body of literature on the determinants of fertility including fertility intentions and it is well established that individual intentions are significant predictors of fertility. (1-5) The demographic and public health literature is also rich with evidence on the effect of fertility preferences on contraceptive dynamics. Across populations the proportion of women who desire to stop childbearing is associated with the contraceptive prevalence rate and correspondingly, at the individual level, desire to stop childbearing is a significant predictor of contraceptive use. (2-6) Research also supports the influence of fertility

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<sup>1</sup> A related, although subtly different, concept is that of pregnancy planning status. This is generally used to capture a woman's intentions towards a *specific* pregnancy *before* she became pregnant although it is generally measured at the time of the pregnancy or through retrospective reports later. A pregnancy is considered to be intended if it occurred at the "right time", as reported by the woman, and as unintended if it occurred either too soon (a mistimed pregnancy) or when a woman desired no children (an unwanted pregnancy). The concept of planning status is generally used retrospectively to evaluate whether and when a specific pregnancy was wanted while the concept of preferences is typically used prospectively to refer to future fertility desires.

preferences on contraceptive continuation; whether an individual wants to space future births or limit them entirely is among the factors most consistently related to continued contraceptive use. (7-10) Similarly, abandoning contraception due to reduced need and contraceptive failure has also been found to be linked to fertility preferences. (7)

In addition to evidence from demographic research on the importance of intentions, the social psychology literature supports a strong relationship between individuals' plans for future fertility and their reproductive behaviors. Miller hypothesized that reproductive decisions are made through a psychological and behavioral sequence that begins with underlying and unconscious motivations and is converted into intentions which then become behaviors when the conditions are right. (11, 12) The importance of fertility intentions is additionally supported by the Theory of Reasoned Action which posits that intention to perform a behavior increases the likelihood that the behavior will be undertaken. (13)

### **Current Measures of Intention and Their Limitations**

Typically, fertility intentions are assessed by asking an individual whether they want a child, or more children, and, if so, how long they would prefer to wait before their next child. Measured this way, intentions are considered a fair predictor of subsequent fertility however; discrepancies between women's stated intentions and their reproductive behaviors are common. (14, 15) The capacity of intentions to predict fertility varies by location. Data from several studies conducted in the United States and other countries with high contraceptive prevalence rates find that simple statements about wanting more children are highly predictive of subsequent fertility. (2, 3, 16-18) A study by Schoen et al. found fertility intentions to be a strong and persistent predictor of fertility even after controlling for background and life course variables. Nevertheless, nearly 40% of those stating they were

very sure they wanted to have a birth did not do so and over 10% of those who were very sure they did not want to have a birth had a child. (18) Similarly, in a study of the effect of fertility intentions on consistency of contraceptive use Jaccard et al. concluded that the prediction of contraceptive use over time is not possible with a single attitudinal predictor of desire for children. (19)

Studies using developing country populations have yielded conflicting results regarding the ability of fertility intentions to predict pregnancy. (15, 16) Using Morocco panel data, Bankole and Westoff found that of women wanting more children, 62% had given birth or were currently pregnant three years later and of those wanting no more children, 29% had given birth or were currently pregnant. (6) While desire for children was found to be strongly related to the likelihood of having a birth between the two surveys, fertility intentions still failed to predict behavior in nearly one-third of cases. A prospective study using data from Malaysia by Tan and Tey found that only 12% of women who answered “no” to the question “Do you want to have any (more) children?” had a subsequent birth over a three year period while 40% of those unsure whether they wanted another child and more than half of those wanting another child gave birth within three years. (16) These results demonstrate that intentions remain an imperfect tool for fully understanding women’s plans for childbearing and predicting pregnancy.

### **Discrepancies between Intentions and Behaviors**

Several factors may explain the discrepancy between women’s stated fertility intentions and their subsequent behavior. First, the simplicity of conventional measures of fertility intentions may be inadequate for fully understanding and predicting fertility behaviors. Despite the fact that fertility intentions are increasingly understood to include cognitive,

affective and cultural components of a woman's plans for pregnancy, conventional measures of intention are based largely on a woman's cognitive plans for pregnancy. (14) Numerous socio-economic factors have been identified as influences on women's fertility intentions. A woman's age (16, 17, 20, 21), number of living children (16, 17, 21) and marital or partnership status (16-18, 22) have been found to be associated with their fertility preferences. The intentions of a woman's husband or partner have also been found to have an affect on both women's pregnancy intentions (16, 22-27) and the probability of the couple having a birth. (18) Similarly, family members, particularly parents-in-law, have been found to influence fertility intentions and reproductive behaviors.(28, 29)

In addition to socioeconomic factors known to affect intentions, there is emerging evidence on the importance of additional psycho-social variables on women's plans for childbearing. Of particular interest is variation in underlying levels of strength of desire to avoid pregnancy. Several researchers have found a connection between the strength of desire for pregnancy and both contraception and pregnancy. (7, 18, 19, 30) In addition, variation in the strength of intentions has been found among women using contraception to avoid pregnancy with women desiring to limit childbearing demonstrating a stronger desire than those wishing to space their pregnancies. (7, 31, 32) Multivariate analyses of the determinants of contraceptive discontinuation by both Ali and Cleland and Curtis and Blanc have consistently found that rates of discontinuation for reasons other than the desire to get pregnant are higher for women wishing to space pregnancies than those wishing to limit pregnancies. Schoen et al. demonstrated that the intensity with which fertility intentions were held was related to future fertility—a strong, monotonic, relationship was found between

fertility intentions, their strength, and the likelihood of having a subsequent birth for both men and women. (18)

Using data from six DHS studies Curtis, Evens and Sambisa explored underlying variation in motivation to avoid pregnancy and contraceptive discontinuation. (33) This study examined how often women reported pregnancies as intended after experiencing contraceptive failure or discontinuing contraception for reasons other than the desire to get pregnant. Factors associated with reporting pregnancy as intended were also examined. A significant percentage of births following contraceptive failure or discontinuation for reasons other than the desire for pregnancy were reported as intended, ranging from 16% in Bangladesh to 54% in Kazakhstan. These findings support the hypothesis that underlying variation in motivation to avoid pregnancy is an important factor in contraceptive discontinuation and demonstrates the variation in motivation to avoid pregnancy is common among contraceptive users. While multivariate analyses revealed few consistent patterns in factors associated with reporting births following discontinuation and failure as intended, the most consistent associations were with variables linked to motivation such as whether women have achieved their desired family size and whether they experienced contraceptive failure. (33)

The locus of motivation for engaging in reproductive behaviors is another psycho-social variable which could play a role in the formation and execution of fertility intentions. Consideration of the locus of motivation on behavior is supported by Self Determination Theory. According to this theory, all behaviors lie along a continuum of relative autonomy reflecting the extent to which a person fully endorses and is committed to a specific activity. (34, 35) At one end of the continuum behaviors are controlled by external regulations such as

rewards and punishments controlled by others. At the opposite end is the most autonomous and stable form of motivation, where the person identifies with the behavior and coordinates it with their other core values and beliefs. More autonomously regulated behaviors, those that fall further towards the intrinsic end of the continuum, are more likely to be continued, be performed with greater care and quality and be accompanied by more positive experiences. (34, 35) Accordingly, an individual who chooses to use contraception because she believes it enables her to control when she becomes pregnant would be more likely to use contraception effectively than those only using contraception because others expect it. Those with less autonomy would be more likely to discontinue contraceptive use or use it inconsistently or incorrectly. Given the range of socioeconomic and psycho-social factors that exert an influence on fertility intentions, simple measures of intentions could be insufficient for understanding women's plans for pregnancy and predicting fertility. Consideration of additional factors that influence women's plans for pregnancy could improve understanding of how and why women act on their intentions and, potentially, increase the predictive power of fertility intentions.

In addition to limitations imposed by conventional measures of intentions, two other factors may help explain the discrepancy between women's stated intentions and their reproductive behavior. Changes in the circumstances of women's lives such as changes in marital status or the death of a child could shed light on inconsistencies between plans for pregnancy and behaviors. (31) Additionally, weakly held or ambivalent fertility intentions may be an important factor. Evidence from the United States identifies significant ambivalence towards pregnancy among women. Trussell et al. found that only 59% of women stating that a pregnancy following a contraceptive failure was unintended reported

feeling unhappy or very unhappy about the pregnancy, while 25% of women reported they were happy or very happy. (36) Similarly, a study by Sable and Libbus found that almost half (48%) of women obtaining a pregnancy test and stating that a pregnancy would be unintended, reported that they would be somewhat or very happy about that pregnancy. (29) Evidence that women report happiness at pregnancies not planned for and, less commonly, dismay at those that were deliberate suggests considerable ambivalence in fertility intentions. (37) A study by Speizer exploring women's ambivalence in Burkina Faso, Ghana and Kenya provides similar evidence in the developing world. Using DHS data, Speizer found that between 25% and 43% of women who stated that they wanted to delay or stop childbearing reported that it would be no problem or a small problem if they got pregnant in the next few weeks.(38)

Ambivalence towards childbearing may also influence women's contraceptive behaviors. Trussell et al. suggest that ambivalence about pregnancy could result in imperfect contraceptive use and higher risk of pregnancy. (36) Additionally, women may not use contraception due to ambivalence regarding contraception itself. (36, 37) Zabin argues that both ambivalence towards contraception and ambivalence towards conception are centrally important to our understanding of fertility motivations. (37) The literature on contraceptive acceptability demonstrates ambivalence towards contraceptive use may be an indicator of contraceptive method acceptability. (31) However, contraceptive continuation may also be a sign that the motivation to avoid pregnancy outweighs any negative attributes of a particular method. (31)



## **The Continuum of Fertility Preferences**

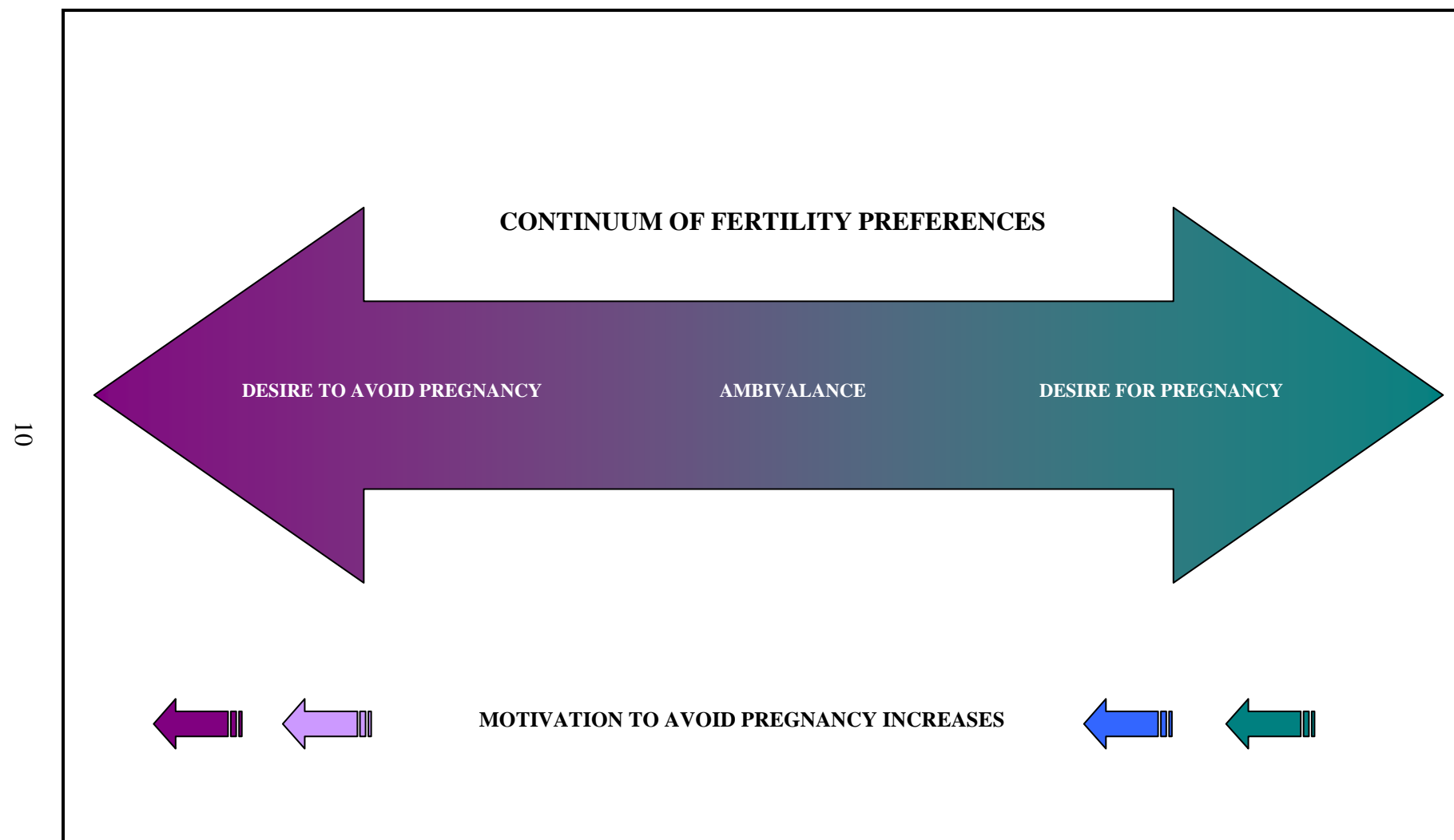
The disconnect between stated fertility intentions and behavior as well as the existence of ambivalence towards pregnancy points to the existence of a continuum of fertility intentions. Research suggests that fertility behaviors are the consequence of a complex mix of traits and intentions that result in a variety of behaviors. (12, 36) Simple categorical measures to determine future fertility plans are problematic as they do not capture the subtlety of fertility desires and the ambivalence often associated with contraceptive use and pregnancy. Recognizing the existence of this continuum may be an important component in improving understanding of future reproductive behaviors. (31)

Fertility preferences are conventionally measured as discrete categories—either a pregnancy is desired now, a woman would prefer to wait or she never wants to be pregnant or pregnant again. However, as women's stated fertility desires and their behavior are often unclear or conflicting, a more subtle approach to capturing fertility preferences may be more effective in understanding and predicting reproductive behavior. A continuous array of fertility preferences, ranging from a strong desire to avoid pregnancy, to ambivalence, to a strong desire for pregnancy would be a more refined and descriptive means to depict women's fertility preferences. This continuum blurs the distinct categories into a continuous range, thereby recognizing the potential for ambivalence towards fertility. (See Figure 1: Continuum of Fertility Preferences)

Work by Miller describes a seven-point continuum of fertility intentions ranging from conceptions that were fully intended and preceded by behavior specifically aimed to achieve conception to those that were preceded by active and effective contraceptive use; in the middle are those that were neither intended nor counter-intended. Starting from the middle of

the spectrum and present in decreasing quantities in all but the fully counter-intended conceptions is subconscious intention for pregnancy. (11) The fertility intentions literature also supports the concept of a continuum of preferences; Bachrach and Newcomer write about the existence of a continuum of pregnancy intentions involving at least two dimensions: intentionality or planning plus an affective component. (39)

**Figure 1-1: Continuum of Fertility Preferences**



## **Dissertation Goals and Study Aims**

Intentions have been established as significant predictors of fertility at the population level however, their predictive ability could be improved. Evidence from survey research and social psychology literature points to the existence of a continuum of fertility preferences ranging from strong motivation to avoid pregnancy to intense desire for children however, women's plans for pregnancy are conventionally measured as discrete categories.

Ambivalence towards pregnancy and contraceptive use as well as discrepancies between women's stated preferences for pregnancy and their subsequent behavior further demonstrate limitations in our ability to understand and measure women's plans for pregnancy. In order to improve the prediction of fertility, understanding and measurement of intentions must be improved. Ultimately, improved measurement of intentions will facilitate the development of effective interventions to address negative reproductive health outcomes such as unintended pregnancy and unmet need for family planning.

This dissertation seeks to improve understanding of women's fertility intentions in order to improve the prediction of pregnancy and contraceptive continuation. The first paper, *Factors Influencing the Formation and Achievement of Fertility Intentions: A Qualitative Study of Childbearing Decision Making Among Honduran Women*, explores fertility decision making and women's plans for pregnancy in order identify factors that influence the formation and operationalization of fertility intentions. Data come from focus group discussions and in-depth interviews with Honduran women of various ages and levels of contraceptive experience. Previous research has identified factors associated with fertility intentions however; little qualitative research has explored the saliency of these factors with women. Socioeconomic and psycho-social factors hypothesized to affect intentions were

explored through questions on community-level attitudes toward the timing of childbearing, contraceptive and fertility decision-making processes and individual experience. Factors that affect the fertility decision making process are explored at both the community and individual level in order to capture multiple levels of influence on women's desire for children. Specifically, this paper aims to:

- Develop a deeper understanding of how women in a Latin American setting form plans for pregnancy and what influences the likelihood that these plans will be achieved. Qualitative methods are used to examine the fertility decision making process, factors recognized in the literature as influencing fertility intentions and factors hypothesized to affect women's intentions and their ability to achieve them.

As this aim uses qualitative methods, no specific a priori hypotheses have been constructed. Preconceived expectations of findings would influence the subjective interpretation of qualitative data and are therefore avoided.

Using the factors explored in the first paper, the second paper, *Exploring Factors that Affect the Operationalization of Fertility Intentions: Efforts to Improve the Prediction of Contraceptive Continuation and Pregnancy*, seeks to improve the prediction of contraceptive use and pregnancy by proposing a new, more nuanced, evaluation of influences on women's plans for pregnancy. Using longitudinal data from Honduran women receiving contraceptive services in a variety of public-sector health facilities, this paper used factor analysis to determine the underlying elements of women's motivation to avoid pregnancy. Regression analysis was then used to determine whether motivation predicted contraceptive use and pregnancy better than the standard measures of intention one year later. Specifically, this paper aims to:

- Propose a new, multi-dimensional construct for evaluating additional dimensions of women's fertility preferences

- Quantitatively test whether the proposed multi-dimensional measure can be used to calculate a single measure of motivation to avoid pregnancy, an unobservable variable
- Test if this measure predicts contraceptive use and pregnancy better than the conventional means of assessing fertility intentions

It is hypothesized that the multi-dimensional measure of motivation will predicts continued contraceptive use and pregnancy better than the standard measure of fertility intentions.

## **CHAPTER 2**

### **Factors Influencing the Formation and Achievement of Fertility Intentions: A Qualitative Study of Childbearing Decision Making Among Honduran Women**

#### **Abstract**

Desire for children is an important influence on the reproductive health of women and measuring fertility intentions accurately is essential for family planning programs and researchers. Quantitative research has identified factors associated with fertility intentions however; the predictive power of fertility intentions could be improved. Furthermore, discrepancies between women's intentions and their reproductive behaviors illustrate the fact that different factors may influence the formation of plans for childbearing and the achievement of those plans. Focus group discussions and individual in-depth interviews were conducted to qualitatively examine reproductive decision making, socio-economic factors identified as affecting fertility intentions and five other factors hypothesized to affect intentions: strength of desire for pregnancy, pregnancy-related affect, locus of motivation for fertility decision making, the ability to pursue educational and occupational opportunities and the ability of a woman to care for family. Study participants were Honduran women of reproductive age seeking health care from public and non-profit health care facilities in four Honduran cities. Factors associated with intentions in previous quantitative research were found to be relevant in this population. Locus of motivation for fertility decision making, the ability to pursue educational and occupational opportunities and the ability of a woman to care for family were also found to be relevant to the childbearing decision making process among study participants. Pregnancy-related affect and the strength of desire for childbearing

were not important influences on fertility intentions in this population. This study provides evidence that the formation and operationalization of intentions are distinct processes, influenced by different factors. It also identifies both individual and community-level factors affecting intentions. While these results are reflective of the specific population from which they were generated findings suggest factors likely to influence fertility intentions in other developing country settings. Consideration of the factors identified here is likely to facilitate the development of an improved, multidimensional measure of fertility intentions which can enhance researchers' ability to predict pregnancy and ultimately contribute to the design of interventions to address unintended pregnancy.

### **Introduction**

Fertility intentions—the desire for and desired timing of childbearing—are important drivers of reproductive health behaviors and outcomes such as unintended pregnancy. Whether and when an individual desires children can influence their use of contraception, chance of engaging in unprotected sex and the type of contraceptive method they select. Measuring fertility intentions is important to family planning programs and researchers, who want to gauge individuals' desires for children, approximate the need for contraception, predict pregnancy outcomes and estimate the extent of unwanted and mistimed pregnancies.

While quantitative research has identified factors important to the formation of fertility intentions, the predictive ability of intentions could be improved. Furthermore, discrepancies between women's stated fertility intentions and their reproductive behaviors highlight the need to improve our understanding of intentions and the factors that hinder or facilitate the translation of these intentions into reproductive actions. Qualitative research on the fertility decision making process is promising but limited, especially within the Latin American



context. This study develops a deeper understanding of fertility intentions and their actualization in a population of Honduran women by qualitatively examining reproductive decision making and exploring factors identified by previous research as influencing fertility intentions as well as other new potential influences on intentions and their operationalization.

## **Background**

There is an extensive body of literature on the determinants of fertility, including fertility intentions, and it is well established that individual intentions are significant predictors of fertility. (1-5) However, the capacity of intentions—usually assessed by asking an individual whether they want a child, or more children, and, if so, how long they would prefer to wait before their next child—to forecast pregnancy is imperfect and discrepancies between women’s stated intentions and their reproductive behavior are common. Using Morocco panel data from 1992 and 1995, Bankole and Westoff found that, of women wanting more children in 1992, 62% had given birth or were currently pregnant by 1995 and of those wanting no more children, 29% had given birth or were currently pregnant. (6) While desire for children was found to be strongly related to the likelihood of having a birth between the two surveys, fertility intentions still failed to predict behavior in nearly one-third of cases. Similarly, in a prospective study using data from Malaysia, while only 12% of women who answered “no” to the question “Do you want to have any (more) children?” had a subsequent birth over a three year period, 40% of those unsure whether they wanted another child had a birth and more than half of those wanting another child gave birth within three years. (16) These results demonstrate the need to improve understanding of how fertility intentions are formed and how and why women act upon them.

Several socio-economic factors affecting intentions and their achievement have been identified by previous research. A woman's age (16, 17, 20, 21), number of living children (16, 17, 21) and marital or partnership status (16-18, 22) have been found to be associated with her fertility preferences. The intentions of a woman's husband or partner have also been found to have an effect on both women's pregnancy intentions (16, 22-27) and the probability of the couple having a birth. (18) Similarly, family members, particularly parents-in-law, have been found to influence fertility intentions and reproductive behaviors.(28, 29)

Information on other factors influencing fertility intentions is emerging. Several researchers have found a connection between the strength of desire for pregnancy and both contraceptive use and pregnancy. (7, 18, 19, 30) Variation in the strength of intentions has been found even among women using contraception to avoid pregnancy with women desiring to limit childbearing demonstrating a stronger desire to avoid pregnancy than those wishing to space their pregnancies. (7, 31, 32) Schoen et al. demonstrated that the intensity with which fertility intentions were held was related to future fertility—a strong, almost monotonic, relationship was found between fertility intentions, their strength, and the likelihood of having a subsequent birth for both men and women. (18)

The strength and direction of a woman's desire for pregnancy is not always clear however, and another promising area of interest concerning the achievement of fertility intentions is women's ambivalence towards pregnancy. Weakly held or ambivalent fertility intentions may be a key factor in explaining how and why some women fail to act on their plans for pregnancy. Research in the United States has found that a considerable proportion of women experience ambivalence towards pregnancy—either reporting happiness at unintended pregnancies or less commonly, dismay at those that were deliberate. (3, 22)

Ambivalence in fertility intentions has also been identified with many women reporting both positive and negative feelings towards a potential pregnancy. (37) A study by Speizer exploring women's ambivalence regarding fertility intentions in Burkina Faso, Ghana and Kenya found that 25-43% of women who stated that they wanted to delay or stop childbearing reported that it would be no problem or a small problem if they got pregnant in the next few weeks.(38) Ambivalent fertility intentions may influence the operationalization of fertility intentions through contraceptive use; women with ambivalent intentions have been found less likely to be users of contraception and effective contraception. (40, 41)

Another emerging area of interest is pregnancy-related affect, or women's feelings towards pregnancy. Affect is thought to be an important complement to the cognitive element of women's plans for childbearing and affective reactions to pregnancy frequently differ from cognitive plans. (42) Bachrach and Newcomer describe a continuum of pregnancy intentions involving intentionality plus an affective dimension which expresses happiness or dismay at pregnancy. (39) Pregnancy-related affect has also been found to be an important component in contraceptive behavior, an important influence on the attainment of fertility intentions. (29)

While research supporting the influence of another group of factors is limited, issues related to a woman's perceived ability to make decisions about her fertility and other important life choices and responsibilities may be influential. The locus of motivation for individual fertility decision making is central to women's ability to achieve their fertility intentions. According to Self Determination Theory, all behaviors lie along a continuum of relative autonomy reflecting the extent to which a person fully endorses and is committed to a specific activity. (34, 35) At one end of the continuum are behaviors controlled by external

regulations such as rewards and punishments directed by others. At the opposite end is the most autonomous and stable form of motivation, where the person identifies with a behavior and coordinates it with their other core values and beliefs. More autonomously regulated behaviors are more likely to be continued, to be performed with greater quality and to be accompanied by more positive experiences. (34, 35) Accordingly, an individual who believes she is able to control when she becomes pregnant would be more likely to successfully achieve her fertility intentions than one who believes others are in control of her fertility decisions.

Another area thought to influence the formation and achievement of fertility intentions is women's ability to pursue educational and occupational opportunities. Miller and Pasta hypothesize that an individual's fertility preferences take into account both their personal desires for childbearing, as well situational factors, such as schooling or work, that impose additional constraints on behavior. (12) Some research supports the influence of educational status on a woman's ability to achieve their fertility intentions, and an increased level of woman's education has been found to be associated with a lower probability of having an unintended birth. (17) Education and employment might also affect intentions indirectly through their influence on women's economic status. However, little research has examined the relationship between a woman's plans for childbearing and her perceived ability to pursue education or work, however, especially, in developing country settings.

Finally, the ability of a woman to care for her family is likely to influence the formation and achievement of her fertility intentions, although research supporting this influence is inadequate. If a woman strongly feels that avoiding pregnancy allows her to give better care to her family because she has more time, energy or resources than if she were to have a child,

or another child, then her intention to avoid pregnancy will likely be stronger than if she believes future childbearing will have no influence on her ability to care for her family. The ability to care for family is likely to be influenced by the number of living children a woman has, a factor known to influence women's fertility intentions. (16, 17, 21) Desire for children has been shown to decrease as the number of children a woman has rises and, in general, women are more likely to report births as unintended as their family size increases. (16, 17)

Survey research has failed to yield a complete understanding of how fertility intentions are formed and acted upon, and a more nuanced understanding of these processes is needed. Despite efforts to define and measure fertility intentions, the concept, as widely used, is insufficient for fully understanding and predicting future fertility. (14) Qualitative research holds promise for the exploration of the formation and execution of intentions however, results are limited. Qualitative studies have revealed the presence of ambivalence towards contraception and pregnancy, highlighted the failure of current measurement techniques to capture this ambivalence and demonstrated that fertility preferences are influenced by many factors. (43-45) Work in the United States by Moos et al. enlarged understanding of fertility intentions by challenging the notion that fertility decisions are the result of conscious actions and the idea that intended pregnancy is the goal of women. (43, 44) While these findings help expand understanding of intentions, additional qualitative work exploring emerging areas thought to affect intentions is essential.

This study aims to develop a deeper understanding of how women in a Latin American setting form plans for pregnancy and what influences the likelihood that these plans will be achieved. Qualitative methods are used to examine the fertility decision making process, factors recognized in the literature as influencing fertility intentions and factors hypothesized

to affect women's intentions and their ability to achieve them. Specifically, socio-economic factors influencing intentions and the strength of a woman's desire for childbearing, pregnancy-related affect, locus of motivation for fertility decision making, the ability to pursue educational and occupational opportunities and the ability to care for family as well as the fertility decision making process will be explored using data from focus group discussions and in-depth individual interviews. The authors know of no other qualitative research on pregnancy intentions exploring these issues and no qualitative research on fertility decision making in a Latin American population.

### **Setting**

This study utilizes data from Honduras, one of the poorest and least developed countries in Latin America with nearly two-thirds of residents living in poverty. Contraceptive use is common among Honduran women with 43% of all women between the ages of 15 and 49 reporting the current use of any method of contraception and 38% of all women using a modern method. (46) Female sterilization is the most common method of family planning in Honduras, as it is across Latin America, accounting for 15% of all women. Injections are the next most common method with 8.6% of women; this is followed by pills with 7.1%, traditional methods with 5.5% and IUDs with 4.4%. Condoms are used by only 2.3%. (46) The majority of contraceptive methods are obtained in public hospitals and clinics run by the Honduran Secretary of Health, clinics run by the Honduran Association of Family Planning (ASHONPLAFA), and pharmacies. (47) Despite the wide use of contraception, the total fertility rate is 3.3 children per women and most Honduran women have more children than they would like to have. Approximately one-third of women report their ideal number of children as two with another third reporting ideal family size as three. (46) Other factors may

influence the ability of Honduran women to achieve their fertility intentions: Honduras has the highest adolescent birthrate in Central America; half of all women 20-24 years old have given birth by age twenty and 40% of these are reported as unplanned pregnancies. (48) Previous research has also identified power imbalances between genders in Honduras, a factor that could contribute to women's inability to achieve their fertility intentions. (49)

### **Data and Methods**

Data for this study come from two sources; focus group discussions from the *Study of Service Quality, Motivations to Use Contraception and Contraceptive Continuation in Honduras* conducted by MEASURE Evaluation and in-depth interviews conducted by the author. Focus groups provided information on community-level attitudes and normative data on the timing of pregnancy and contraceptive use and influences on these behaviors. In-depth interviews were then added to provide additional detail concerning influences on fertility decision making at the individual level. Specifically, the factors identified in previous research as having a demonstrated or hypothesized effect on fertility intentions were explored within the context of individual women's reproductive careers. As multiple levels of influence exert an effect on individual behavior, factors affecting fertility decision making at both the community and individual level were explored. This layering of methods allowed for a more thorough identification of factors that influence the formation of fertility intentions and their translation into behavior. This approach is supported by Social Ecological Theory which posits that individuals are nested within multiple layers of influence and, together, these levels affect behavior.

### **Focus groups**

The goal of the MEASURE Evaluation *Study of Service Quality, Motivations to Use Contraception and Contraceptive Continuation in Honduras* was to determine how the family planning service environment, individual characteristics and experience with and fear of side effects affect contraceptive continuation. Honduras was selected for the study because it had a relatively high contraceptive prevalence rate, including a high prevalence of female, reversible contraceptive methods and low HIV prevalence. (50) Study sites included four cities in four administrative departments: Tegucigalpa in Francisco Morazan, San Pedro Sula in Cortes and Santa Rosa de Copan and Gracias in Lempira. (See Figure 1: Map of Honduras and Study Sites) Study cities were selected to capture a range of population size and diversity of available contraceptive services; the rural department of Lempira was chosen because it was a priority department for USAID, the study's funder. Tegucigalpa and San Pedro Sula are the two largest cities in Honduras and offer a greater diversity of contraceptive services while Santa Rosa de Copan and Gracias have a lower population density and offer fewer services.

Partnering with PRODIM (Programas para el Desarrollo de la Infancia y la Mujer/Programs for the Development of Childhood and Women), a Honduran non-profit organization, MEASURE Evaluation conducted two focus groups in each of the four cities for a total for eight focus groups including 73 women. In each city one focus group was conducted with women between the ages of 15 and 24 and another with women from 25 to 44 years of age. To be eligible to participate women had to be of reproductive age (between 15 and 44 years old) and a current or past user of reversible contraception or sterilization. Women were recruited from health centers and hospitals run by the Honduran Secretary of Health and clinics run by ASHONPLAFA. Women waiting for appointments at these



facilities were approached, screened for eligibility and asked if they would take part in the study. All focus groups were conducted in May 2006 at the facilities where the women were recruited.

**Figure 2-1: Map of Honduras and Study Sites**



Qualitative data on community-level attitudes towards the decision-making processes around contraceptive adoption and continuation including the role of health care providers, women's perceptions of side effects, reactions to side effects and motivation to continue use of contraception in the event of side effects were collected during the focus groups. (51) A twenty-question focus group guide was developed by MEASURE Evaluation and PRODIM to guide discussion of these topics. The guide was pilot tested prior to the initiation of data collection. Each focus group was conducted in Spanish. Written informed consent was obtained from all participants. Audio recordings were made of each group and then transcribed; Spanish transcripts were translated into English for analysis.

### **In-depth interviews**

Data also come from 25 in-depth interviews with Honduran women of reproductive age conducted in July 2008. Interview participants were recruited from two health centers in Tegucigalpa and Santa Rosa de Copan run by the Honduran Secretary of Health where focus group participants were recruited. Twelve interviews were conducted in Tegucigalpa and 13 in Santa Rosa de Copan. To be eligible to participate women needed to be between the ages of 15 and 44. Women were recruited from individuals waiting to receive health services as well as from women accompanying those waiting for services. In order to equally represent both those women who wanted children or more children and those who did not, a simple questionnaire using the standard classification of fertility preferences guided recruitment. Approximately half (56%) of women stated at screening that they wanted children or more children and half (44%) stated they did not want children or more children. Interview participants ranged in age from 16 to 42, with an average age of 28. Eighty percent were married or living with a partner and 84% had children; the number of children women had ranged from one to ten, with an average of three. Approximately three-quarters (76%) of participants were current contraceptive users. The most common methods were female sterilization (37% of participants currently using contraception), injectables (26%) and IUDs (15%). Condoms were used by 11% and oral contraceptive pills by 10%.

An interview guide was developed to guide discussion on individual women's reproductive careers as well as contraceptive and pregnancy decision making. Interview topics also included factors identified in previous research as having an influence on fertility intentions: women's age, number of children, partnership status and partner's intentions and the influence of family members. Additionally, factors hypothesized to affect intentions were

explored; these included: strength of desire for pregnancy, pregnancy-related affect, locus of motivation for fertility decision making, the ability to pursue educational and occupational opportunities and the ability of a woman to care for her family. The interview guide was finalized in English then translated into Spanish; random sections were then back translated to ensure accuracy of translation. The guide was pretested and revised prior to the start of data collection. Interviews were conducted by a local research assistant in a private location at each health facility; they lasted approximately one-half to three-quarters of an hour. Informed consent was obtained by all participants and an audio recording was made of each interview. All interviews were then transcribed and translated by the research assistant and reviewed by the author.

### **Data analysis**

Research questions guiding data analysis describe the fertility decision making process; specifically: attitudes towards the appropriate time to start, delay and stop childbearing; the benefits to delaying and stopping childbearing and the advantages and disadvantages of using contraception. Additionally, the salience of factors influencing, or thought to influence, individual fertility intentions were explored.

Transcripts were analyzed using ATLAS.ti 5.2 qualitative software to identify recurrent patterns and specific language regarding fertility decision making and motivation to avoid pregnancy. Analysis started with a thorough reading of transcripts by the author. Memos were then written to identify units of meaning, acknowledge the author's position in approaching the data and capture contextual considerations. Descriptive codes based on study goals were then created to identify central constructs and all data was then re-read and double coded. The second coder was a Spanish-speaking master's student in public health who had

worked in Honduras. Descriptive codes were refined as necessary while additional interpretative codes were added as nuances of the data emerged. Additional memos were written during the coding process and the findings were then organized and summarized. All data with the same code was sorted and principle themes and subthemes were identified along with textual evidence to support that theme. Data was then reduced to make the most essential concepts and relationships visible using matrices and diagrams. Finally, themes were interpreted to determine how they related to each other and illustrative quotes were identified to exemplify important themes. Data from both focus groups and individual interviews were analyzed separately and then merged according to research questions.

## **Results**

Results are presented in three sections; first, findings concerning the fertility decision making process including attitudes towards both the appropriate timing of pregnancy and contraceptive use. Next, qualitative perspectives on socio-economic factors found by previous research to influence fertility intentions are discussed. Finally, results on factors hypothesized to influence fertility intentions are presented.

### **The fertility decision making process**

Study participants discussed very specific ideas surrounding fertility decision making. Attitudes toward the initiation of childbearing identified a narrow range of time seen as appropriate for women to first have children. The late teens to early twenties, “*when one still has forces and is a young woman*” is seen as ideal. Pregnancy at too young an age (in the mid-teens) was viewed as inhibiting a woman’s ability to fulfill personal goals outside of pregnancy and “*embitter...life*”. Pregnancy at too late an age (late 30’s) was viewed as harmful to women’s health. To some women, planning the initiation of childbearing was not

a salient idea as becoming pregnant was seen as the natural, unquestioned consequence of falling in love or starting a relationship. In discussing the influences on her decision to have her first child one woman says:

“I fell in love, I fell in love and I didn’t think, well...in, in what was coming after, then I fell in love, and what had to happen happened.”

- Interview participant Santa Rosa de Copan

Women identified three major areas of preparation necessary prior to childbearing:

economic, career/education and relationship stability. They also noted that maturity is essential before childbearing starts.

“I think that the right moment to have children is when you are prepared with a career to get your children along or to find a good man, because men just want to take advantage of you get you pregnant and leave you, so I think that you get a career and you get along if you don’t stay with the man.”

- Focus group participant, 25 -44 year old group, Gracias

Women expressed specific attitudes towards the appropriate time to have subsequent children as well. The importance in postponing a pregnancy while children were young was emphasized and birth intervals of five to six years were seen as best. These intervals were seen as vital for the proper care of children and necessary to preserve women’s health and wellbeing.

“I do not recommend having them so [close together] because even the health deteriorates. My children are close together...and...I was crying because they were...three [so close together]. When one was asking for[a] meal, the different one peed and another pooped...and this is a disaster, it is a chaos in a house, to have the children [consecutively]. [It is] so much [work to take] care of them... one [becomes] careless with the children, the husband neglected for the children, it is a chaos.”

- Focus group participant, 25 -44 year old group, Tegucigalpa

“The body gets thin and you wear out. If you suffer with your children, this having and having children is a sacrifice, meanwhile if you distance them and plan well it is more happiness for us, we feel at peace and everything.”

- Focus group participant, 15-24 year old group, Santa Rosa de Copan

### **Attitudes towards contraception and contraceptive use**

Attitudes towards contraception were variable with women expressing the benefits of contraceptive use and confidence in their ability to use contraception to control their fertility as well as concerns over the safety and efficacy of family planning. These perceptions influenced women's fertility intentions directly as well as their ability to operationalize their intentions.

Contraception was widely seen as helping women care for themselves physically, emotionally and economically care for themselves. Despite the perceived potential for contraceptive use to improve women's wellbeing however, concern over side-effects and other negative health effects of contraception was widespread and viewed as a major contribution to both non-use and contraceptive discontinuation. Commonly reported side effects include: menstrual irregularities, weight gain or loss, headaches, acne or facial "spotting" (darkening of facial skin) and circulatory problems. Alleged complications with IUD use were especially common as were reports by women of men's dislike of condoms. The idea that each woman's body can respond differently to the same contraceptive method was widespread. Additionally, contraceptive use; especially prior to childbearing, was widely feared to cause infertility; this lead many women to report that contraception should only be used after having a child.

Interviewer: Why do you think that some people of this community that want to avoid pregnancies don't use the family planning methods?

Participant: For fear ... perhaps of what they have heard from other persons, that every type of contraceptive always has a reaction ... then that's why the majority of the persons do not use it.

- Focus group participant, 15-24 year old group, San Pedro Sula

Women were divided as to the efficacy of contraception with many expressing strong beliefs in the ability of family planning methods to prevent pregnancy and others expressing doubt. There were many factors seen as potentially compromising the efficacy of family planning.

Some women believed that while contraception worked for others, it could not control their fertility—the concept that some women were “*too fertile*” to prevent pregnancy despite contraceptive use was expressed. It was also common for women to report that contraceptive methods sometimes just did not work. The belief that God, not women, decides when a woman becomes pregnant was also articulated. Finally, user errors such as forgetting to use a method or not using it as prescribed were commonly cited causes of contraceptive failure.

Interviewer: Do you think contraception can help you avoid pregnancy or plan when to get pregnant?

Participant: Well, uh no, the truth is that contraceptives are not that safe because there are persons planning and suddenly [they] get pregnant without wanting to, then, many times it is safe and many times it is not

- Interview participant, Santa Rosa de Copan

Interviewer: Do you think women plan the number of children they would like to have?

Participant: The truth is that I wanted to have my children, I always wanted to have my five children, but not so early, but spread out, I am too fertile; although I was careful...I always got pregnant.

- Interview participant, Tegucigalpa

### **Qualitative perspectives on socio-economic factors influencing fertility intentions**

Several factors identified in quantitative research as influencing fertility intentions emerged as influential in this analysis. Specifically, the number of children a woman had, the influence of partners, and the role of a woman’s family emerged as significant factors influencing childbearing decision making process.

#### **Number of children**

Family size emerged as one of the central determinants of the formation of fertility intentions. Smaller families were the norm and two or, at the most, three, children were viewed as ideal.

Women felt that smaller families enabled them to take better care of their children, their husbands and themselves by ensuring the availability of adequate time and resources.

Smaller families reduced suffering and stress for women and improved the quality of a marriage or relationship.

“Now the parents advise us to have few children because my mother-in-law...had eleven children and she says that she was suffering with these eleven children... After she made the tortillas, she grabbed the rice and to grind it and to do an atolito (Honduran Idiom for a nutritious beverage) of rice for the smallest child who was left behind and although she wanted to give everything to the children she could not. That is why now she says a child or two is sufficient.”

- Focus group participant, 15-24 year old group, Gracias

“Let’s suppose that there are two children at home and they are better taken care of instead of four, right. They are better cared for by the husband. There is better attention, better stability in all aspects, economic and sentimental.”

- Interview participant, Tegucigalpa

### The role of partnerships on fertility decision making

Generally, women viewed themselves as responsible for family planning, childbearing decision making and raising children and they believed men thought the same. While social norms emphasize the importance of the presence of both a mother and father, single motherhood was common among participants. The quality of a woman’s relationship with her husband or partner also influenced childbearing decisions; those in troubled relationships often reported avoiding pregnancy while those in good relationships were frequently encouraged to become pregnant.

“You don’t live happy with your husband when the man is a drunk, if he has women on the streets (prostitutes). That is the moment when you have to plan and I won’t have more children because I see that I suffer with my husband and my children are going to suffer if I have more children with him. I better plan and I will have another if I see that I live well in my home, otherwise no.”

- Focus group participant, 15 -24 year old group, Santa Rosa de Copan

Interviewer: What can motivate a woman to become pregnant?

Participant: Well, sometimes, some of them because they do want it, they want children, then I say a good motivation would be having a good husband and good and responsible father, that can motivate us.

- Interview participant Santa Rosa de Copan

### Influence of extended family



Experience with and perception of contraception by family members, especially mothers and sisters, exerted a strong influence on women's contraceptive and childbearing behaviors. Parents were viewed as being responsible for educating daughters about sex and family planning and women widely reported that their families encouraged them to both avoid pregnancy and use contraception.

“...the feeling is to use that (contraception) and not get pregnant because as I have said, well, I can't make the decision without my father's consent and my mother's, brothers, from my sisters, because all the family is gathered around this.”

- Interview participant, Santa Rosa de Copan

“Look, about having children, they (the family) tell me that I am fine now and that I should protect myself, they say I should use contraceptives. Sometimes my mother, when I do not come to the medical appointments, or when it is close, she advises me, go, go, because it is not good to fill with children.”

- Interview participant, Tegucigalpa

These results validate the influence of factors identified by previous quantitative research on fertility intentions among this population. A woman's number of children, the influence of partnerships and the role of family were all found to be important influences on fertility intentions.

### **The role of new factors thought to influence fertility intentions**

The final section of results presents findings on women's responses to questions regarding the influence of selected areas hypothesized to influence fertility intentions.

#### **Pregnancy-related affect and strength of desire for pregnancy**

Pregnancy was commonly viewed as a time of anxiety and stress for women due to concerns over their health, life changes, finances and partners. Conflicting emotional reactions towards pregnancy were common and, in particular, unintended pregnancies were seen as emotionally and physically difficult for women. However, despite the expression of a range of feelings towards pregnancy, most women were unable to quantify their strength of

desire to avoid childbearing or describe how their feelings affected their plans for pregnancy. The belief that ultimately all pregnancies must be accepted, even if unwanted, was almost universal and the conviction that children bring happiness and a woman never regrets having a child, even if unintended, was broadly expressed.

“Once you are pregnant you must have it because if you have an abortion that is murder, then it is best to have them and thank God, afterwards we are happy to have them.”

- Interview participant, Tegucigalpa

“The first baby I wished because I was living with my husband...but the second baby I was planning and he came to me, then I am not going to say to him that I do not love it because I love my baby just as I love the other, they are my treasures, but one came to me without wanting it.”

- Focus group participant, 15 – 24 year old group, Tegucigalpa

#### Locus of motivation for fertility decision making

Study women expressed a variety of ideas concerning who made fertility decisions.

Although it was widely believed that fertility decisions should be made jointly with husbands or partners; many women reported making contraceptive use and childbearing decisions independently or even against their partner's preferences. Many women strongly believed they should be able to make decisions surrounding contraceptive use and pregnancy irrespective of their partner's opinions. Other women reported deciding to become pregnant to please their partners or because their partners had greater power in the relationship.

Interviewer: Who makes the decisions about whether you use contraception or become pregnant?

Participant: I do, because it is I who will have a baby...I talk to my mate, if I have one, talk with him and tell him...I tell him and if he doesn't agree I continue to plan.

-Interview participant, Tegucigalpa

Interviewer: Who made the decisions about whether you used contraception or became pregnant?

Participant: Practically, in our case, it was my partner and I, we always made these decisions together because communication has to be totally good, yes, because without dialogue between the couple there could be trouble if you make decisions on your own that are incumbent to both.

- Interview participant, Tegucigalpa

“We surrender to them and do not want to displease them, we always want to please them, meal...bed...everything and there it is where I say that we should be a little selfish because we are being ruined...”

- Focus group participant, 25-44 year old group, Tegucigalpa

“The problem is that sometimes the couple doesn’t agree, because we women want to plan but the husband doesn’t want to, and he doesn’t want to because he wants to have you tied down, confused and controlled.”

- Focus group participant, 15 – 24 year old group, Santa Rosa de Copan

### Women’s ability to pursue educational and occupational opportunities and care for their families

The perceived ability to pursue educational and occupational opportunities and the ability to care for family were found to be closely related in this population and both were seen as influential in decisions regarding pregnancy. The ability to care for family, particularly young children, was consistently reported as a very strong influence on women’s plans for pregnancy. The ability to care for family also influenced a woman’s desired family size, the timing of births and contraceptive use. Pregnancy and childbearing were seen as requiring women’s exclusive attention and it was common for women to forgo work and school for a period when their children were small or if they had many children. Resumption of work and school occurred when children became more independent. Women also reported difficulties getting or keeping work when they were pregnant. Given this it not surprising that the desire to work was often cited as a reason for avoiding pregnancy. Similarly, avoiding pregnancy allowed women to continue working and attending school. Many women reported that their primary motivation for avoiding pregnancy was to “*improve*” or “*progress*”—to become better able to provide for themselves and their children through enhanced educational and occupational opportunities.

“A woman with many children cannot develop, because I have a girl and I study and everything, and I start thinking that if I have more children I neither could study, nor

work, nor do everything of what I do and I have a goal of graduating, of having a title (degree) and everything and I already lack little to graduate and I start thinking that if I have more children, now I cannot, better I am going to avoid them and later I am going to enjoy a better economic situation and am going have the second child.”

- Focus group participant 15 – 24 year old group, San Pedro Sula

Interviewer: If a woman does not want to become pregnant, what do you think motivates her to not want to have a child or to want to avoid pregnancy?

Participant: She is not married, eh, wants to go back to school, wants to work, wants to progress first, wants to live in comfort to keep her child well.

- Interview participant, Santa Rosa de Copan

Women’s perceived ability to care for their families was also an important influence on contraceptive decision making. Using contraception was regarded as an important tool for improving women’s ability to care for their family—both their existing children and potential children who would be born if they did not use contraception. Women expressed concern over the difficulties in providing for children’s needs given the poor economic situation in Honduras and believed that the prevention of unintended pregnancy averted suffering caused by poverty that additional children would experience.

Interviewer= How do you feel about using contraception?

Participant= Well, I think, really, I imagine God illuminated the head of the one who invented them, right, because the truth is that this is something that helps us all, because this way children do not suffer, and I think this is excellent for me.

- Interview participant, Santa Rosa de Copan

## **Discussion and Conclusions**

This study enriches understanding of fertility intentions by using qualitative methods to explore childbearing decision making among a group of Honduran women. Factors influencing the formation and operationalization of fertility intentions were explored in focus group discussions and individual in-depth interviews with women recruited from public and non-profit health care facilities in four Honduran cities. Results were presented on the fertility decision making process, the influence of socio-economic factors found by quantitative research to influence fertility intentions, and women’s perspectives on new

factors hypothesized to influence plans for pregnancy. Study results validate the importance of socio-economic factors identified by quantitative research as influencing pregnancy intentions among this population. The role of these factors on intentions should be confirmed with additional qualitative and survey research. Two other factors: the strength of a woman's desire for childbearing and pregnancy-related affect were not found to be salient ideas to women's plans for childbearing in this population.

Previous research has identified noteworthy discrepancies between women's plans for pregnancy and their actual behavior, underscoring the need to understand both what influences women's intentions and what affects their ability to achieve these reproductive goals. Earlier research has not differentiated between these processes however and this study provides preliminary evidence that these are distinct and influenced by diverse factors. The formation of fertility intentions was shaped by strong social norms about when to initiate childbearing and the spacing of subsequent births. Ideas about ideal family size and the benefits of smaller families also played an important role in the formation of plans for pregnancy. Additionally, women's families influenced their ideas on contraceptive use and pregnancy. Similarly, concern with the time and resources necessary to properly care for children and partners exerted influence. Finally, a woman's desire to attend school or pursue occupational opportunities was found to play a part in her plans for pregnancy.

Additional factors were found to affect the achievement of fertility intentions with separate aspects facilitating and hindering the translation of intentions into behavior. Facilitating factors included: the ability to tolerate contraceptive side-effects and the ability to successfully use contraceptive methods. A strong individual locus of control, expressed as the beliefs that women are responsible for making childbearing decisions and can control

their fertility also positively affected the ability to realize fertility plans. Finally, the ability to pursue educational and occupational opportunities supported a woman's ability to achieve her fertility intentions; those study participants who expressed the desire to work or attend school were more likely to avoid pregnancy.

Factors that hindered the likelihood that intentions would be operationalized included inaccurate knowledge of family planning methods such as: the belief that some women are "too fertile" for family planning to work, perceptions that contraception does not work at times and the belief that family planning causes infertility. These beliefs likely contribute to inconsistent and incorrect use of family planning thereby limiting women's ability to effectively control their fertility. Changes in partnership status or the quality of a partnership were also found to hinder attainment of childbearing plans. Similarly related to partnerships, power dynamics and gender norms may further inhibit women's ability to achieve their fertility intentions. Previous research suggested that power imbalances between genders were common in Honduras and could negatively affect the achievement of fertility intentions; this study found evidence that women often feel pressured to make decisions regarding contraceptive use and pregnancy that their partners would be happy even when they conflict with their own plans, thereby potentially hindering the achievement of their reproductive goals.

Study findings also support the importance of examining both individual and community-level influences on childbearing plans. At the individual level factors relevant to fertility intentions include experience with contraceptive side effects and the ability to use family planning effectively. Family members' attitudes towards contraceptive use and pregnancy were also important. Individual women's ability to make childbearing decisions was another

important influence. Finally, desire for educational and occupational opportunities was found to be a significant influence at the individual level.

At the community levels several factors were found to influence the formation of childbearing plans. Social norms regarding when women should bear children and the notion that women are responsible for contraceptive and pregnancy decision making influences the plans women make for pregnancy. The idea that, whether they were intended or not, all children bring happiness influences women's motivation to operationalize their intentions. Gender norms giving men power in relationships and fertility decision making are another community-level factor. Opportunities for pregnant women and those with small children to work or attend school also have an effect on the plans for childbearing. Finally, the level of poverty in Honduras affects fertility decision making. Both individual and community level factors were found to influence fertility intentions and the use of focus groups to gather community level attitudes and in-depth interviews to identify individual level issues is a strength of this study.

Several factors not germane to the formation of fertility intentions were identified among study women. Cognitive plans for childbearing—such as those calculated by conventional measure of fertility intentions—varied by birth order with the planning of a first birth far less common than the planning of subsequent births. Norms regarding the correct time to bear children were fairly rigid with few women planning a first birth. Additionally, as childbearing was seen as the natural consequence of falling in love or getting married and contraceptive use was widely initiated only after a first child was born, woman's cognitive plans for childbearing contributed little to the formation of primary fertility intentions in this setting. This finding is supported by data from the DHS—over 69% of Honduran women had

one or more children when they first initiated contraceptive use. (52) While economic, career, educational and relationship factors did moderate the start of childbearing to some degree, cognitive planning for pregnancy generally occurred after the birth of a first child as attitudes towards correct family size and birth spacing exerted strong influences on subsequent fertility.

Additionally, two of the areas hypothesized to influence fertility intentions were not found to be strong influences among this study population. Pregnancy-related affect exerted only a modest effect on the formation of fertility intentions. While women expressed a range of positive and negative feelings towards pregnancy most were unable to articulate if and how these feelings would affect their plans for childbearing or to quantify their strength of desire to avoid pregnancy. As most women felt that all pregnancies, whether wanted or not, must be continued and would, ultimately, be viewed positively, both feelings towards pregnancy and the strength of desire for pregnancy did not appear to be a noteworthy influence on fertility intentions among this population.

These results support the existence of a continuum of fertility intentions and demonstrate variations in individual's level of motivation to avoid pregnancy. As multiple individual and community-level factors were identified as having an influence on fertility intentions and the formation of intentions was found to be influenced by different factors than the ability to operationalize those intentions; the use of simple categorical measures is likely to be unsuccessful at accurately predicting pregnancy. While fertility intentions are increasingly understood to include cognitive, affective and cultural components of a woman's plans for pregnancy before she becomes pregnant, conventional measures of intention remain largely based on cognitive reports of the timing of the pregnancy. (42)



The ability of these conventional measures of fertility intentions to predict pregnancy varies by the location of the research. Data from several studies conducted in the United States and other countries where family planning is well established find that very simple measures of pregnancy intentions are highly predictive of subsequent fertility. (2, 3, 16) In contrast, studies using developing country populations have yielded doubts regarding the validity of existing measures in predicting subsequent pregnancies. (15, 16) Though conventional measures of fertility intentions are considered a fair predictor of subsequent fertility at the population level in developed country populations, they remain imperfect for fully understanding and predicting future fertility. (14) Existing measures to predict fertility must therefore be improved, especially in developing country populations where community-level factors may exert more influence on plans for pregnancy.

These results are reflective of the specific population from which they were generated and, as qualitative data, they are not generalizable. Study findings reflect the beliefs and experiences of women seeking health care from public-sector health facilities in urban areas who may differ from women in rural areas, those who receive care from other types of facilities or those who do not seek health care services. However, this study provides a deeper, more nuanced exploration of factors affecting the formation and operationalization of fertility intentions among this population and suggests factors likely to influence fertility intentions among other Honduran women and women in other developing country settings. Validation of the influence of these factors would be necessary in other locations in order to confirm that the findings are relevant and appropriate in other settings.

This study makes several contributions to research on fertility intentions. First, it provides evidence that the formation and operationalization of intentions are distinct processes, influenced

by different factors. It also identifies both individual and community-level factors affecting intentions. The use of qualitative methods to explore factors identified in quantitative research as influencing intentions validates the importance of those factors in this population. Finally, results support the case for a multidimensional measure of intentions and suggest factors to include in such a measure. (22, 53, 54) Inclusion of factors identified by previous quantitative research as influencing fertility intentions including: women's age, marital or partnership status, partner's intentions and the influence of family members could improve the predictive power of measures of fertility intentions. The addition of assessments of women's attitudes towards contraception, the locus of motivation for fertility decision making, ability to pursue educational and occupational opportunities and perceived ability to care for family could further strengthen the measurement of fertility intentions. Consideration of these factors is likely to facilitate the development of an improved, multidimensional measure of fertility intentions which can enhance researchers' ability to predict pregnancy and ultimately contribute to the design of interventions to address unintended pregnancy.

## **CHAPTER 3**

### **Exploring Factors that Affect the Attainment of Women's Plans for Pregnancy: Efforts to Improve the Understanding and Predictive Ability of Fertility Intentions**

#### **Abstract**

Understanding women's fertility intentions is crucial for family planning and reproductive health research and programs. While simple measures of intentions predict pregnancy moderately well, discrepancies between women's stated intentions and their behavior are common and tools to predict fertility remain imperfect. Knowledge of factors that enable some women to successfully achieve plans for pregnancy while others fail to do so could advance understanding of unintended pregnancy, unmet need for family planning and contraceptive discontinuation. Using longitudinal data from 671 Honduran contraceptive users, aspects thought to positively influence the attainment of intentions were explored using factor analysis and a multi-dimensional measure of motivation to avoid pregnancy was proposed. This new measure was then compared to the standard measure of fertility intentions using multivariate logistic regression to see which predicted contraceptive continuation and pregnancy better. Three dimensions of motivation were identified: Control Locus, Expectations and Feelings. Decreased expectations to use contraception were found to diminish the chances of continuing contraceptive use; other dimensions of motivation were not found to be significant. Overall, the multidimensional measure of intentions performed similarly to the standard intention categories in the prediction of contraceptive use and pregnancy. Future research should explore the role of motivation among a wider population in order to further assess the role of attitudinal factors in fertility and contraceptive decision

making. Additionally, the interaction between motivation to avoid pregnancy and individual experience with contraceptive side effects should be explored. Improved knowledge of contraceptive and fertility decision making will increase understanding of unmet need for family planning, contraceptive discontinuation and unintended pregnancy and, ultimately, help determine how best to address these issues.

### **Introduction and Background**

There is an extensive body of literature on the determinants of fertility, including fertility intentions, and it is well established that individual intentions are significant predictors of fertility. (1-5, 13) As contraceptive use is the primary means through which women achieve their plans for pregnancy, fertility intentions are also vital for understanding contraceptive behaviors. Discontinuation of contraception for reasons other than the desire for pregnancy is a common event associated with serious negative reproductive consequences such as unmet need for contraception, unwanted pregnancy and induced abortion. (7, 9, 55, 56) Understanding the factors that influence contraceptive and pregnancy decision making could inform interventions to lower rates of discontinuation and unintended pregnancy and ultimately support couples in achieving their reproductive goals.

Fertility intentions are typically assessed with a simple measure—by asking an individual whether they want a child or more children and, if so, how long they would prefer to wait before their next child. Data from several studies conducted in the United States and other countries with high contraceptive prevalence rates find that simple statements about wanting more children are highly predictive of subsequent fertility. (2, 3, 16-18) A study by Schoen et al. found fertility intentions to be a strong and persistent predictor of fertility even after controlling for background and life course variables. Among this population of non-Hispanic

whites in the United States nearly 40% of those stating they were very sure they wanted to have a birth did not do so and over 10% of those who were very sure they did not want to have a birth had a child by five years later. (18)

Studies using developing country populations have yielded mixed results regarding the ability of simple measures of intentions to predict pregnancy. (15, 16) Using Morocco panel data Bankole and Westoff found that, of women wanting more children, 62% had given birth or were currently pregnant three years later and of those wanting no more children, 29% had given birth or were currently pregnant. (6) While desire for children was found to be strongly related to the likelihood of having a birth between the two surveys, fertility intentions still failed to predict behavior in nearly one-third of cases. In a prospective study using data from Malaysia by Tan and Tey, only 12% of women who answered “no” to the question “Do you want to have any (more) children?” had a subsequent birth over a three year period while 40% of those unsure whether they wanted another child had a birth and more than half of those wanting another child gave birth within three years. (16)

While the predictive ability of simple measures of intention is quite good at the population level, understanding of intentions remains imperfect. Evidence from the United States reveals the inability of conventional measures of intention to capture pregnancies that women view as problematic. (3, 22) Research by Trussell et al. found that only 59% of women stating that a pregnancy following a contraceptive failure was unintended reported feeling unhappy or very unhappy about the pregnancy, while 25% of women reported they were happy or very happy. (36) Similarly, research by Sable and Libbus found that almost half (48%) of women obtaining a pregnancy test and stating that a pregnancy would be unintended, reported that they would be somewhat or very happy about that pregnancy. (29) A study by Speizer

exploring women's ambivalent fertility desires in Burkina Faso, Ghana and Kenya provides similar evidence in the developing world. Using DHS data, Speizer found that between 25% and 43% of women who stated that they wanted to delay or stop childbearing reported that it would be no problem or a small problem if they got pregnant in the next few weeks.(38) Evidence that women report happiness at pregnancies not planned for and, less commonly, dismay at those that were deliberate demonstrates the existence of ambivalence in fertility intentions. Together with data demonstrating the importance of the strength with which women hold intentions on the attainment of those preferences these findings highlight the need for more nuanced knowledge and measurement of intentions. (37)

Discrepancies between women's stated fertility and contraceptive intentions and their reproductive behavior are common (14, 15) and unintended pregnancy and unmet need for contraception remain all too frequent. For some women, changes in the circumstances of their lives over time such as alterations in marital status or the death of a child may account for discrepancies between their stated intentions and actual behavior. (31) For others, intentions may not predict fertility behaviors consistently because they do not take into consideration the full range of dimensions to fertility preferences. Although fertility behaviors are understood to be the result of a complex mix of traits and intentions, women's plans for childbearing are typically measured with a single question on cognitive plans for childbearing. (12, 36) A growing body of evidence supports the influence of cognitive, affective and cultural elements of a woman's plans for pregnancy. Simple categorical measures of intention remain common however, despite increasing calls for multidimensional measures of intentions. (22, 42, 53) Understanding and assessing attitudinal factors that help women act upon their stated intentions could provide a more

nuanced understanding of fertility decision making. Attitudinal factors, including variation in desire for pregnancy, are also thought to be key to understanding contraceptive discontinuation. (7, 10, 31, 57) A more nuanced understanding of the influences on contraceptive and pregnancy decision making could improve the understanding and prediction of fertility behaviors over measures of intention alone.

Several factors internal to individuals are known or hypothesized to influence plans for future fertility and contraceptive use. As feelings towards pregnancy can differ from cognitive plans for childbearing, an important complement to the cognitive element of women's plans for childbearing captured in the standard measure of fertility intentions is *pregnancy-related affect*. (39, 42) Additionally, as a connection has been established between the intensity with which intentions are held and future fertility, the *strength of desire to avoid pregnancy* could also affect the translation of intentions into behavior. (7, 18, 30) A woman's *contraceptive intentions* are another internal factor likely to affect the translation of fertility and contraceptive intentions into behavior. (37, 40, 41) Finally, an individual's *locus of motivation* for contraceptive and fertility decisions is thought to be an important internal influence on the formation and execution of intentions. The importance of locus of motivation is supported by Self Determination Theory which posits that more autonomously regulated behaviors are more likely to be continued, be performed with greater care and quality and to be accompanied by more positive experiences than those behaviors that are reinforced externally. (34, 35)

An additional group of factors that could affect the translation of intentions into behaviors relates to women's perceptions of their capability to deal with the circumstances of their lives. The *ability to pursue educational and occupational opportunities* captures the

extent to which a woman feels that childbearing could affect her ability to engage in educational and occupational endeavors. Support for the importance of factors relating to life opportunities comes from Miller and Pasta who hypothesize that fertility intentions take into account both an individual's antecedent personal desires, as well situational factors, such as schooling or work, which impose additional constraints on behavior. (12) Occupational and educational opportunities might also affect fertility intentions and their operationalization indirectly through their influences on women's economic status. (17) Similarly, the *ability to care for family* could affect the operationalization of fertility and contraceptive intentions as perceived difficulty in caring for family generally increases with family size. Typically, desire for children decreases as a woman's number of children rises and, generally, women are more likely to report births as unintended as their family size increases. (16, 17, 21)

Finally, the expectations of partners and family members are important considerations to women's ability to achieve their plans for childbearing. Previous research has identified *partner expectations* as having an effect on both women's pregnancy intentions and the probability of having a birth. (18, 22-25) *Expectations of family members*, particularly parents-in-law, can also influence a woman's fertility and contraceptive preferences. (28) The decision to initiate behaviors to become pregnant has also been found to occur sooner when individuals perceived their parents as being in favor of them having a child. (29)

Improved understanding of how and why women act upon their stated fertility and contraceptive intentions is needed. A more nuanced measure of women's plan for childbearing would improve understanding of unintended pregnancy, unmet need for contraception and contraceptive discontinuation. Knowledge of factors that influence women's desire to avoid pregnancy and their relative importance could help identify and



target potential interventions to prevent unintended pregnancy. Understanding “demand side” influences on pregnancy prevention is an important complement to “supply side” influences such as the availability of contraceptive commodities and trained healthcare providers. An improved measure of fertility intentions that could identify whether and to what degree women want to avoid pregnancy as well as the relative importance of specific influences on intentions would enable researchers to test their knowledge of factors affecting contraceptive and fertility intentions.

This study aims to increase understanding of fertility and contraceptive plans by examining a set of factors thought to influence how women act or do not act on their intentions. Improved understanding of influences on fertility decision making is expected to improve the prediction of contraceptive continuation and pregnancy, thereby verifying our understanding of influences on contraceptive and childbearing decision making. Specifically, this study:

- Proposes a new, multi-dimensional construct for evaluating additional dimensions of women’s fertility intentions
- Quantitatively tests whether the proposed multi-dimensional measure can be used to calculate a single measure of motivation to avoid pregnancy, an unobservable variable
- Tests if this measure predicts contraceptive use and pregnancy better than the conventional means of assessing fertility intentions

The authors know of no other research that explores women’s motivation to avoid pregnancy by assessing multiple attitudinal dimensions of intentions that could influence the translation of plans for pregnancy into behavior.

### **Data and Methods**

Data for this study come from the *Study of Service Quality, Motivations to Use Contraception and Contraceptive Continuation in Honduras* conducted by MEASURE

Evaluation. The goal of the original study was to determine how the family planning service environment, experience with and fear of side effects and individual characteristics affect contraceptive continuation. Honduras was selected for the study because it has a relatively high contraceptive prevalence rate, including high prevalence of female, reversible contraceptive methods and low HIV prevalence. (50) Data on the elements thought to influence fertility intentions comes from the baseline data, information on the outcomes of interests comes from the one-year follow up survey.

While data come from a study of contraceptive use and continuation and therefore focus on intention to use contraception, this data is also valuable for evaluating fertility intentions. Family planning use and fertility intentions are closely linked and contraceptive use is the primary way that fertility intentions are operationalized. Ambivalence towards pregnancy can translate into inconsistent contraceptive use and many women must make a trade-off between desire to avoid pregnancy and concern over use of family planning, especially side effects. Successful achievement of intentions represents the resolution of the competing desires to avoid pregnancy and avoid side effects. Furthermore, as motivation to avoid pregnancy is thought to be a factor in contraceptive discontinuation (7, 10, 31, 57), a population of family planning users is also appropriate for investigating motivation to avoid pregnancy. (33)

Study sites included four cities selected to capture a range of population and diversity of available contraceptive services: Tegucigalpa, San Pedro Sula, Santa Rosa de Copan and Gracias. (See Figure 1: Map of Honduras and Study Sites) Tegucigalpa and San Pedro Sula are the two largest cities in Honduras and offer a greater diversity of contraceptive services while Santa Rosa de Copan and Gracias have smaller populations and offer fewer contraceptive options.

**Figure 3-1: Map of Honduras and Study Sites**



Exit interviews were conducted with 800 women between the ages of 15 and 44 receiving family planning services at 13 facilities run by the Ministry of Health and the Family Planning Association of Honduras (ASHONPLAFA). These two types of facilities are the main facility-based providers of contraceptive methods in Honduras. With the help of facility personnel, eligible women waiting for appointments were identified using a recruitment form. Informed consent was obtained from each participant and interviews were conducted in a private location.. The questionnaire included background characteristics, birth and contraceptive histories, perceptions of service quality and questions on motivation to use contraception to avoid pregnancy. At the end of each interview contact information was obtained from women agreeing to be interviewed again one year later. Baseline interviews were conducted in October and November, 2006. (58) Follow-up interviews included questions on contraceptive use in the year following the exit interview, current contraceptive use, experience with side effects, motivation to use contraception to avoid pregnancy and current fertility intentions. Eighty-four percent (671) of women from exit interviews

completed follow-up interviews; only data from women completing both the exit and follow-up interviews are included in this analysis.

### **Exploratory Factor Analysis**

This study explored multiple dimensions of fertility intentions in order to understand what factors motivate women to successfully achieve their fertility intentions. Factors thought to positively influence the attainment of intentions were explored using factor analysis. A review of the literature on fertility intentions provided guidance on elements associated with fertility intentions which could potentially affect the translation of intentions into behavior and should be considered for inclusion in a multi-dimensional construct of motivation to avoid pregnancy.

Eight elements thought to affect women's ability to achieve their fertility intentions are included in the measure of motivation to avoid pregnancy: *family care*, *locus of motivation*, *pursuit of opportunities*, *family expectations*, *partner expectations* and *contraceptive intentions*, *pregnancy-related affect* and *strength of desire to avoid pregnancy*. (See Table 1) As motivation can not be measured directly, variables whose value can be observed and measured are used to approximate motivation.

Questions used to measure each element are listed in Table 1. All were measured using a 5-point Likert scale (1 – Strongly agree, 2 - Moderately agree, 3 - Neither agree nor disagree, 4 - Moderately disagree, 5 - Strongly disagree) except *pregnancy-related affect* which was measured on a three-point scale. An exploratory factor analysis using the principle factor method was used to examine the underlying dimensions among the eight proposed elements. The degree to which the latent variable of motivation explained the observed data and the degree of purely random or unique variance for each observed variable was calculated. (59)

According to the standard guideline of 5-20 cases per parameter estimate, sample size was more than adequate for this analysis.

**Table 3-1: Proposed Elements of Motivation to Avoid Pregnancy**

<b>Element</b>	<b>Assessment Question</b>
<i>Family Care</i>	- Using contraceptive allows me to give better care to my family
<i>Locus of Motivation</i>	- Using contraception allows me to control when I get pregnant.
<i>Pursuit of Opportunities</i>	- Using contraception allows me to pursue educational and/or employment opportunities.
<i>Family Expectations</i>	- My family expects me to use contraception.
<i>Partner Expectations</i>	- My husband/partner expects me to use contraception.
<i>Contraceptive Intentions</i>	I will use (my current method of) contraception to avoid becoming pregnant within the next 12 months.
<i>Pregnancy-related Affect</i>	In the next few weeks, if you discovered that you were pregnant, would that be a big problem, a small problem, or not problem for you?
<i>Strength of Desire to Avoid Pregnancy</i>	I am using contraception because there are negative consequences to getting pregnant right now.

A correlation matrix was created from the eight elements of motivation and the degree of correlation between variables was determined. Three factors had Eigenvalues greater than one and, according to convention, were retained. (See Table 2) These three factors accounted for 54.5% of the variance that is shared with other variables in the factor analysis. These three factors were then extracted from the matrix and rotated to determine factor loadings, the correlation between each factor and the eight variables proposed as elements of motivation.

**Table 3-2: Eigenvalues and Cumulative Variance**

<b>Factor</b>	<b>Eigenvalue</b>	<b>Cumulative Variance</b>
Factor 1	1.87737	0.2347
Factor 2	1.32572	0.4004
Factor 3	1.16048	0.5454
Factor 4	0.86890	0.6541
Factor 5	0.77436	0.7509
Factor 6	0.75854	0.8457
Factor 7	0.69421	0.9324
Factor 8	0.54041	1.0000

Factor loadings identified three dimensions of motivation, Control Locus, Expectations and Feelings (See Table 3) In order to predict contraceptive continuation and pregnancy using regression analyses, values for these three dimensions were made by creating a scale for each factor. As the factor loadings were similar for all the variables comprising each of the three factors, the variables were considered to be equally weighted. A numerical value for each dimension was created for every participant by averaging the value of the Likert-scaled responses to the questions that loaded with (i.e. were statistically related to) each other. For example, values of *family care*, *locus of motivation* and *pursuit of opportunity* were averaged to obtain one value for the dimension Control Locus. Values of “don’t know” were recalculated as a 3 (“neither agree nor disagree”). For those women with no partner, the value of *partner expectations* were recoded as a 3 (“neither agree nor disagree”) to represent no partner effect.

**Table 3-3: Rotated Factor Loadings**

<b>Element</b>	<b>Factor 1 Control Locus</b>	<b>Factor 2 Expectations</b>	<b>Factor 3 Feelings</b>
<i>Family care</i>	0.7841	0.1317	- 0.0191
<i>Locus of motivation</i>	0.7481	-0.0349	0.1015
<i>Pursuit of opportunities</i>	0.7143	0.0292	0.0401
<i>Family expectations</i>	-0.0402	0.7256	-0.0145
<i>Partner expectations</i>	0.1218	0.7179	-0.1695
<i>Contraceptive intentions</i>	0.0985	0.6072	0.3382
<i>Strength of desire</i>	0.0996	-0.0061	0.7371
<i>Pregnancy-related affect</i>	-0.0159	-0.0307	0.7159

The dimension accounting for the greatest amount of variance between variables, Control Locus was created from responses to the questions on *family care*, *locus of motivation* and *pursuit of opportunities*. Thus, Control Locus reflects the degree to which a women can control key elements of her life—when she becomes pregnant, her ability to care for her family and her ability to pursue educational and occupational opportunities. The second

dimension, Expectations is comprised of *family expectations*, *partner expectations* and *contraceptive intention*, and represents the degree to which women expect and are expected to use contraception. A third and, according to the Eigenvalue, less important dimension, Feelings refers to a woman's feelings toward pregnancy and the strength with which she holds them and is comprised of *strength of desire* and *pregnancy-related affect*.

### **Multivariate logistic regression**

Multivariate logistic regression was used to compare standard pregnancy intention categories and the identified factors of motivation on their ability to predict two outcomes: contraceptive continuation and pregnancy. The standard pregnancy intention categories were defined as: those women who want a child now (within two years), those who want a child later (more than two years from now), those who do not want a child or any more children, and those who are unsure or undecided. Control Locus, Expectations and Feelings, the three factors of motivation identified by the factor analysis, were the independent variables in the other set of regression models. Contraceptive continuation was defined as continuous use of any method of contraception between the initial interview and the follow-up; therefore, those that continued contraceptive use were coded as a one and those that discontinued or become pregnant were coded as a zero. Pregnancy was defined as pregnancy or childbirth during the follow-up period. Two models of continuous contraceptive use were estimated, one with the standard pregnancy intentions categories as the independent variables and one with the factors of motivation. Two models of pregnancy were also estimated to compare the influence of intentions or motivation on pregnancy. Socio-demographic factors including parity, age, educational status, place of residence, religion, marital status, household income

made by the participant and contraceptive method at baseline were controlled for. (See Table 4)

Logistic regression analyses were used and for each outcome of interest the two models were compared to determine which predicted the outcome of interest better. While there are no formal statistical tests for comparing the fit of two non-nested models the size, direction and significance of the effect of the key independent variables on the outcome were examined. Statistical significance was set at  $p=0.05$  and z tests were used to test the significance of parameters. The log likelihood and chi-squared for each model were also compared. Finally, the degree to which variation in the dependent variable was explained by the model was calculated using the pseudo R-squared statistic.

## **Results**

Demographic characteristics of study participants are described in Table 4. While approximately half of participants were recruited from the two larger cities (Tegucigalpa and San Pedro Sula) and half from the two smaller sites (Santa Rose de Copan and Gracias) study participant were overwhelmingly urban in residence as expected since participants were recruited in urban areas. The mean age of participants was 24.8; slightly less than half were Catholic and most were cohabitating but not officially married. The population was fairly well educated with 57% attaining secondary education. Monthly income earned by the participant varied widely with a mean of 4074 Lempiras (approximately \$216). All but 3% of study participants had given birth with 41% having one child and 50% having two to four children.



**Table 3-4: Selected Participant Demographics at Baseline**

	<b>% Study Participants (N = 679)</b>
<b>Study Site</b>	
Tegucigalpa	24
San Pedro Sula	23
Santa Rosa de Copan	37
Gracias	16
<b>Place of residence</b>	
Urban	80
Rural	20
<b>Age</b>	
15 – 19	21
20 -24	34
25 - 29	26
30 - 34	13
35 - 39	4
40 – 44	3
<b>Religion</b>	
Catholic	45
Protestant	35
Other	20
Nothing	1
<b>Marital Status</b>	
Married	22
Living with a man	72
Not in union	6
<b>Highest level of education</b>	
None	6
Primary	16
Secondary	57
Post-secondary	21
<b>Parity</b>	
0	3
1	41
2-4	50
More than 5	6

At baseline, approximately half the sample was women who were continuing users of IUDs, injectable contraceptives or contraceptive pills; the other half was women who started one of these three contraceptive methods for the first or for the first time after a period of

discontinuation on the day of the baseline interview. At baseline, the sample was heavily weighted towards injectable contraceptive use with 72% of participants using this method; 21% used IUDs and 7% used contraceptive pills (data not shown).

Figure 2 depicts study participants' baseline desire for children according to the standard categories of fertility intentions. A range of intentions was present among study participants; approximately one-half reported wanting a child more than two years from now with another third not wanting a child. There are subtleties in the intentions of study women not captured by these conventional measures however; nearly one-quarter of women who do not want children, or more children, said it would be no problem if they became pregnant in the next few weeks.

**Figure 3-2: Participant's Desire for Children at Baseline**

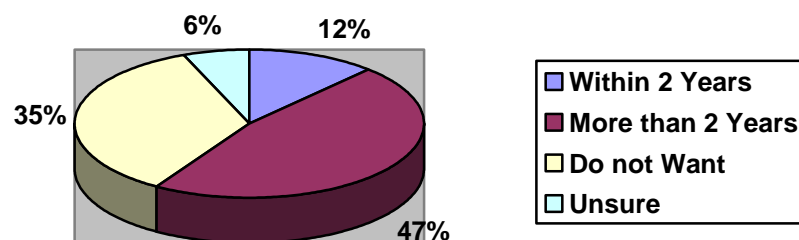
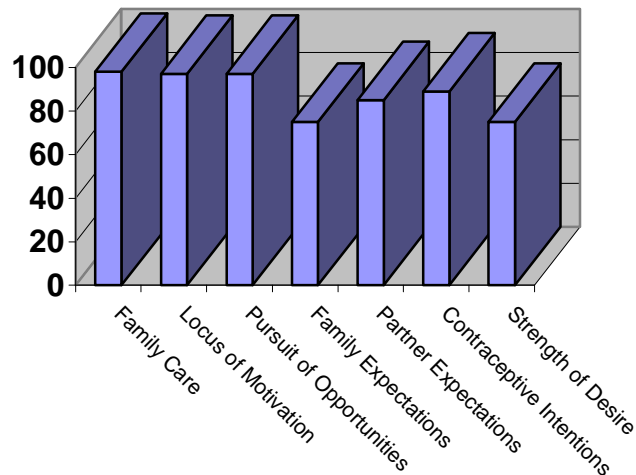


Figure 3 shows the distribution of the proposed elements of motivation at baseline. The vast majority of women agreed or strongly agreed with the statements on the relative importance of *pursuit of opportunities*, *family care* and *locus of motivation*. Slightly more variation existed in responses to *partner expectations* and *contraceptive intentions* elements. *Strength of desire* and *family expectations* displayed the most variation with approximately three-quarters of women agreeing or strongly agreeing with statements about the importance

of these elements. *Pregnancy-related affect* is not included in the chart as it is based on a 3-point scale and the other elements are based on a 5-point scale.

**Figure 3-3: Percent Women Strongly or Moderately Agreeing with Selected Elements of Motivation at Baseline**



Average values for the three dimensions of motivation were similar. Control Locus, the dimension of motivation accounting for the greatest amount of variance between variables, ranged from 1 to 5 with a mean of 1.80 and a standard deviation of 0.40. The Expectations scale ranged from 1 to 5 with a mean 1.99 and standard deviation 0.61 and the Feelings scale ranged from 1 to 4 with a mean of 2.06 and a standard deviation of 0.83 (data not shown).

Nearly three-quarters (72%) of participants used a contraceptive method continuously throughout the follow-up period with the remaining one-quarter (27%) discontinuing contraceptive use (data not shown). Only 8% of women became pregnant during the follow-up; 37% of whom reported becoming pregnant while using a contraceptive method. Women who became pregnant are considered to have discontinued, even if they became pregnant while using contraception. The main reasons for discontinuing baseline contraceptive method

included: reduced need for contraception (25%), method failure (4%), problems with method (62%), service access and quality issues (2%), and other reasons<sup>2</sup> (7%).

### **Multivariate logistic regression modeling**

Multivariate logistic regression was used to examine the association between the dimensions of motivation or the standard pregnancy intentions categories and two fertility behaviors—continued contraceptive use or pregnancy at follow up—controlling for demographic variables. Models 1 and 2 examine contraceptive continuation; in Model 1, the independent variables are dimensions of motivation, Model 2 uses the standard intention categories. In Model 1 only one of the motivation dimensions, Expectations, was a significant predictor of contraceptive continuation after controlling for demographic variables. Decreased expectations to use contraception diminished the chances of continuing contraceptive use; for each decrease of 1 on a 5-point Likert scale, the odds of continuing contraceptive use diminish by 0.43 (95% confidence interval 0.42 – 0.78) (See Table 5) The other dimensions of motivation were not significant. Having no children was a significant predictor of contraceptive continuation; nulliparous women reduced their odds of continuing contraceptive. Women living in urban area (OR=1.73, 95% confidence interval 1.09 – 2.74) and those using an IUD at baseline (OR=2.94, 95% confidence interval 1.68 – 5.14) all had greater odds of continuing contraceptive use. Other demographic variables were not significant at the  $p=0.05$  level.

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<sup>2</sup> Other reasons included: missed appointment (2%) husband/partner does not approve (1%) and others reasons (4%).

**Table 3-5: Multivariate Logistic Regression Modeling of Contraceptive Continuation**

	<b>Model 1 Dimensions of Motivation (N= 668)</b>		<b>Model 2 Standard Intention Categories (N=668)</b>	
<b>Variable</b>	<b>Odds Ratio</b>	<b>95% CI</b>	<b>Odds Ratio</b>	<b>95% CI</b>
<b>Intention Status</b>				
Want Now	NC	NC	0.46**	0.26 – 0.83
Want Later	NC	NC	1.36	0.86 – 2.15
Unsure	NC	NC	1.43	0.63 – 3.25
<b>Dimensions of Motivation</b>				
Control Locus	1.24	0.77 – 2.00	NC	NC
Expectations	0.57**	0.42 – 0.78	NC	NC
Feelings	0.96	0.77 – 1.20	NC	NC
<b>Demographic Variables</b>				
Ages 15 – 24	1.11	0.72 – 1.71	1.06	0.69 – 1.65
Ages 35 – 44	2.44	0.96 – 6.20	2.30	0.91 – 5.78
Parity 0	0.37*	0.14 – 0.97	0.43	0.16 – 1.14
Parity 2 – 4	0.91	0.58 – 1.40	0.94	0.59 – 1.48
Urban residence	1.73*	1.10 – 2.74	1.69*	1.06 – 2.69
Secondary Education	0.85	0.53 – 1.35	0.92	0.58 – 1.47
Post-Secondary Education	1.06	0.59 – 1.90	1.25	0.70 – 2.24
Living Together	1.32	0.85 – 2.05	1.17	0.75 – 1.83
Single	0.93	0.410– 2.10	0.68	0.31 – 1.51
Protestant Religion	0.91	0.60 – 1.38	0.87	0.57 – 1.31
No Religion	1.07	0.64 – 1.79	1.11	0.67 – 1.86
Mid-low Income	0.99	0.62 – 1.59	1.03	0.64 – 1.65
Mid-high Income	1.06	0.62 – 1.78	1.08	0.64 – 1.84
High Income	1.08	0.63 – 1.82	1.06	0.62 – 1.79
Pill use at Baseline	1.05	0.52 – 2.13	1.04	0.51 – 2.10
IUD use at Baseline	2.94*	1.68 – 5.14	2.89*	1.64 – 5.08

NC = not calculated for this model

\*Significant at  $p \leq 0.05$ \*\*Significant at  $p \leq 0.01$ 

In Model 2, wanting a child within the next two years was a significant predictor of contraceptive continuation after controlling for demographic variables; compared to those women not wanting children or more children, those women who wanted a child within the next two years reduced the odds of continuing contraceptive use by 0.54 (95% confidence interval 0.42 – 0.78). The other standard pregnancy intention categories were not found to be

significant predictors of contraceptive continuation. As with the motivations model, women living in an urban area (OR 1.70, 95% confidence interval 1.09 – 2.74) and those using an IUD at baseline (OR 2.89, 95% confidence interval 1.68 – 5.14) had greater odds of continuing contraceptive use. Other demographic variables were not significant at the  $p < 0.05$  level.

Models 1 and 2 are very similar in their ability to predict contraceptive continuation with neither model demonstrating strong predictive power. In each model the size, direction and significance of the effect of the common independent variables on the outcome was comparable. The likelihood ratio chi-squared for both Models can be compared as they have the same degrees of freedom; accordingly, Model 2 (LR chi-squared = 59.72) is found to predict contraceptive use better Model 1 (LR chi-squared = 57.21); however the difference is slight. Both Models 1 and 2 are statistically significant overall with a p-value of less than 0.000. While caution is often appropriate when interpreting the pseudo R-squared, it is valid and useful here as it is used to evaluate multiple models predicting the same outcome using the same sample. Using McFadden's pseudo R-squared, Model 2 (Pseudo R-squared = 0.0759) is slightly better at predicting contraceptive continuation than Model 1 (Pseudo R-squared = 0.0727).

Models 3 and 4 were estimated to predict pregnancy; Model 3 uses the dimensions of motivation as the independent variables and Model 4 uses standard intention categories. None of the dimensions of motivation or the pregnancy intentions categories were significant. (See Table 6) In both models the only significant control variable was IUD use—a highly effective and long acting method that would prevent almost all pregnancies.

**Table 3-6: Multivariate Logistic Regression Modeling of Pregnancy**

	<b>Model 3 Dimensions of Motivation (N= 668)</b>		<b>Model 4 Standard Intention Categories (N=668)</b>	
<b>Variable</b>	<b>Odds Ratio</b>	<b>95% CI</b>	<b>Odds Ratio</b>	<b>95% CI</b>
<b>Intention Status</b>				
Want Now	NC	NC	1.39	0.57 – 3.36
Want Later	NC	NC	0.54	0.25 – 1.16
Unsure	NC	NC	1.13	0.36 – 3.51
<b>Dimensions of Motivation</b>				
Control Locus	0.50	0.24 – 1.01	NC	NC
Expectations	1.40	0.89– 2.21	NC	NC
Feelings	1.18	0.84 – 1.66	NC	NC
<b>Demographic Variables</b>				
Ages 15 – 24	0.90	0.45 – 1.82	0.92	0.46 – 1.85
Ages 35 – 44	0.27	0.03 – 2.18	0.27	0.03 – 2.21
Parity 0	3.39	0.96 – 12.03	2.38	0.66 – 8.57
Parity 2 – 4	1.16	0.56 – 2.39	0.94	0.45 – 1.98
Urban residence	1.00	0.47 – 2.14	1.00	0.47 – 2.15
Secondary Education	1.18	0.54 – 2.59	1.21	0.55 – 2.63
Post-Secondary Education	0.90	0.33 – 2.43	0.84	0.31 – 2.24
Living Together	0.84	0.42 – 1.67	0.90	0.45 – 1.81
Single	0.19	0.02 – 1.63	0.21	0.25 – 1.75
Protestant Religion	0.89	0.46 – 1.72	0.96	0.50 – 1.85
No Religion	0.54	0.21 – 1.41	0.50	0.20 – 1.30
Mid-low Income	0.52	0.223– 1.18	0.54	0.23 – 1.22
Mid-high Income	0.59	0.25 – 1.43	0.67	0.28 – 1.60
High Income	0.80	0.36 – 1.79	0.83	0.37 – 1.86
Pill use at Baseline	1.16	0.42 – 3.19	1.16	0.43 – 3.11
IUD use at Baseline	0.24*	0.07 – 0.79	0.24*	0.07 – 0.80

NC = not calculated for this model

\*Significant at  $p \leq 0.05$

Models 3 and 4 are again similar overall with neither appearing to fit the data well.

According to the likelihood ratio chi-squared, Model 3 (LR chi-squared =31.71) predicts pregnancy approximately as well as Model 4 (LR chi-squared =31.48). Both Models 1 and 2 are statistically significant overall with a p-value of less than 0.05. Using McFadden's

pseudo R-squared, Model 3 (Pseudo R-squared = 0.0856) is slightly better at predicting pregnancy than Model 4 (Pseudo R-squared = 0.0850).

### **Discussion and Conclusions**

While standard measures of fertility intentions predict pregnancy moderately well, unintended pregnancy remains common. Knowledge of factors that enable some women to successfully operationalize their fertility intentions while others fail to do so could improve understanding unintended pregnancy, unmet need for contraception and contraceptive discontinuation and contribute to efforts to address these issues. This study explored multiple dimensions of intentions in order to understand what factors help women to operationalize their plans for pregnancy. Factor analysis was used to identify the underlying dimensions of motivation to avoid pregnancy and regression analyses were then used to compare these dimensions of motivation to the standard measure of fertility intentions to see which better predicted continued contraceptive use and pregnancy among a sample of contraceptive users.

Factor analysis revealed three dimensions of motivation—Control Locus, Expectations and Feelings—each distinct and uncorrelated with the others. The literature on fertility intentions is consistent with the claim that these dimensions play a role in women's plans for pregnancy.(7, 11, 12, 18, 30, 31, 39) Expectations were a significant predictor of contraceptive continuation; decreased expectations to use contraception were found to diminish the chances of continuing contraceptive use. Overall however, these results do not provide support for the hypothesis that consideration of these dimensions of motivation to avoid pregnancy improves the prediction of contraceptive continuation and pregnancy over the standard intentions categories. While both the motivation and standard intentions models were significant overall, the models were similar in their ability to predict contraceptive



continuation and pregnancy and regression analyses did not confirm an advantage of using the dimensions of motivation.

Results revealed limited variability in the measures of motivation among contraceptive users. The proportion of participants agreeing or strongly agreeing with the importance of the eight elements of motivation to avoid pregnancy was very high (see Figure 3); consequently, variation in the three dimensions of motivation (Control Locus, Expectations and Feelings) was restricted. Additionally, the distribution of mean scores of the dimensions of motivation was similar between those who became pregnant and those who did not as well as for those women who discontinued contraceptive use and those who did not. These particular measures of intention are not therefore very useful for further explaining why some women continue contraceptive use or become pregnant and others do not.

This study examined attitudinal factors associated with contraceptive continuation and pregnancy among a clinic-based sample of contraceptive users; as such the sample differs in several ways from Honduran women in general and may explain the lack of variation in motivation to avoid pregnancy. Contraceptive prevalence among the general population of Honduran women is 65%. Additionally, the contraceptive method mix among study participants differed from the general population.. (52) Pill users were underrepresented in the sample with only 7% of study women; this is likely due to the fact that pills are available at pharmacies in Honduras but study women were recruited in health facilities. Method choice has been found to be related to contraceptive discontinuation (60) with women using those methods requiring passive use and active discontinuation, such as the IUD, less likely to discontinue than those women using methods requiring active use and passive discontinuation such as the pill. Similarly, an individual's method choice is likely to be

associated with their level of motivation to operationalize fertility intentions. It is possible that those individuals adopting long-acting methods such as IUDs and injectables are more motivated to prevent pregnancy and less ambivalent than those using methods that can be easily discontinued such as pills. If this is true, study data would be represent women with higher levels of motivation than a method mix favoring pills. In addition, discontinuation rates were lower among study participants than among contraceptive users in the general population; one-quarter of study women discontinued the use of all methods by one year compared to 12-month all reason, all method discontinuation rates throughout Latin America ranging from 31-53%. (61) These factors may also contribute to the lack of variation in levels of motivation among the study's sample.

Future research should investigate the role of these dimensions of motivation on women's ability to operationalize their intentions in a wider population, including women not using contraception. There may be a threshold effect such that attitudinal factors influence the transition from contraceptive non-use to use but are less important among women already using contraception. Additionally, as the transition to contraceptive use may reduce variation in motivation to avoid pregnancy, assessing motivation among a larger, more diverse population might be more effective for investigating the influence of attitudinal variables on unintended pregnancy.

There are other possible explanations for the lack of significance of the elements of motivation. First, there may be other elements of motivation that discriminate better between women and could improve the prediction of fertility behaviors. The questions used in this study to assess motivation to avoid pregnancy may not be nuanced enough to capture variability between women either because the questions are too simplistic or because they are

not measuring the right aspects of motivation. Dissimilarity in the ability to operationalize fertility intentions may be difficult to capture and variation could be influenced by individual psycho-social variations, changes in circumstances of women's lives or interactions between these two. More complex psychological instruments may be needed to identify self-efficacy or other psycho-social variables that could classify women who are likely to discontinue and/or become pregnant. It is also possible that the underlying hypothesis that multiple factors affect women's ability to operationalize their contraceptive and fertility intentions is invalid. A richer evidence base is needed in order to conclude whether more nuanced measures of motivation would distinguish between women.

Experience with contraceptive side effects may be an additional factor interacts with components of motivation to influence the use of contraception and the ultimate operationalization of fertility preferences. Analysis of this dataset by Barden O'Fallon et. al demonstrated the importance of contraceptive side effects to continuing contraceptive use and, subsequently, pregnancy. (62) Side effects were found to be widely experienced among this population and, while motivation to avoid pregnancy was not quantified, differences in levels of motivation were suggested as a factor in explaining why some women continue contraceptive use and other do not. Future research on intentions should consider the interaction between experience with side effects and motivation to avoid pregnancy.

While this study did not provide support for a multidimensional measure of intentions, methodologically similar work by Santelli et. al in the United States using data from the National Survey for Family Growth does provide support for the use of multidimensional measures. (53) Santelli et. al found that desire for pregnancy—defined as a combined response to questions about happiness towards pregnancy, wanting to become pregnant,

trying to become pregnant and wanting a child with a specific partner—was an important dimension of intentions and was highly predictive of the decision to abort or continue a pregnancy. In this study, desire for pregnancy was not found to be a significant influence on either contraceptive continuation or pregnancy. Analysis of qualitative data from this population by Evens and Curtis demonstrated that feelings towards pregnancy and the strength of desire to avoid pregnancy were not important components to women's fertility intentions. High levels of acceptance for pregnancy, even for those pregnancies not planned, were widely demonstrated. (63) This was also found in an analysis by Speizer et. al that concludes unintended pregnancy is widely accepted in Honduras and inconsistent fertility motivations are common even among effective contraceptive users. (64) These findings point to the importance of considering cultural variations to perceptions of pregnancy and ensuring measures of intention should be culturally relevant to the populations in which they are being used.

Ultimately, improved measures of intention are important only to the extent to which they aid the understanding and alleviation of negative reproductive health outcomes such as unmet need for family planning and unintended pregnancy. If women report pregnancies as unintended but these intentions are not strongly held then some pregnancies classified as unintended may not be viewed as problematic by women or associated with negative consequences and may not therefore merit significant public health attention. Simple measures of intention provide a fair degree of prediction but more work remains to be done to improve the understanding of fertility and contraceptive decision making in order to improve health care services, programs and research and, ultimately, design and target

interventions to effectively address unmet need for family planning and unintended pregnancy.

## **CHAPTER 4**

### **Conclusion**

While standard measures of fertility intentions predict pregnancy moderately well, unintended pregnancy remains common. Knowledge of factors that enable some women to successfully operationalize their fertility intentions while others fail to do so could improve understanding of contraceptive discontinuation, unmet need for contraception and unintended pregnancy. This dissertation used qualitative and quantitative methods to address four aims:

- To develop a deeper understanding of how women in a Latin American setting form plans for pregnancy and what influences the likelihood that these plans will be achieved.
- To propose a new, multi-dimensional construct for evaluating additional dimensions of women's fertility preferences
- To quantitatively test whether the proposed multi-dimensional measure can be used to calculate a single measure of motivation to avoid pregnancy
- To test if this measure predicts contraceptive use and pregnancy better than the conventional means of assessing fertility intentions

The first paper used qualitative methods to explore why, how and under what circumstances fertility decisions are made. Study results add to the small qualitative literature on fertility preferences and achieve the first aim of developing a deeper understanding of the childbearing decision making process. Results demonstrate the importance of family size, the influence of partners and the role of family—factors associated with intentions in previous quantitative research—among the study population. Additionally, several new factors hypothesized to affect intentions were found to be relevant to women's plans for pregnancy.

Specifically—locus of motivation for fertility decision making, the ability to pursue educational and occupational opportunities and the ability to care for family were strong influences on women's fertility plans. Two additional potential influences on intentions, feelings towards pregnancy and the strength of desire for pregnancy, were not found to be noteworthy influences on fertility intentions among this population.

Previous research has identified notable discrepancies between women's plans for pregnancy and their actual behavior, underscoring the need to understand both what influences women's intentions and what affects their ability to achieve their reproductive goals. The first paper provided evidence that the formation and operationalization of intentions are distinct processes, influenced by different factors. Study results also demonstrated the importance of examining both individual and community-level influences on childbearing plans. Findings from this study provide support for the existence of a continuum of fertility intentions and demonstrate variations in individual's level of motivation to avoid pregnancy. Overall, the first paper showed that the use of simple categorical measures is likely to be unsuccessful at accurately predicting pregnancy and supported calls for multidimensional measures of fertility intentions in order to increase understanding of fertility preferences enhance researchers' ability to predict pregnancy and ultimately contribute to the design of interventions to address unintended pregnancy.

The second paper quantitatively explored and tested the dimensions of intentions examined in the first paper in order to understand what factors motivated women to operationalize their plans for pregnancy. A multi-dimensional construct was put forth for evaluating dimensions of fertility preferences, as proposed in the second dissertation aim. Factor analysis was used to identify the underlying dimensions of motivation to avoid

pregnancy and regression analyses were then utilized to compare motivation to the standard measure of fertility intentions to see which could better predict contraceptive use and pregnancy.

In response to the third dissertation aim factor analysis was performed. This revealed three dimensions of motivation—Control Locus, Expectations and Feelings—each distinct and uncorrelated with the others. The literature on fertility intentions, as well as results from the first paper, is consistent with the claim that these dimensions play a role in women's plans for pregnancy. Expectations were a significant predictor of contraceptive continuation with decreased expectations to use contraception diminishing the chances of continuing contraceptive use.

The two papers comprising this dissertation work together to increase knowledge of fertility intentions. The first paper proposes a series of elements found to be influences on women's plans for pregnancy, the second paper then explores the influence of these elements on contraceptive continuation and pregnancy using quantitative methodologies. The dimensions of motivation identified in the factor analysis are consistent with the factors identified in the qualitative research and results from the factor analysis provided evidence of the importance of these elements. The factor Control Locus was composed of three elements found to be central to women's fertility plans in the first paper—locus of motivation for fertility decision making, the ability to pursue educational and occupational opportunities and the ability to care for family were all key to women's childbearing decision. In the factor analysis Control Locus was the factor that explained the greatest proportion of variance of the three identified factors. Strength of desire for childbearing and pregnancy-related affect,



were found to be only modest influences on women's intentions in the first paper and factored together as the least influential of the three factors.

The final dissertation aim sought to test if the proposed multidimensional measure of motivation could predict contraceptive continuation and pregnancy better than the standard intentions categories. The quantitative analyses in the second paper did not bear out the influences of the factors identified in the first paper. While the second paper found a very high percentage of women strongly agreed or agreed with the importance of the eight elements of motivation, confirming the salience of the issues identified in the qualitative data, only one factors of motivation was found to be a statistically significant determinant of contraceptive behavior and none were found to be statistically significant determinants of pregnancy in the regression analyses. Results from the second paper can not therefore support the hypothesis that consideration of multiple dimensions of motivation to avoid pregnancy improves the prediction of contraceptive use and pregnancy over the standard intentions categories. This could be because the second paper utilized a sample comprised entirely of contraceptive users with high levels of motivation to avoid pregnancy. Limited variation in measures of the proposed elements of motivation could have prevented adequate assessment of the influence of motivation to avoid pregnancy on contraceptive continuation and pregnancy. Future research examining the influence of motivation on contraceptive use and pregnancy among a broader population of women, including those not using contraception, is needed before the influence of motivation on contraceptive use and pregnancy can be decisively concluded.

Exploration of ambivalence towards contraception may also be vital to understanding how and why some women fail to achieve their stated fertility intentions. Contraceptive side

effects are by far the largest reasons for discontinuing contraceptive use in this population (47) and women often have to balance their ambivalence about using contraceptive with their desire to avoid pregnancy. (31) Analysis from the *Study of Service Quality, Motivations to Use Contraception and Contraceptive Continuation in Honduras* by Speizer et. al concludes that both contraceptive behaviors and fertility motivations are inconsistent among this population and motivations may be fluid over time. (64)

Additionally, the proposed measure may have failed to predict contraceptive use and pregnancy better than the standard intentions categories because the questions used to assess motivation to avoid pregnancy may not have been nuanced enough to capture variability between women because the questions were too simplistic. The first paper may also have failed to capture the importance of additional elements of motivation that may be central to the achievement of plans for pregnancy. In particular, psycho-social issues related to attitudinal dimensions of intention may not have emerged through qualitative work and there may be further elements of motivation that discriminate better between women and could improve the prediction of fertility behaviors.

We know from the first paper and other quantitative research that fertility intentions are shaped by numerous factors and that simple measures of intention do not fully explain the formation and achievement of women's plans for pregnancy or predict fertility. However, the second paper demonstrated the difficulty in using these measures to predict contraceptive continuation and pregnancy. These results illustrate a potential trade off between the simplicity of the standard measures of intention and their degree of predictive power. Standard measures provide a fair degree of prediction while requiring a low level of effort to obtain and analyze. The addition of multiple psycho-social variables to measures of intention

may require a greater level of effort yet provide only minimal additional predictive power. This trade-off should be considered carefully as measuring intentions is important only to the extent to which it aids the understanding and alleviation of negative reproductive health outcomes such as unintended pregnancy and unmet need for family planning. If improved measures of intentions help uncover dimensions to women's plans for pregnancy that can not be captured with existing measures then they are valuable. For instance, if women report pregnancies as unintended but these intentions are not strongly held then some pregnancies reported as unintended may not be associated with negative consequences and merit significant public health attention. Ultimately, understanding and predicting contraceptive discontinuation and pregnancy accurately is vital for clinicians, programmatic work and research addressing unintended pregnancy and unmet need for family planning.

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