REPRODUCTIVE BEHAVIOR IN PAKISTAN: INCORPORATING MEN AND COUPLES TO UNDERSTAND CHANGE OVER TIME

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A Dissertation

Submitted to the Graduate College of Bowling Green
State University in partial fulfillment of
the requirements for the degree of

DOCTOR OF PHILOSOPHY

August 2017

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ABSTRACT

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Attention to gender has been largely absent from research on the fertility decline in less industrialized societies. In patriarchal societies like Pakistan, it seems likely that women's power has increased, allowing them to assert their own preferences for contraceptive use and childbearing behaviors. However, given that women tend to want smaller families as their status improves, the stagnation in fertility levels implies that women are still unable to assert their preferences. Using individual- and couple-level data from the 1990-91 and 2012-13 Pakistan Demographic Health Survey (PDHS), I conducted three distinct sets of analyses to provide a better understanding of gender and couple dynamics of reproductive behavior. First, I examined the associations between women's perception of their husband's fertility desires, women's education, and birth intendedness. Second, I looked at the change over time in future fertility intentions as a couple-level construct and examined how congruence varies by relative education. Finally, I examined the role of gender in reproductive decision-making by analyzing couples' joint prospective fertility intentions, women's education, and current contraceptive use. I find women's perception about their husband's desired family size is generally not associated with unintended fertility, but, unexpectedly, better educated women are more likely to have an unintended birth than less educated women. Next, I find that the risk of spousal disagreement is higher among couples in which the wife is more educated than her husband. Further, when couples disagree, it is the husband who wants another child, especially if the wife has secondary education or higher. Finally, on the relationship between couple fertility preferences and contraceptive use, husbands' and wives' fertility preferences exert equal influence on

contraceptive use. Moreover, the positive association between women's own education and contraceptive use has weakened over time. Although contraceptive use is higher among educated women, uneducated women are driving the fertility decline. The findings of this dissertation demonstrate that despite marked improvement in women's education in the last two decades, the stalled fertility level in Pakistan suggest that gender changes at the societal level are slow to translate into interpersonal relationships.

Affectionately Dedicated
to
The Twinkle of My Eyes
Abeer Yasir

ACKNOWLEDGMENTS

First, I am grateful to my advisor Karen Guzzo, who believed in me. I was privileged to be the Ph.D. student of one of the finest scholars in the field of Demography who taught me how good research is done. Karen's detailed and thorough comments and advice stimulated my critical thinking and refined my research skills. But for her contributions of time, critique and ideas, my Ph.D. experience would not have been so stimulating and productive. Her contagious joy and enthusiasm for research lifted my spirits during my darkest hours. She stood there as an example of how to balance work and family life, and as a proud mother, a noted researcher, and a superb professor. Next, my profound gratitude goes to my dissertation committee members—Wendy Manning, Kara Joyner, and Kelly Ballisteri. Wendy, thank you for providing insightful comments on my work throughout the dissertation process. Kara, I am grateful for sharing with me your expertise in demographic techniques and your investment in my graduate studies. And, the decomposition analysis in this dissertation would not have been possible without your help and guidance. Kelly, as a mentor and a friend, your emotional support and advice during the toughest period helped me put things back on track. I am also thankful to Steven P. Lab who graciously accepted to serve as the Graduate Faculty Representative. I wish to acknowledge the great statistical support from Hsueh-Sheng Wu, Steve Demuth, other faculty members and the departmental staff. Many friends, especially Esther, Gwen, Matthew, Marshal, and Jie Sun made my stay at the Bowling Green a joy to remember; you've all become a part of my life. Lastly, my heartfelt gratitude to my family. My parents raised my consciousness to the value of science and backed me in all my pursuits. My little daughter Abeer became the reason to excel in life so she could look at her mom with pride. And most of all, my loving life partner, Yasir whose constructive support during the final stages of my Ph.D. was critical. Thank you for being there for me.

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CHAPTER I: INTRODUCTION

Many developing countries began experiencing the fertility transition in the 1960s, and a number of countries had reached replacement-level fertility (i.e., 2.1 births per women) by 2000. A substantial number of countries are still in transition, but fertility is generally expected to continue to fall, as the Demographic Transition Theory (DTT) predicts that once fertility starts declining, it continues until it reaches replacement level (Bongaarts, 2006; Kirk, 1996). However, recent survey estimates show that fertility in many countries has declined less rapidly than expected, with mid-transition stalls in some countries (Bongaarts, 2006). The stalling fertility transition warrants the reexamination of the components of fertility, such as high desired family size or high levels of unintended childbearing, along with related behaviors like contraceptive use, as small changes in fertility levels have serious implications for future population growth.

Family planning research as well as policy formulation for family planning has, until recent times, used data gathered from the female segment of the population. Conventional fertility analysis assumes women's responses about the frequency and timing of past childbearing are more accurate than men's reports as they are the actual bearer of children. Moreover, views that couples can be considered a single entity and assume that they have similar fertility goals further underlie the collection of information from one spouse (Dodoo and Tempenis, 2002; Thomson, 1997; Greene and Biddlecom, 2000). One key assumption from this literature is that wives' reports of their husband's fertility intentions are fairly accurate (Morgan, 1985; Korenman et al., 2002; Williams, 1994; Khan et al., 2007). Studies have shown that fertility data are generally concordant across couples and that women's fertility indicators can accurately serve as a proxy for men's (Diro and Afework, 2013; Yadav et al., 2010), but this may

not be the case for all fertility indicators. In societies in which fertility is almost entirely marital and divorce is uncommon, data on dates of birth and number of children collected from wives can largely be assumed to be identical for husbands. But for more subjective fertility-related information, this is less likely to be true. Though women's proxy reports about their partner's fertility goals are not problematic in most cases, it is also reasonable to expect that some wives might be unaware of their husband's fertility intentions if couples have not discussed their intentions with one another.

In this research, I argue that one potential way to investigate the stalled fertility transition is to analyze fertility from a gendered and couple perspective. Familial systems play a significant role in reproductive behaviors and outcomes. The pace at which the fertility transition occurs is significantly affected by gender systems. Scholars, who over the last several decades observed fast decline in fertility in developing countries, argue that empowering women to make decisions about childbearing can change gender relations and gender systems in traditionally male-dominated settings, which may coincide with changes in the education system and labor market (Dyson, 2001; Malhotra, 2012; Mason, 1997; McDonald, 2000; McNay, 2005). However, changes in gender relations at the societal level sometimes are slow to translate into interpersonal relationships. This is particularly true in societies marked with high gender segregation, in which the husband's fertility desires and attitudes takes the central priority in decisions about family formation and planning and in which communication between spouses about fertility may be limited. Given the change in gender roles and relations over the past two decades in developing countries, examining fertility behavior at both the individual level and the couple level will add a different perspective and will enhance our understanding of reproductive preference and decision-making process. In this perspective, not only the gendered dimensions of fertility but

spousal agreement on reproductive matters is often considered an important indicator of a couple's future reproductive behavior as well as potential contraceptive practices.

Fertility in A Mid-Transition Country

Applying a gendered lens to fertility behaviors in a patriarchal developing country with high fertility may be an important step in understanding fertility behaviors and the variation seen across contexts. An interesting case can be made for studying Pakistan, the sixth most populous country in the world with a population of 191.7 million (Economic Survey of Pakistan, 2015). Fertility began to decline in the early 1990s, falling for the first time to below 6 births per woman. Estimates imply a decline of around 1.5 births between the 1980s and 1990s (Sathar et. al., 2009). After the 1990s, the fertility rate continued to decline but at a slower pace; the latest Pakistan Demographic Health Survey (PDHS) 2012-13 shows the total fertility rate (TFR) stagnating at 3.8, only slightly lower than 4.1 children per women in 2006-07.

Pakistan was among the first Asian countries to start a family planning program as early as 1960. Despite this history, fertility has declined more slowly in Pakistan than in other neighboring countries (Hardee and Leahy, 2008). The contraceptive prevalence rate (CPR) is very low and seems to have plateaued. Overall, 35% of currently married women in Pakistan are currently using a contraceptive method, which is only a five-percentage point increase from 2006-07 (PDHS, 2013). The CPR rose from 12% in 1990-91 to 28% in 2000-01 but has remained around 35% since then. Thus, the early success in lowering fertility levels seems to have disappeared, yet the reasons underlying the stagnation of fertility decline are unclear.

Unwanted childbearing tends to fluctuate over the course of the fertility transition. In traditional societies, especially prior to the onset of the fertility transition, intentions and fertility are often more or less equally high, with little unwanted childbearing. However, as fertility

declines, a sizable upswing is generally observed in unwanted fertility because the acceptance and adoption of contraceptive methods and voluntary abortion do not increase quickly enough to meet the changing social norms promoting smaller families (Casterline et al., 2001). According to conventional demographic theory (Notestein, 1945, 1953; Bongaarts, 2006), parents want fewer children when the costs of having children increase and the benefits decrease as a consequence of development. Reduced child mortality removes uncertainty and the need to have more children, and formulating – and reaching – a desired family size becomes easier for parents (Bongaarts, 2011).

Thus, individuals weigh the benefits of having more children against costs as the fertility transition occurs, but their personal desires are not the only influences on their reproductive behavior. The social environment, particularly the gender system of the society, affects the value that couples attach to children, and during the course of the demographic transition, the effect of social norms seems to change in its nature and strength (Nauck, 2007; Muhoza et al., 2014). Pakistan is currently in mid-transition phase, and so unintended fertility may be high not only because of reduction in desired family size and lack of access to family planning but because gender relations and cultural norms may not be changing at the same time. Recent evidence suggests that Pakistanis' ideal family size is 4 overall. However, men's ideal family size is slightly higher, at 4.3, than women's, at 4.1. Pakistani women have an average of 0.9 more births than they want, and 16% of births are unintended (NIPS, 2013). To some extent, this represents unmet need for contraception, yet knowledge of contraceptive methods is universal in Pakistan (NIPS, 2013) and so other factors must be at play.

Gender, Education, and Fertility in Pakistan

What is interesting about Pakistan's fertility stall is that it coincides with a dramatic improvement in women's status, particularly in terms of education. Over time, a shift has occurred with new policies to empower women and improve women's status. For instance, during the last two decades a gradual improvement in female literacy occurred, with rates increasing from 21% in 1990 to 47% in 2011-12 (Pakistan Bureau of Statistics, 2015). Although the level is still low and gender disparities remain large (men's literacy is at 70%), the increase in the female literacy rate brings hope for future generations (Pakistan Bureau of Statistics, 2015). Women are also increasingly entering in the labor force, though most of them are working in the agriculture sector. Women's share in wage employment in the non-agricultural sector increased over time; it was 8% in 1990-91, 9% in 2001-02 and rose to 15.8% in 2014-15 (Pakistan Labor Force Survey, 1991-92, 2001-02, 2014-15). Pakistan's parliament has not only passed additional laws to protect women's rights recently but also strengthened existing laws to provide women with equal and just opportunities.

Pakistan is a male-dominated society, where men play a major role in contraceptive practice, and women's position in society is increasingly contested. Women in traditional societies like Pakistan have to submit to their partner's will, as the husband is usually the sole breadwinner. For instance, Casterline et al. (2001) found that Pakistani men feel quite justified in not using contraception, and more women cited their husband's objection as a reason for non-use of contraceptives than men cited their wives' objections to non-use. These findings confirm the predominant perception in Pakistani society that men's opinions ultimately prevail on matters pertaining to reproductive behavior. Further, evidence of men's power in childbearing decisions can be seen in the fertility and reproductive health surveys which reveal a large discrepancy

between women's stated fertility intentions and their actual fertility, resulting in high levels of unintended fertility (Kritz and Makinwa-Adebusoye, 2001: Bankole and Singh, 1998).

How does education play into women's fertility behaviors in a setting such as Pakistan? On the one hand, rising education levels are associated with fertility decline by increasing the opportunity cost of childbearing and childrearing for educated women (Basu, 2002; Martin, 1995; Caldwell, 1980). Education is an effective tool for increasing women's equality with men because it can give women control over resources and their own lives as well as autonomy to make decisions and to act on these decisions (Basu, 2002). It also provides women access and resources to regulate their fertility behavior (see e.g. Bbaale and Mpuga, 2011; Uchudi, 2001; Jejeebhoy, 1995; Martin, 1995). Further, education exposes women to new ideals and alternative life options by providing economic opportunities to pursue goals other than childbearing (Uchudi, 2001; Martin, 1995; Jejeebhoy, 1995).

On the other hand, in settings with strong gender inequities in power, it is possible that women's own education may not translate into key fertility behaviors, as it is still the case that husbands are usually more educated than their wives. For instance, studies have found that a husband's education had a stronger influence on a wife's fertility intentions and behaviors than her own education but not vice versa (e.g. DeRose and Ezeh, 2005; Gubhaju, 2009; Ezeh, 1993). DeRose et al. (2002) argued that women's education brings them more economic independence and general decision-making power but does not increase their ability to make reproductive decisions within marriage. This implies that even if a woman has high levels of education and potentially some degree of power, men's authority will not necessarily be challenged. Therefore, the logic that women's education gives them the ability to make informed choices and also allows them to challenge the high fertility norms of their husband must be weighed against the

cultural backdrop of a patriarchal society such as Pakistan, which protects men's authority in all spheres of life. In highly gendered societies, women tend adjust their fertility intentions to avoid conflict (whether its perceived or real) with their partners or to conform to the societal and cultural expectations (Thomson, 1997; DeRose and Ezeh, 2005; Basu, 1999). For instance, studies have found that women's perception of their husband's family planning attitudes significantly influences contraceptive use (Lasse and Becker, 1997; Kulczycki, 2008).

Fertility Within a Couple-Level Context

Fertility theories generally assert that fertility is within the conscious choice of individuals. In other words, individuals and couples have preferences of when and how many children they want to have (e.g. Coale, 1973; Hagewen and Morgan, 2005). The fertility intentions of both partners (husband and wife) may influence the reproductive and contraceptive behavior of individuals and couples (Bankole, 1995; Kodzi et al., 2010). Fertility preferences are important to assess not only the demand for family planning but also to provide important information on fertility trends such as desired family size and unintended fertility. Also, motivation for fertility limitation can be used for predicting future prospects of fertility change. However, to correctly assess demand for children, not only couple's stated family size preferences but agreement in fertility intentions and preferences are considered important.

For instance, one of the reasons for experiencing an unintended pregnancy can be the lack of spousal agreement on desired family size. A recent study by Kamran et al. (2011) found that couples rarely discuss fertility intentions or desired family size in Pakistan, and discordance on fertility intentions is high among couples, with women being more likely to report unintended fertility than their husbands (Kamran et al., 2011). In other words, women who do not prevent an unintended pregnancy may do so because they perceive that their husband wants more children

than they do and feel unable to exert their own preferences. It is also unclear how much discordance exists in patriarchal societies. On the one hand, couples' concordance on reproductive matters may be high because women are socialized to accept the opinion of their husbands or do not voice their opinions because of the fear of reprisal (Mason and Smith, 2000). Conversely, the gendered environment of patriarchal societies hinders husband-wife communication and thus may lead to discordance, as spousal communication is associated with more agreement (Mason and Smith, 2000; Tumlinson et al., 2013; Kamran et al., 2011).

Research has long recognized the importance of couple-level fertility preference and intentions and their influence on couples' reproductive behavior and outcomes (Rosina and Testa, 2009; Morgan, 1985; Fried and Udry, 1979; Beckman et al., 1983; Thomson, 1997; Thomson and Hoem, 1998; Irani et al., 2014; Bankole and Singh, 1998). Men and women may not necessarily share the same fertility goals (Bankole, 1995; Ezeh, 1993; Lasee and Becker, 1997). In societies where patriarchal systems prevail and where men are the main decision-makers, a husband's fertility desires and goals influences the couple's reproductive behaviors (DeRose et al., 2002; Mason and Smith, 2000; Ezeh, 1993). Spousal agreement on fertility intentions in recent years has garnered a renewed attention as not only are fertility intentions a precursor of couples' fertility behaviors and thus important in predicting future fertility trends (Bongaarts, 2001) but also because of changing gender roles and relations at household level. Women's increased participation in higher levels of education – and the greater economic opportunities this affords them – provide more bargaining power and decision-making authority within the household (Rosina and Testa, 2009; Stein et al., 2014).

Given the change in gender roles and relations in Pakistan, it seems likely that women's power has increased, allowing them to assert their own preferences for contraceptive use and

childbearing behaviors. Educated women are more likely to share their fertility intentions and desires with their husbands. Formal education promotes the discussion and use of family planning methods by increasing the degree of communication between spouses. Spouses who are educated are likely to do a better job of communicating with each other about contraception than spouses who have a more distant relationship (Uchudi, 2001; Hindin, 2000). However, given that women tend to want smaller families as their education and social statuses improve, the stagnation in fertility levels implies that women may continue to be unable to assert their own preferences. If women own desired family size is declining but fertility decline is stalling, a couple-level gendered lens may provide insight. Couples may not be communicating about desires (in which case women's perceptions of their partner's fertility desires may be inaccurate) or couples may have more disagreement as women become more empowered through education. The likelihood of these two possibilities may have changed over time. Though a few research studies have used couple's joint fertility attitudes and desires to examine couple's reproductive behavior (e.g. Mahmood, 1998; Mahmood and Ringheim, 1997; Casterline et al., 2001), much of the existing research on fertility intentions and preferences in Pakistan has used intentions as an individual-level construct and ignored the role of husbands in reproductive decision-making.

One of the major reasons for the lack of research on couple's agreement in fertility preferences and intentions is the lack of available data. For the most part, only women of reproductive age are interviewed in surveys that collect fertility information, except for the Pakistan Demographic Health Survey (PDHS) 1990-1991and the most recent PDHS 2012-13 that had a special module for men (NIPS 1992, 2013). The most recent PDHS 2012-13 provides a unique opportunity to address this limitation as it collected data on men's fertility behavior and intentions for the first time in over twenty years. Although PDHS is cross-sectional in nature,

comparing the trends over time will nonetheless help in our understanding of gender dynamics by including husbands' fertility intentions alongside wives' and exploring the influence of discordance in couple' fertility intentions.

I conduct three distinct sets of analyses that will complement current research on fertility intentions and provide a better understanding of gender dynamics and couple disagreement in fertility intentions and their implications for future fertility changes and contraceptive use in Pakistan. Capitalizing on the availability and richness of this recent individual and matched couple dataset, this study will contribute to the existing literature on couple's fertility decision-making processes in an era of changing gender roles, using women's education as a proxy. In general, I ask whether women's education has, in fact, improved their bargaining power in terms of fertility decisions. Each analysis addresses a distinct research question. The three overarching questions are: 1) how does both a woman's perceived concordance with her spouse on desired family size as well as her own level of education relate to unintended pregnancy/birth? 2) how is spousal agreement on fertility intentions (i.e. desire to have another child) influenced by women's absolute and relative education? 3) how does both spousal agreement on fertility intentions as well as women's own education influence current contraceptive use? All analyses draw on the PDHS 1990-91 and 2012-13 data.

Although the primary focus here is on women's education and couple-level fertility behavior over time, it is important to acknowledge other factors that might influence fertility. Pakistani society in general is evolving, and people have become more receptive to modern family ideals and life styles. Therefore, we should not ignore the role of diffusion processes in spreading smaller family ideals and the information regarding various ways to achieve their family ideals through different means of communication such as TV and the internet.

Conventional demographic transition theory puts socioeconomic development at the center of fertility decline but ignores the role of ideational changes through diffusion process that can influence the reproductive attitudes and behaviors of individuals. "Social interaction and influence" are key elements of the diffusion process that introduce and inspire individuals to adopt new lifestyles (Mason, 1997; Bongaarts and Watkins, 1996). During the diffusion process, the fertility attitudes and behaviors of high socioeconomic groups (those who are the agents of change and forerunner of accepting modern lifestyle ideals) are spread across all socioeconomic classes. Adoption of new ideals and behaviors is not a calculated response to one's socioeconomic position; rather, it is the influence of other people's behavior that compel these individuals to adopt these new fertility ideals. In other words, it is first the attitudes, behaviors, and values of an innovative and educated group that favors fertility decline that then diffuses to other groups such as uneducated individuals through media exposure or through direct contact with educated women (Casterline, 2001; Cleland, 2001). Though this cannot be explicitly tested in the current project, changes in the educational gradient of fertility behavior over time would be indicative of diffusion processes.

Chapter II: Pakistani Women's Perceived Spousal Concordance on Desired Family Size and Birth Intendedness

This chapter examine shifts over time in the association between women's perception of their husband's fertility desires relative to their own and the intendedness of women's most recent pregnancy/birth. With respect to its familial structure, Pakistan is a patriarchal society. Men enjoy uncontested decision-making authority in both public and private spheres including the reproductive ones. Further, Pakistan exemplifies a society where gender roles are changing dramatically as evident from increases in women's education. The gender system influences a

couple's fertility desires and goals and thereby their behaviors. One of the reasons for experiencing an unintended pregnancy can be the lack of spousal agreement on desired family size. In other words, women who fail to protect themselves from unintended pregnancy may do so because they perceive that their husband wants more children than they do. Recall that Pakistan is currently in mid fertility transition phase and during this phase perceived discordance on fertility desires and goals may be high not only because of male dominance but because women may internalize small family size ideals due to increase awareness and control over their fertility. In the wake of changing gender roles and an unfinished fertility transition in Pakistan, it is important to look at the relationship between perceived spousal fertility desires and its impact on unintended fertility.

Although I argued above that it is advantageous to include men's direct reports of their fertility, in this chapter I rely on an indirect construct of couple's agreement on desired family size by using the wife's report of her husband's fertility desires as a proxy. Ideally, one would use information directly from both partners about desired family size, their perceptions of their partners' preferences, and intendedness. However, this is not often possible, and given data limitations, mothers' reports of fathers' intentions have been used in prior work (e.g. Korenman et al., 2002; Williams, 1994). Studies have shown that fertility preferences are generally concordant across couples and that women's fertility preferences can accurately serve as a proxy for men's fertility preferences (Diro and Afework, 2013; Yadav et al., 2010). Prior studies on desired family size and intentions to have a(nother) child suggested wives' reports of husbands' intentions were not too problematic (see Morgan, 1985; Williams and Thomson, 1985). Therefore, in the absence of such data, getting indirect data on men's preferences – by asking women about their perceptions of their partner's beliefs – may provide another way to evaluate

the gendered nature of fertility decisions. Further, even if women do not accurately know their husband's fertility preferences, it may be that women's *perception* about their partner's attitudes is more relevant for shaping women's own fertility behavior and outcomes (Bankole, 1995; Ezeh, 1993). Several studies found that contraceptive use is low when women perceive that their husbands disapprove of family planning (Casterline et al., 2001; Mbizvo and Adamchak, 1991). Lack of spousal communication (Lasee and Becker, 1997) and education may also inhibit women's ability to accurately report their partner's fertility intentions and desires, and as such, unwanted fertility (as reported by women) may be high if women perceive that their husbands want more children than they do. Attention to women's perceived partners' fertility desires accompanied by women's education and their influence on their reproductive behavior will help in understanding the gender norms and relations in light of improvements in female empowerment – that is, whether women's empowerment is transferring into their reproductive life sphere or not.

In light of increased levels of education and economic development and legal reforms that support greater gender equality, one might expect spousal preference to change. However, Pakistan's culture and socioeconomic structures remain male-dominated. This suggests that fertility preferences may not change at the same time, in the same way, for men and women, which may make women's perception of their partner's fertility goal an important predictor of how women themselves classify the intendedness of a birth. The objective of this chapter is to answer three questions: 1) has unintended fertility increased/declined over time? 2) how does women's perceived spousal concordance on desired family size influence unintended fertility? 3) has the educational gradient of unintended fertility changed over time? The main contribution of this chapter is that I am looking at change over time in the relationship between women's

perception of their partner's desired family size and intendedness of their most recent pregnancy/birth. I have data on two time points in which massive social changes, particularly for women, occur in Pakistan. By conducting this analysis, I will be able to provide new insight into spousal relationships and communication between partners on reproductive matters and the role of gender in reproductive intentions and behaviors, especially when gender roles and relations are changing at societal level. This will help policy makers and other stakeholders concerned with high levels of unintended fertility to make informed decisions about reducing unintended pregnancies by revealing the influence of perceived partner's fertility desire.

Chapter III: Changing Gender Roles and Spousal Agreement on Fertility Intentions: A Case of Pakistan

This chapter focuses on fertility intentions as a couple-level construct: the intentions to have a/another child. Although individuals' fertility desires and intentions may vary among men and women, convergence between husbands and wives is the link for converting intentions into behavior, as it increases the chances of translating desires into reality. Decisions to have a child, and when, are essentially a dyadic matter, and so a couple's agreement on having a child is important in shaping their fertility intentions and desires as well as their actual reproductive behavior. The neglect of power relations both inside and outside the relationship has made it difficult to make sense of reproductive decisions in different contexts. This is particularly important in cases when fertility decisions are highly gendered due to power differentials in couples. With increases in education and greater exposure to opportunities outside home, women may internalize smaller family size ideals, yet the gender dynamics of the society may remain pronatalist, thereby leading to more disagreement in a couple's fertility intentions. Put differently, women's education may bring them more economic independence and general

decision-making power but does not necessarily increase their ability to make reproductive decisions within marriage (DeRose et al. 2002). This chapter, therefore, examines the change over time in couple-level of disagreement in prospective childbearing intentions and how changes in gender roles in Pakistani society, as evident from increases in women's education, are linked to spousal agreement on fertility intentions. Specifically, this chapter examines: 1) change over time in spousal agreement on future fertility intentions, 2) how women's absolute and couple's relative education influences spousal agreement on prospective fertility intentions (i.e. desire to have additional children), and 3) the role of women's absolute and couples' relative education in predicting which partner (husband or wife) wants additional children when there is disagreement in fertility intentions.

The research on couple's fertility preferences is extremely limited in Pakistan and is based on PDHS 1990-91 data. This study, therefore, is an attempt to fill that gap in existing literature on spousal agreement on fertility preferences in the era of massive social change in gender roles. The couple-level analysis, therefore, will provide a better understanding of the extent of gender inequality in couples' joint fertility decision-making and how gender and couple dynamics influence the association between women's absolute and relative education and spousal agreement on fertility preferences. The analysis will also help in understanding why some individuals are unable to achieve their fertility intentions and preferences. The findings will provide important insights for policy makers, programmers, and other stakeholders about whether, and how, take into account spousal disagreement on fertility intentions in policy making to help couples in achieving their desired fertility goals.

Chapter IV: Couple's Fertility Intentions, Changing Gender Roles, and Contraceptive Use in Pakistan

This chapter examines the relative influence of husbands' and wives' fertility preferences, as well as women's absolute education, in shaping their contraceptive behavior in Pakistan. Couples may not share the same fertility desires and goals, particularly in patriarchal societies, and this may inhibit contraceptive use. For instance, Mason and Smith (2000) found that negotiation between husbands and wives on whether to use contraception is influenced by gender stratification, with the husband possessing more negotiation power in more highly gender-stratified communities. Similarly, Dodoo (1998) found that contraceptive use is higher when the husband wants to stop childbearing rather than the wife. Although it seems clear that contraceptive use will be high when both husband and wife want to stop or postpone their childbearing and low when both want to have additional children, it is less clear what would happen when couples disagree on future childbearing.

There is also reason to believe that the educational gradient of education has changed over time. Women with higher education are more likely to adopt contraception because they internalize smaller family ideals (Mason and Smith, 2000). Although the influence of women's education on contraceptive behavior is well recognized, the role of diffusion processes in spreading smaller family ideals cannot be overlooked. As couples are exposed to the low-fertility attitudes, behaviors, and values of an innovative and educated group through social interaction and different means of communication, these low-fertility norms then diffuse to other groups such as uneducated individuals (Casterline, 2001; Cleland, 2001). Specifically, this chapter has three objectives: 1) when couples disagree on fertility preferences, whose (husband or wife) fertility preferences (desire for another child) have more influence on contraceptive use? 2) does

women's absolute education influence contraceptive use? and 3) has the education gradient changed over time, as might be expected when diffusion occurs? Answering these questions will help in better understanding the role of gender and couple dynamics in use of contraception. The extent to which contraceptive use is influenced by the couple's fertility preferences will shed light into the role of gendered power in reproductive decisions. The analysis will provide important insights for policy makers and other stakeholders to address the seemingly stalled fertility in Pakistan by considering gender differences in fertility preferences and power relations within household.

Summary

Having a child is essentially a couple-level decision, but studies on couples' fertility decision making are rare, especially in developing countries. Although it has long been recognized that both partners' fertility desires and intentions influence a couples' reproductive behavior, the majority of research has focused on women. The PDHS of 1990 and 2013, nationally representative data of men and women of reproductive age, provides a unique opportunity to use matched couples' data to examine the trends in fertility intentions and preferences as a couple-level construct. Although the PDHS is cross-sectional in nature, examining change over time in reproductive attitudes and behaviors nonetheless helps our understanding of gender dynamics by including husbands' fertility intentions alongside wives' and exploring the influence of discordance in couple' fertility intentions.

I proposed three analyses: 1) predicting unintended fertility by women's perceived concordance on desired family size and their own education, examining whether the education gradient has changed over time, 2) examining spousal agreement in fertility intentions by women's absolute and couple's relative education, and 3) predicting current contraceptive use by

spousal agreement in fertility intentions, as well as women's absolute education and considering the educational gradient of contraceptive use. The main contribution is that I am looking at the change over time in spousal concordance in reproductive matters, which tends to be overlooked yet may be a vital influence given gender changes within a patriarchal system, by taking advantage of one of the few couple-level datasets available. I have data on two time points in which massive social changes, particularly marked improvement in women's education, are observed in Pakistan. In addition to increase in women's education, an upsurge in electronic media occurred between these two-time periods (starting in early 2000) and a large number of new radio and television channels were launched. These channels brought new and luxurious lifestyle ideals to people's life promoting smaller family norms, which may weaken the well-documented link between education and fertility behavior.

In the past two decades, women's status has improved remarkably due to rising women's education. However, fertility declined very slowly in this period and now seems stalled. On the one hand, it seems likely that women's power has increased due to rising education levels and increased labor force participation, allowing them to assert their own preferences for contraceptive use and childbearing behaviors. On the other hand, given that women tend to want smaller families as their education and social statuses improve, the stagnation in fertility levels implies that women have been unable to assert their own preferences. Gender changes at the societal level sometimes are slow to translate into gender changes in interpersonal relationships. Analyzing the role of gender in reproductive decision-making by linking couples' fertility preferences – particularly agreement – to fertility and reproductive behaviors in Pakistan can provide important insight to the factors underlying the fertility stall in a high-fertility, populous country.

CHAPTER II:

PAKISTANI WOMEN'S PERCEIVED SPOUSAL CONCORDANCE ON DESIRED FAMILY SIZE AND BIRTH INTENDEDNESS

Introduction

Regardless of their intentions to stop childbearing or space their pregnancies, women in many countries often have more children than desired, and this contributes to growing levels of unintended fertility. In recent decades, a desire for a smaller family is growing among couples due to increased urbanization and socioeconomic opportunities. Pakistan, the sixth most populous country in the world, is experiencing this shift in desired family size, accompanied by a decline in fertility levels. Fertility has declined from 6 births per women in 1980s to 3.8 births per women in 2012-13, but the decline is slow compared to other neighboring countries (Sathar et. al., 2014; NIPS, 2013). According to the 2012-13 Pakistan Demographic Health Survey (PDHS), 16% of all pregnancies are unintended, and most of these pregnancies end in births (NIPS, 2013). Unintended (both mistimed and unwanted) fertility has negative social and health consequences for both mother and child (Guzzo and Hayford, 2011; Joyce et al., 2000; Singh et al., 2013).

Pakistan is a male-dominated society. Major household decisions, including reproductive ones, are made by the head of the household, usually a male. Women, especially those of childbearing age in traditional societies like Pakistan, have to submit to their partner's will, as the husband is usually the sole breadwinner. They have limited control over their fertility, i.e. how many children they want to have and when to have them. Decisions about family size and family planning are usually made by husbands or the mother-in-law (Casterline et al., 2001). Evidence of men's power in childbearing decisions can be seen in the fertility and reproductive

health surveys which reveal a large discrepancy between women's stated fertility intentions and their actual fertility (Kritz and Makinwa-Adebusoye, 2001: Bankole and Singh, 1998). To some extent, this represents unmet need for contraception. However, PDHS 2012-13 shows that the knowledge of contraceptive methods is universal in Pakistan (NIPS, 2013). Therefore, it seems that the discrepancy between women's desired and actual fertility may also reflect women's marginalized position and lack of power and resources to exercise authority. Also, in traditional societies, even when female education and employment increases, women are not always able to convert their improved socioeconomic position into a more equitable relationship with their partner. In this view, it is important to look at fertility behaviors through a gendered lens.

The objective of this chapter is to examine the association between women's perception of their husband's fertility desires relative to their own, as well as women's absolute education and the intendedness of women's most recent pregnancy/birth using the PDHS 1990 and 2013. In the wake of changing gender roles and an unfinished fertility transition in Pakistan, it is important to look at the relationship between perceived spousal fertility desires and its impact on unintended fertility. The main contribution of this paper is that I am looking at change over time in the relationship between women's perception of their partner's desired family size and intendedness of their most recent pregnancy/birth. I have data on two time points in which massive social changes, particularly for women, occur in Pakistan. The analysis will provide new insight into spousal relationships and communication between partners on reproductive matters and the role of gender in reproductive intentions and behaviors, especially when gender roles and relations are changing at societal level. This will help policy makers and other stakeholders concerned with high levels of unintended fertility to make informed decisions about reducing unintended pregnancies by revealing the influence of perceived partner's fertility desire.

Background

Fertility can decline if unwanted pregnancies are checked, but without significant declines in desired family size, the fertility transition cannot reach replacement level. Historical progress of an agricultural society to an industrial society results in socioeconomic development of a kind which reduces desired family size, according to conventional demographic theory (Notestein, 1945, 1953). This theory holds that parents want fewer children when the costs of having children increase and the benefits decrease as a consequence of development. Reduced child mortality removes uncertainty and the need to have more children, and formulating – and reaching – a desired family size becomes easier for parents (Bongaarts, 2011). This theoretical framework helps to demonstrate that a couple's rational and conscious decision-making leads to reduced family size. Couples weigh the benefits of having more children against costs, which forms the basis of their individual desired family size. However, individuals' personal desires are not the only influences on their reproductive behavior.

This is particularly true when one takes a gendered lens to reproduction in developing countries. Theories of demographic change (i.e., classic demographic transition theory, wealth flow theory, and the diffusion innovation theory) generally emphasize population decline as achieved through declining mortality and fertility. Many scholars highlight the fact that demographic research has ignored the role of societal gender systems in shaping the reproductive attitudes and behaviors of men and women (Presser, 1997; Mason, 1997). The societal gender system is actually critical for fertility research because, as Mason (1997) notes, it comprises the "entire complex of interactions, roles, rights and statuses that surround men and women in a given society or culture." It is often assumed that couples have common shared interests, but what matters more to individuals in terms of reproductive choices is a function of gender and

hence it is different for men than women (Thomson, 1997; Dodoo and Frost, 2008). For instance, in a highly-gendered society, women's position in the household is strengthened if she bears more sons than daughters. This strong preference for a son by women may reduce the couple's agreement on desired fertility (Mason and Smith, 2000). Contextual reality is, therefore, at odds with the theoretical frameworks. Theory sometimes falls short of taking into account that, within a particular society or a culture, significant differentials exist between the relative control and authority of men and women over most matters, including sexual preferences and reproductive decision-making. Power differentials by gender may be particularly important for reproductive decisions in developing countries. In societies where patriarchal systems prevail and where men are the main decision-makers, such as Pakistan, men's attitudes and desires toward fertility shape the fertility outcomes of the couple (DeRose et al., 2002; Mason and Smith, 2000). For example, Ezeh (1993) studied how partners affect each other's attitudes toward contraception in Ghana, observing that the wife's attitudes and preferences regarding contraception were in fact a mirror of the husband's attitudes and preferences but not vice versa. This shows the relative dominance and authority of a husband that may result from women's economic dependency on their husbands and their low status.

Although there is considerable evidence that men's authority, desires, and intentions about childbearing affect women's fertility and childbearing intentions, the primary focus of fertility research remains women, in the sense that fertility data is generally only collected from women and women/mothers are the unit of analysis (Dodoo and Frost, 2008; Thomson, 1997; Lundgren, 2005). Thomson (1997) argued that it is advantageous to include men in fertility behavior research as she found that husband's desires and intentions matter, and the potentially asymmetrical nature of spouses' intentions warrants data collection for both spouses. In the

absence of such data, getting indirect data on men's preferences – by asking women about their perceptions of their partner's beliefs – may provide another way to evaluate the gendered nature of fertility decisions. Some prior research has demonstrated that wives' report of their partners' fertility preferences are not problematic (Morgan, 1985; Korenman et al., 2002; Williams, 1994; Khan et al., 2007; Diro and Afework, 2013). Further, even if women do not accurately perceive or know their husband's fertility preferences, it may be that women's *perception* about their partner's attitudes is more relevant for shaping women's own fertility behavior and outcomes (Bankole, 1995; Ezeh, 1993). Several studies found that contraceptive use is low when women perceive that their husbands disapprove of family planning (Casterline et al., 2001; Mbizvo and Adamchak, 1991). Lack of spousal communication (Lasee and Becker, 1997) and education may also inhibit women's ability to accurately perceive their partner's fertility intentions and desires, and as such, unwanted fertility (as reported by women) may be high if women perceive that their husbands want more children than they do or they do not know about their partner's desired fertility. In patriarchal societies, discussion on reproductive matters can be limited and not encouraged, as couples often feel uncomfortable discussing fertility-related topics (Biddlecom and Fapohund, 1998). As a result, this may leave women uncertain about their partner's fertility desires, as evident from a substantial proportion of women who report that they do not know about their husband's desired family size (NIPS, 1991, 2013).

Perceived Spousal Concordance and Unintended Fertility

Pakistan is currently in mid-transition phase, and according to transition theory unwanted fertility may be high not only because of reduction in desired family size and lack of access to family planning but because gender relations and cultural norms may not be changing at the same time. As such, women may not be able to fully act on their fertility desires. In light of

increased levels of education and economic development and legal reforms that support greater gender equality, one might expect spousal agreement about fertility to change at the same time. However, Pakistan's culture and socioeconomic structures remain male-dominated. This suggests that fertility preferences may not change at the same time, in the same way, for men and women, which may make women's perception of their partner's fertility goal an important predictor of how women themselves classify the intendedness of a birth.

In this chapter, I rely on an indirect construct of couple's agreement on desired family size by using the wife's report of her husband's fertility desires as a proxy. I used the wife's report of her husband's fertility desires as a proxy for the husband's reports to see how this perception is associated with the intendedness of the most recent pregnancy/birth. I hypothesize that women's perception of their husband's desired family size is associated with their reporting of intentions of their last pregnancy/birth. Because of the male dominated society where men's desires matter more than women's, I hypothesize that this association would be stronger in case of women's perceived discordance on desired family size. Almost all the fertility is with in marital union in Pakistan and a woman is expected to prove her fertility right after marriage because of the pronatalist culture, the association between women's report of their husband's desired family size and unintended fertility would be stronger for higher order births than for the first birth.

Hypothesis 1: Women's perceived spousal discordance on desired family size increases the risk of unintended pregnancy/birth, particularly for higher order births.

Women's Education and Unintended Fertility

The lack of attention to gender in Pakistani context is especially problematic given marked improvement in women's education and employment. Over time, a shift has occurred

with new policies to empower women and improve women's status in Pakistan. For instance, during the last two decades a gradual improvement in female literacy occurred, with rates increasing from 21% in 1990 to 47% in 2011-12, although men's literacy is still higher, at 70% (Pakistan Bureau of Statistics, 2015; Planning Commission, 2015). Gender parity in education has also improved – for primary education, secondary education and youth literacy (Pakistan Bureau of Statistics, 2015). Women are also increasingly entering in the labor force, though most of them are working in the agriculture sector. Women's share in wage employment in the non-agricultural sector has increased over time; it was 7.98% in 1990-91, 8.95% in 2001-02 and rose to 15.8% in 2014-15 (Pakistan Labor Force Survey, 1991-92, 2001-02, 2014-15). Pakistan parliament has not only passed additional laws to protect women's rights recently but also strengthened existing laws to provide women's equal and just opportunities. The current political and social environment undoubtedly promotes women's educational and employment opportunities, but deep rooted cultural and gender attitudes towards the education of girls remain strongly biased and largely unchanged (Choudhary, 2014).

In general, women's education is equated with empowerment measured in terms of improved economic opportunities, better living standards, and decline in maternal and infant mortality. Education provides women resources and enables them to make informed choices (Jejeebhoy, 1995). Education exposes women to new ideals and alternative life styles by providing economic opportunities to pursue goals other than childbearing (Uchudi, 2001; Martin, 1995; Jejeebhoy, 1995). Formal education promotes the discussion and use of family planning methods by increasing the degree of communication between spouses (Martin 1995). Educated couples are better able to communicate with each other with regard to the use of contraceptives as compared with couples who have a low level of education (Uchudi, 2001; Hindin, 2000).

Research on the fertility transition has generally overlooked the role gender in various contexts which results in a certain lack of clarity regarding reproductive decision making in different social and cultural contexts. This may prove especially informative considering the apparent stall in the fertility decline in Pakistan that is occurring even as women's socioeconomic position is improving. Education and exposure to the modern ideals brings change in women's family ideals. When women are more educated and aware then they are more likely to challenge the existing societal norms specifically related to their reproductive sphere. In this context, attention to women's perceptions of their partners' fertility desires and their link to reproductive behavior will help in understanding the gender norms and relations in light of improvements in female empowerment – that is, whether women's empowerment is transferring into their reproductive life sphere. I examine how the wife's education, as a proxy for power and equality in a couple's relationship, influences intendedness of pregnancy/birth. With the increase in women's education, change in gender roles, and the diffusion of small family ideals over the last two decades in Pakistan, I expect that there will be educational variation in the fertility intentions of the recent birth (Bongaarts, 2003).

Hypothesis 2: Educated women will be less likely to experience unintended fertility than women with no formal education.

Changes in the Educational Gradient of Unintended Fertility

Pakistani society in general is evolving, and people have become more receptive to modern family ideals and life styles. Therefore, we should not ignore the role of diffusion processes in spreading smaller family ideals and the information regarding various ways to achieve their family ideals through different means of communication such as TV and the internet. The technological revolution and access and availability of family planning services are

considered as important tools in reducing unintended fertility (Westoff and Bankole, 1997). During the diffusion process, the fertility attitudes and behaviors of high socioeconomic groups (those who are the agent of change and forerunner of accepting modern life style ideals) are spread across all socioeconomic classes. In other words, it is first the attitudes, behaviors, and values of an innovative and educated group that favors fertility decline that then diffuses to other groups such as uneducated individuals through media exposure or through direct contact with educated women (Casterline, 2001; Cleland, 2001). Therefore, it is important to examine whether diffusion process has leveled off educational differences in unintended fertility in Pakistan's context. Though this cannot be explicitly tested in the current chapter, changes in the educational gradient of fertility behavior over time would be indicative of diffusion processes. Since 2000, media in Pakistan has expanded tremendously, potentially educating women and diffusing smaller family ideals. The role of media is important as the majority of the population, especially in rural areas, cannot read and write.

Because education levels were lower in the 1990s, making higher levels more rare and perhaps more influential for individual women, education would be more strongly linked to fertility. As education expanded, higher levels of education have become more common for women, and further, women's status more generally has improved, perhaps weakening the impact of individual education level. Although I argued above that education should be negatively linked to unintended fertility, it is possible this was not true in the earlier time period, or not for all educational groups. In the earlier time period, women who have already taken the non-traditional path of gaining any level of education may incur more opportunity costs for having children, making any births they do have more likely to be unintended. For instance, Raymo et al. (2015) found in Japan that that highly educated women are more likely to

experience mistimed or unwanted first birth. The opportunity costs of unintended childbearing are high for educated women because the economic opportunities which their education afford them are often not accompanied by changes in household division of labor in most gendered societies. The work-family conflict which educated women face may result in higher reports of unintended fertility. In this context, a negative educational gradient of unintended fertility may not exist in the earlier time period but rather a positive gradient. However, as the education becomes more common and more and more women are entering into labor force, the educational differences in unintended childbearing may shrink or disappear over time. As such, I expect:

Hypothesis 3: Educational differences of unintended childbearing will decrease over time.

Other Factors Related to Unintended Childbearing

Of course, women's perception about their husbands desired family size and women's education are not the only factors that influence unintended childbearing. Spousal educational homogamy, age, parity, employment status, place of residence, experience of child mortality, and household wealth status are all associated with unintended fertility (Hakim 2003; Hayford and Morgan 2008). Though I expect that rising education among individual women would enable them to assert more control over fertility behaviors, in settings with strong gender inequities in power, it is possible that women's own education may not translate into key fertility behaviors if husbands' preferences are paramount (Bankole, 1995; Mason and Smith, 2000; DeRose et al., 2002; DeRose, 2003). Couple educational differences may lead to varying ideals of gender roles and relations and may thus lead to varying family size ideals, which in turn may influence the women's report of their birth intentions.

Scholarship on fertility and women's employment has found inconsistency in the direction and strength of relationship (Joshi, 2002). Some studies found that women's

employment has little effect on their control over their fertility when women work merely due to economic pressure (Bruce and Dwyer, 1998). It is also argued that it is not women's employment per se but control over earnings that influences the demand for children (Kirtz and Mankinwa-Adebusoye, 1993; Mahmud (1993). Similarly, unintended pregnancies are positively related with maternal age and the number of previous pregnancies and births. Young women are more likely to experience mistimed birth because of their lack of knowledge and access to contraception, whereas older women are at higher risk of experiencing unwanted birth (Adetunji 1998; Adikari et al., 2009; Shaheen et al., 2007; Exavery et al., 2014; Ikamari et al., 2013). Large age differences among couples are a norm in patriarchal society, and they not only affect their spousal communication but also put women in a more vulnerable position in terms of asserting their own preferences (Mason and Smith, 2000; DeRose and Ezeh, 2010).

Gender preferences are a strong predictor of reproductive behavior and intentions of the couples, with son preferences generally increasing fertility, fertility intentions, and unwanted pregnancies (Rai et al., 2014; Hussain et al., 2000; Sathar et al., 2015). Son preference is quite strong in Pakistan and unwanted fertility increases with number of surviving sons (Hussain et al., 2000). Similarly, scholarship on unintended fertility has found preceding birth interval as a significant predictor of mistimed and unwanted pregnancy. Shorter birth intervals (those less than two years) are associated with higher likelihood of unintended pregnancy (Dibaba, 2010; Johnson and Madise, 2009). Research also suggests that rural women are more likely to have more children than urban women, and the risk of unintended pregnancy/birth is higher among women belonging to low socioeconomic strata (Finer and Henshaw, 2006; Singh et al., 2010; Kost et al., 2012).

Data and Methods

Data for this study come from the Pakistan Demographic Health Surveys (PDHS) of 1990-91 and 2012-13, nationally representative surveys undertaken to yield information on the socioeconomic, demographic and health characteristics of women. This is the only national-level survey in which questions on the intentedness of pregnancy/birth are asked in Pakistan. In this study, the focus of analysis are women aged 15-49 years who had a birth in the five years preceding the survey or those who were pregnant at the time of survey, as birth intendedness is only collected for currently pregnant women and those who had given birth five years preceding the survey. Of the 6,611 ever married women in the PDHS 1990-91, I excluded those with no birth in the five years preceding the survey and who were not currently pregnant (n=2,308). I restricted the analysis to the most recent birth to avoid recall error yielding 4,303 women aged 15-49 for the PDHS 1990-91. As the focus of analysis is the wantedness of most recent pregnancy/birth, I excluded those women for whom information on intendedness of recent pregnancy/birth is missing (n=114) as well as those women for whom information on husband's desire for children (discussed below) is missing (n=140). Therefore, the final analytical sample for the PDHS 1990-91 is 4,049 women.

Similarly, for the PDHS 2012-13, of 13,558 ever married women aged 15-49, I excluded women who had not experienced any birth in the five years preceding the survey and who were not currently pregnant (n=5,635). I also dropped those women for whom information on intendedness of recent birth or current pregnancy is missing (n=478) as well as women for whom information on husband's desire for children is missing (n=358). Excluding these women yielded a sample of 7,087 women aged 15-49 for the PDHS 2012-13.

To observe change over time, I pooled the PDHS 1990-91 and PDHS 2012-13. The main objective of pooling the datasets is not only to increase the sample size to obtain more precise estimates but also to investigate the effect of time. The gap of more than twenty years between two surveys facilitates observing change in gender relations to affect reproductive intentions and decision making. To capture the structural change over time, I included survey year as a dichotomous variable (with 1990-91 as the reference category) in multivariate analysis.

Measures

Dependent Variable. The dependent variable is intendedness of most recent pregnancy/birth, which is asked only of women. Pregnancy intention variable is a retrospective measure of a woman's feeling at the time she became pregnant. The DHS asks women "At the time you became pregnant with (name), did you want to become pregnant then, did you want to wait until later, or did you not want to become pregnant at all?" The dependent variable is defined as: 0 for wanted pregnancy/birth (respondent reports that she wanted to become pregnant); 1 for mistimed pregnancy/birth (wanted to wait until later); and 2 for unwanted pregnancy/birth (respondent reports that she did not want to have any (more) children at all).

Independent Variables. Perceived spousal Concordance is measured by the question: "Do you think your husband wants the same number of children that you want, or does he want more or fewer than you want?" The variable is categorized into four categories: same number of children (reference), more than wife, fewer than wife, and don't know.

Education is measured by the wife's educational attainment level, categorized by four categories: no formal education (reference category), primary education (grade 1-5), secondary education (grade 6-10), and higher education (grade 11 & above). The rationale behind this

categorization is that in Pakistan, the majority of women have no formal education, and very few women have a college education (National Institute of Population Studies, 2013).

Other Control Variables. In this analysis, I also control for a number of other socioeconomic and demographic predictors: couples' educational difference, wife's age, couples' age difference, the woman's work status, birth interval, number of living sons, experienced any child death, place of residence, household wealth, and whether the woman is currently pregnant. *Couples' educational homogamy* is categorized as: have the same level of education, husband has less education than wife, husband has more education than wife, and both have no formal education (reference). *Wife's current age* is represented by a three-category measure: 15-24 (reference), 25-34, and 35 and above. *Couples' age difference* is also included in the analysis and is categorized as: wife is older by 1-9 years, wife is younger by 0-4 years (reference), wife is younger by 5-9 years, and wife is younger by 10+years.*Women's work status* is a dichotomous measure, with 0 for not working, and 1for working. *Preceding birth interval* is measured as: less than 18 months (reference), 18-24 months, and more than 24 months. In this analysis, I also controlled for number of living sons, as having a male child enhances the woman's position in the household and society. *Number of living sons* is a four-category variable: no living son (reference), one, two, and three or more living sons. A dummy variable for *experiencing any child death* is also included in the analysis. To account for the *urban-rural* differentials, l included a dummy for urban-rural residence with rural as reference category.

Household wealth is based on information on the wealth index as provided in the PDHS 1990-91 and PDHS 2012-13, constructed from information on household asset data including ownership of a number of consumer durables as well as standard of living and dwelling characteristics (National Institute of Population Studies, 1991, 2013; Mahmood and Bashir,

2012). The index reflects the level of wealth that is consistent with expenditure and income measures and is developed and tested in many countries to measure inequalities in household income and its relation with use of health services and health outcomes (Rutstein and Johnson, 2004; Mahmood and Bashir, 2012). The wealth index originally consisted of five categories (poorest, poorer, middle, higher, and highest). For the sake of simplicity, I merged the poorest and poorer into one category of 'poor' and higher and highest into 'high,' with poor being the reference category. To account for current pregnancies, a dummy for currently pregnant women is included in the analysis.

Analytical Strategy

In this analysis, I disaggregated the data by birth order: first births and higher-order births. The rationale of running models separately by birth order is twofold. First, I had essentially no unwanted first births. Second, the decision to have another child is quite different and wantedness of the birth is affected by the number of children already born (Testa, 2014). In other words, higher-order births are influenced by the women's past fertility. As such, only the higher-order birth models include controls for birth interval, the number of living sons, and whether they ever experienced a child death.

Logistic Regression - First Births: There were only six women who reported an unwanted first birth; these cases are dropped to produce a sample of women with either mistimed or wanted birth. The analytical sample for the analysis of first births consists of 2,126 women: 2,025 wanted and 99 mistimed pregnancies/births. Therefore, for first births, logistic regression analysis is used to estimate the odds of having a mistimed birth versus wanted birth.

Multinomial Logistic Regression - Higher Order Births: For the higher order births, I am able to include both unwanted and mistimed births (as well as wanted births). The analytical sample consists of 9,004 women aged 15-49: 6,681 wanted, 982 mistimed, and 1,341 unwanted pregnancies/births. I employed multinomial logistic regression to examine the association of perceived spousal concordance in fertility preference on intendedness of most recent pregnancy/birth, because the dependent variable has three categories: wanted, mistimed, and unwanted pregnancy/birth.

For both set of analyses, Model 1 is the base model and includes the dummy for survey year to measure change over time and perceived spousal concordance on desired family size. Model 2 adds wife's education to examine how it changes the relationship between perceived spousal concordance on desired family size and pregnancy/birth intendedness of most recent pregnancy. Model 3 introduces couples' relative characteristics (i.e., couples' educational homogamy, wife's age, couples' age difference), and various demographic and socioeconomic controls (i.e. women's work status, preceding birth interval, number of living sons, whether women experienced any child death, place of residence, household wealth, and whether women was pregnant at the time of survey). In Model 4, I include the interaction of wife's education with survey year to test whether the education gradient of unintended fertility has changed over time.

It can be difficult to interpret interactions in multinomial logistic regression models, particularly if the interaction tested is between two categorical variables. In this case, predicted probabilities are more useful in explaining the association between two variables and also are more easily understood. To examine whether wife's education has a stronger influence on

reporting intendedness of most recent pregnancy/birth in 1990 than in 2012-13, I calculated predicted probabilities of the interaction term (survey year x wife's education).

Supplementary Analysis: Pooled regression models assume the effect of independent variables to be equal over time and do not vary. However, descriptive statistics (Table 2.1 & 2.2) suggests that the association between intendedness of the birth and perceived spousal concordance and education changes between 1990-91 and 2012-13. In order to examine whether the association between independent variables and intendedness of the birth for recent pregnancy changes change over time, I analyzed the full model separately by survey year (Table 2.6); this essentially interacts all the covariates with survey year.

Results

The results of the analysis are presented separately by birth order. The first set of analyses present the findings for intendedness of most recent pregnancy/birth for the first birth. The second set of analyses present the findings of intendedness of most recent pregnancy/birth for women with higher-order births[1].

First Order Births

Descriptive Results. Table 2.1 presents the percentage distribution of the variables used to study the intendedness of the birth of women aged 15-49 for their most recent pregnancy/birth by birth order. Almost all first births were wanted in both 1990 and 2012 (96% and 95%, respectively). The percentage of women reporting that they and their husband desire the same number of children almost doubled between 1990 and 2012 (37% and 60%, respectively) for the first birth. Interestingly, there is a twofold increase in the share of women who reported that their husbands want more children than they want between 1990 and 2012. This supports the

[1] All the analyses are weighted to account for the complex survey design of PDHS 1990-91 & 2012-13.

argument that desired family size declines for women first when the fertility transition starts. The percentage of women who reported that they do not know about their husband's fertility desires declined substantially, from 45% in 1990-91 to 12% in 2012-13, indicating that over time spousal communication about reproductive matters has increased in Pakistan.

The percentage of women having primary and secondary education increased since 1990-91. In 2012-13, around 42% of women had a primary and secondary level of education as compared to only 19% in 1990-91. The percentage of women with more than 10 years of education increased from 2.4% in 1990 to 17% in 2012-13. Although the percentage of women with no formal education has declined between 1990-91 and 2012-13, still around 40% of women in the sample had no formal education in 2012-13.

Table 2.1 also shows that in almost 50% of the couples, husbands were more educated than wives. However, the share of couples in which both had no formal education has declined substantially between 1990 and 2012-13 (43% and 17%, respectively). In more than 40% of the couples, the husband was more educated than the wife in both 1990-91 and 2012-13, but there was also an increase in the share of couples where wife is more educated than her husband, rising to 23% in 2012-13. Around two-thirds of the women having their first birth were between the ages of 15-24 both in 1990 and 2012-13. More than 40% of the women were 1-4 years younger than their husband and in one-third of the cases wives were 5 to 9 years younger than their husbands. More than two fifths of the women were out of the work force both in 1990 and 2012-13. Similarly, more than one third of the women were living in urban areas in 2012-13 as compared to a quarter in 1990-91. Between 1990-91 and 2012-13, a decline is observed in women belonging to poor households.

Table 2.1. Weighted Percentage Distribution of Sample Characteristics of Ever Married Women Aged 15-49 by Parity and Survey Year

	First Order Birth		Higher Order Birth	
Variables	1990	2012	1990	2012
Intendedness of Recent Pregnancy/Birth				
Wanted	95.5	95.2	71.1	75.8
Mistimed	4.1	4.7	9.8	12.2
Unwanted	0.4	0.1	19.1	12.0
Perceived Spousal Concordance on Desired Family Size				
Both want same	36.6	60.0	44.4	56.7
Husband wants more	12.7	23.3	16.7	29.4
Husband wants fewer	5.9	4.9	5.4	4.7
Don't know	44.9	11.8	33.5	9.1
Wife's Education				
No formal education	78.0	41.3	79.8	59.5
Primary	8.2	16.7	9.3	16.5
Secondary	11.5	25.3	9.8	16.7
Higher	2.4	16.8	1.0	7.4
Couples' Educational Homogamy				
Both have no formal education	43.4	16.7	46.9	30.3
Husband education less than wife	5.3	23.5	5.2	13.0
Husband education higher than wife	46.6	48.8	43.7	48.7
Both have same level of education	4.9	11.1	4.2	8.1
Wife's Age				
15-24	70.8	59.1	15.8	15.7
25-34	26.9	38.5	55.3	58.7
35 +	2.3	2.4	28.9	25.6
Couples' Age Difference				
Wife is older by 1-9 years	3.7	8.3	4.4	6.9
Wife is younger by 0-4 years	40.9	46.9	35.4	43.8
Wife is younger by 5-9 years	36.5	31.7	35.7	32.2
Wife is younger by 10+years	18.9	13.1	24.5	17.1
Work Status				
Not working	85.4	84.3	82.7	73.8
Working	14.6	15.7	17.3	26.2
Birth Interval				
Less than 18 months			13.3	14.6
18-24 months			17.9	20.8
24 months +			68.8	64.7
Number of Living Sons				
No living sons			11.5	12.5

1			25.4	30.4
2			29.7	29.7
3+			33.5	27.4
Experienced Any Child Death				
No			63.6	70.0
Yes			36.4	30.0
Place of Residence				
Rural	74.8	64.7	71.2	71.5
Urban	25.2	35.3	28.8	28.5
Household Wealth				
Poor	44.0	33.5	41.5	46.1
Middle	21.0	19.8	20.1	19.7
High	35.0	46.7	38.4	34.3
Currently Pregnant				
No	62.8	80.4	81.8	87.1
Yes	37.2	19.6	18.2	12.9
Unweighted N	756	1,376	3293	5,711

Source: PDHS 1990-91 & 2012-13

Analyses are weighted to account for complex survey design of PDHS 1990-91 &2012-13.

Table 2.2 shows the distribution of women's report of intendedness of the last birth by perceived spousal concordance and their education for the most recent pregnancy/birth by birth order across the two surveys. Almost all first births were wanted across both surveys, and no variation was observed by women's perception of their husband's desired family size. Similarly, no variation is observed in the wantedness of the birth by education. More than 90% of the women across all categories of education reported that their first birth was intended. However, interestingly, around 12% of the women in 1990-91 who had more than 10 years of education reported their first birth as mistimed, declining to 6% in 2012-13.

Table 2.2. Weighted Percentage Distribution of Women's Fertility Intentions by Perceived Spousal Concordance and Wife's Education

Variables	Fertility Intentions of First Order Birth					
	1990			2012		
	Wanted	Mistimed	Unwanted*	Wanted	Mistimed	Unwanted*
Perceived Spousal Concordance on Desired Family Size						
Both want same	94.4	5.6	-	95.3	4.7	-
Husband wants more	94.9	5.1	-	95.3	4.7	-
Husband wants fewer	95.5	4.6	-	93.8	6.3	-
Don't know	96.7	3.3	-	95.6	4.4	-
Wife's Education						
No formal education	96.4	3.6	-	96.7	3.3	-
Primary	93.0	7.0	-	93.0	7.0	-
Secondary	94.1	5.9	-	95.4	4.6	-
Higher	88.5	11.5	-	94.0	6.0	-
Unweighted N	717	34	-	1,310	65	-
	Fertility Intentions of Higher Order Birth					
Perceived Spousal Concordance on Desired Family Size						
Both want same	65.7	11.6	22.7	76.7	11.9	11.3
Husband wants more	73.3	9.7	17.1	75.0	11.6	13.4
Husband wants fewer	70.9	12.7	16.4	72.4	13.3	14.3
Don't know	73.9	7.6	18.5	82.9	7.4	9.7
Wife's Education						
No formal education	72.9	7.8	19.3	78.5	8.6	12.9
Primary	63.4	16.6	20.1	72.1	13.9	14.0
Secondary	56.4	19.4	24.3	74.6	15.9	9.5
Higher	72.9	10.4	16.7	74.5	17.7	7.8
Unweighted N	2311	327	655	4370	655	686

Source: PDHS 1990-91 & 2012-13

Analyses are weighted to account for complex survey design of PDHS 1990-91 &2012-13.

* There were only six women who reported an unwanted first birth, therefore, I dropped these cases for first birth analysis.

Multivariate Results. Table 2.3 shows the results of pooled logistic regression models predicting the association between perceived spousal concordance on desired family size and the odds of having a mistimed (rather than wanted) first birth. Model 1 includes only the perceived spousal concordance on desired family size. Contrary to expectation (Hypothesis 1), spousal concordance in general is not associated with birth intendedness. Compared to women who report that they and their husband want the same number of children, there is no difference in the odds of a mistimed birth rather than a wanted birth among those whose husband wants more than they do, among those husband wants fewer children than they do, and women who reported that they don't know about their husband's desired family size. Women who "don't know" about their husband's fertility desires can be a valid response and may represents uncertainty. Morgan (1981) observed that "don't know" responses are different from certain responses on desires and intentions and are meaningful, therefore, should not be excluded from analysis. Moreover, excluding these cases from analysis would distort the comparison of fertility desires and behaviors over time due to change in uncertainty level. This is a distinctive group and may provide important information about the fertility desires and intentions and decision making processes of this specific subgroup. In Model 2, I added wife's education as a proxy for power and equality in couple's relationship to see whether the relationship between perceived spousal concordance on desired family size and intendedness of the birth is modified by education. However, contrary to Hypothesis 2, education is not significantly associated with fertility intentions.

Table 2.3. Logistic Regression Predicting First-Order Mistimed Pregnancy/Birth

Variables	Model 1	Model 2	Model 3
Year (omitted=1990)			
2012	0.78	0.62	1.18
Perceived Spousal Concordance (omitted= both want same)			
Husband wants more	1.01	1.13	1.28
Husband wants fewer	1.41	1.53	1.54
Don't know	0.68	0.77	0.77
Wife's Education (omitted= no formal education)			
Primary		1.93	1.90
Secondary		1.78	1.60
Higher		1.99	2.31
Couples' Educational Homogamy (omitted=both have no formal education)			
Husband education less than wife			0.77
Husband education higher than wife			0.99
Both have same level of education			0.46
Wife's Age (omitted=15-24)			
25 and above			0.58
Couples' Age Difference (omitted=wife is younger by 0-4 years)			
Wife is older by 1-9 years			0.34
Wife is younger by 5-9 years			0.79
Wife is younger by 10+years			0.95
Work Status (omitted= not working)			
Working			0.36
Place of Residence (omitted=rural)			
Urban			1.65
Household Wealth(omitted=poor)			
Middle			1.16
High			1.26
Currently Pregnant (omitted=no)			
Yes			15.25***
Unweighted N	2,126	2,126	2,126

Source: PDHS 1990-91 & 2012-13; + (p<0.10), * (p<0.05), ** (p<0.01), *** (p<0.001).
Analyses are weighted to account for complex survey design of PDHS 1990-91 &2012-13.

In Model 3, I included couple-level characteristics and various demographic and socioeconomic variables to see whether these variables explain any association between spousal concordance on desired family size and intendedness of first birth. Model 3 shows adding these controls does not change the relationship between women's perceived spousal concordance intendedness of first birth. The only significant covariate in Model 3 is current pregnancy: Women who were pregnant at the time of survey were 15 times more likely to report their pregnancy is mistimed rather than wanted than non-pregnant women. I also tested for interactions between education and survey year, but these were not significant and are thus not shown in the model. As such, no support for Hypothesis 3 was found.

Higher-Order Births

Descriptive Results. The last two columns of Table 2.1 present the distribution of key variables for the higher order birth for two surveys. The distribution of these variables does not differ substantially from first births except for the intendedness of most recent pregnancy/birth and women's work status. Table 1 show that a substantial proportion of higher-order pregnancies/births were reported as mistimed or unwanted in both surveys. The results also show that the percentage of unwanted pregnancies declined between 1990 and 2012, but still 1 in every 10 pregnancies/births was unwanted in 2012-13. More than one fourth of the women with higher order birth were working at the time of survey in 2012-13.

In this analysis, I also include preceding birth interval, number of living sons, and experience of any child death. The distribution of birth spacing is almost similar across both surveys. More than two thirds of the women reported that the preceding birth interval was more than 24 months. More than 50% of the women had either one or two living sons. A considerable

proportion of women had experienced child death in 1990-91 and 2012-13 (36% and30%, respectively).

The second half of Table 2.2 shows the distribution of women's birth intendedness by perceived spousal concordance and their education for the most recent pregnancy/birth for higher order birth. Substantial variation is observed in wantedness of higher-order births by perceived spousal concordance on desired family size between 1990-91 and 2012-13. In both time periods, more than two thirds of the women reported that their most recent pregnancy/birth was wanted across all the categories of spousal concordance measure. About 12% of women who reported they and their husband have the same desired family size characterized their most recent birth as mistimed in both surveys. However, a shift in the distribution for unwanted birth for higher-order births is observed, declining from 23% to 11%. The percentage of unwanted fertility attributable to women who reported not knowing their spouse's fertility preferences declined by 50%, from 18% in 1990-91 to 9% in 2012-13. Overall, more than two thirds of women with higher-order births reported that their most recent pregnancy/birth was wanted in both 1990-91 and 2012-13, with one exception; in 1990-91, around 50% of the women with secondary education reported unintended fertility (both mistimed and unwanted). In recent times, a 70% increase in mistimed birth is observed among women with higher education. Interestingly, a substantial decline is observed in unwanted fertility across all educational categories. However, the decline is more pronounced for women with secondary and higher education (24% vs. 9%& 17% vs. 8% respectively) in 2012-13.

Multivariate Results. Table 2.4 shows the pooled multinomial logistic regression models predicting the association between perceived spousal concordance in desired family size and intendedness of most recent birth/pregnancy among women aged 15-49 for higher order births.

To study change over time, I pooled the data for PDHS 1990-91 and PDHS 2012-13 (Table 4). The primary reference category is a wanted pregnancy/birth; relative risk ratios (RRRs) presented shows the relative risk of having either a mistimed or unwanted pregnancy/birth relative to having a wanted pregnancy/birth. I also use unwanted pregnancy/birth as the reference category to show the relative risk of having mistimed birth rather than an unwanted birth (results not shown but discussed here).

Table 2.4 contains four models. Model 1 includes the women perceived spousal concordance on desired family size along with dummy for survey year; in Model 2 I added wife's education. Model 3 includes spousal-related characteristics (i.e., spousal educational gap, wife's age, and spousal age gap) and various demographic and socioeconomic variables as controls (i.e., preceding birth interval, number of living sons, whether women experienced any child death, place of residence, household wealth, whether women was pregnant at the time of survey, and whether women is working or not). In Model 4, I tested the interaction of wife's education with time.

Table 2.4. Pooled Multinomial Logistic Regression Predicting Higher-Order Unintended Birth/Pregnancy

Variables	Model 1		Model 2		Model 3		Model 4	
	Mistimed Vs. Wanted	Unwanted vs. Wanted	Mistimed Vs. Wanted	Unwanted vs. Wanted	Mistimed Vs. Wanted	Unwanted vs. Wanted	Mistimed Vs. Wanted	Unwanted vs. Wanted
Year (omitted=1990)								
2012	1.05	0.55***	0.89	0.55***	0.95	0.63***	1.05	0.69**
Perceived Spousal Concordance (omitted= both want same)								
Husband wants more	0.88	0.92	1.00	0.92	1.02	0.84	1.01	0.83
Husband wants fewer	1.26	1.02	1.30	1.02	1.42	1.04	1.36	1.01
Don't know	0.58*	0.69**	0.70*	0.69**	0.73	0.77*	0.74	0.79*
Wife's Education (omitted= no formal education)								
Primary			2.04***	1.06	1.40*	1.14	1.37	1.07
Secondary			2.58***	1.00	1.50*	1.01	2.26***	1.58
Higher			2.63***	0.80	1.44	0.72	0.85	0.96
Couples' Educational Homogamy (omitted=both have no formal education)								
Husband education less than wife					1.72**	1.58*	1.72*	1.60*
Husband education higher than wife					1.09	1.15	1.08	1.14
Both have same level of education					1.41	1.24	1.40	1.25
Wife's Age (omitted=15-24)								
25 and 34					0.92	2.71***	0.91	2.77***
35+					0.60**	7.49***	0.60**	7.46***
Couples' Age Difference (omitted=wife is younger by 0-4 years)								
Wife is older by 1-9 years					1.08	0.77	1.08	0.76
Wife is younger by 5-9 years					1.00	1.07	1.00	1.07
Wife is younger by 10+years					0.99	1.51***	0.99	1.52***

Wife's Work Status (omitted= not working)				
Working	0.87	1.18	0.86	1.17
Birth Interval (omitted=less than 18 months)				
18-24 months	0.53***	0.81	0.53***	0.81
24 months +	0.32***	0.81	0.32***	0.82
Number of Living Sons (omitted=no living sons)				
1	1.03	2.17**	1.04	2.19**
2	1.09	4.61***	1.09	4.63***
3+	1.11	9.16***	1.11	9.22***
Experienced Any Child Death (omitted=no)				
Yes	0.69**	1.07	0.69**	1.08
Place of Residence (omitted=rural)				
Urban	1.21	1.37**	1.19	1.35**
Household Wealth(omitted=poor)				
Middle	1.18	1.27	1.20	1.29*
High	1.22	1.44**	1.23	1.47**
Currently Pregnant (omitted=no)				
Yes	1.80***	1.59***	1.81***	1.61***
Wife's Education x Year (omitted= no formal education, 1990)				
Primary			1.02	1.06
Secondary			0.57*	0.49*
Higher			1.70	0.68
Unweighted N	9,004	9,004	9,004	9,004

Source: PDHS 1990-91 & 2012-13; + (p<0.10), * (p<0.05), ** (p<0.01), *** (p<0.001).
Analyses are weighted to account for complex survey design of PDHS 1990-91 &2012-13.

Model 1 shows that the relative risk ratio of reporting an unwanted birth relative to a wanted birth were significantly lower in 2012 than in 1990. Further, the relative risk of experiencing a mistimed birth is 0.9 times higher than an unwanted birth for women in 2012 than in 1990 (not shown). Contrary to Hypothesis 1, perceived spousal concordance on desired family size in general is not related with intendedness of the birth. However, women who reported that they don't know about their husband desired family size were around 40% less likely to report a mistimed than a wanted birth and 30% less likely to report an unwanted birth than a wanted birth compared to women who reported that both husband and wife wants same number of children.

In Model 2, I added wife's education as a proxy for power and equality in couple's relationship to see whether the relationship between perceived spousal concordance on desired family size and birth intentions is modified by education. The relative risk ratios of perceived spousal concordance largely remain unchanged when I controlled for wife's education. Education is significantly associated with the intendedness of the most recent pregnancy/birth among higher-order births. Educated women (of any level) are significantly more likely to report their recent pregnancy/birth as a mistimed birth than wanted as compared to their counterparts with no formal education. The risk of experiencing a mistimed birth is 2.5 times as high for secondary and higher educated women and 2 times as high for women with primary education than women with no formal education. Interestingly, the risk of experiencing an unwanted birth relative to a wanted birth is the same across all educational categories. The risk of experiencing a mistimed birth relative to an unwanted birth increases with education. Compared to their peers with no formal education, the risk of a mistimed birth versus an unwanted birth is 3.3 times as high for women with higher education, 2.6 times as high for women with secondary education,

and 1.9 times as high for women with primary education (not shown). Thus, Hypothesis 2 was not supported and, in fact, almost the opposite was found.

Model 3 includes couple's individual and shared demographic and socioeconomic characteristics. The addition of these variables does not change the relationship between perceived spousal concordance and birth intentions. The risk of experiencing a mistimed birth rather than a wanted birth is still higher for educated women though reduced in magnitude as compared to women with no formal education. Similarly, the relative risk of experiencing a mistimed birth versus an unwanted birth is significantly higher for women with secondary and higher education as compared to women with no formal education (not shown). The relative risk of experiencing an unintended birth (both mistimed and unwanted) is significantly higher for couples in which the wife is more educated than her husband relative to couples having no formal education. Women aged 35 and above are more likely to report their most recent pregnancy/birth as unwanted than wanted and are less likely to report a mistimed pregnancy/birth than wanted as compared to women aged 15-24 (RRR=15.3 and RRR=0.46 respectively). Interestingly, the relative risk of an unwanted pregnancy/birth is 4 times as high for women aged 25-34 than younger women (15-24 years). Women who are 10 or more years younger than their husbands are significantly more likely to report an unwanted birth than a wanted birth and are significantly less likely to report a mistimed birth than an unwanted birth (RRR=1.57 and RRR=0.60, respectively). Longer birth intervals are associated with lower risk of experiencing an unintended fertility (both mistimed and unwanted) relative to wanted fertility. Having a living son significantly increases the risk of experiencing an unwanted birth relative to a wanted birth and significantly reduces the risk of a mistimed birth as opposed to an unwanted birth. Compared with women who had not experienced any child deaths, women who

experienced a child death were about 30% less likely to report a mistimed pregnancy/birth as opposed to wanted and 36% less likely to say that a pregnancy/birth was mistimed rather than unwanted (not shown). Women living in urban areas and belonging to higher economic strata were significantly more likely to report their recent pregnancy/birth as unwanted than wanted as compared to their counterparts living in rural area and belonging to lower economic strata. Currently pregnant women were more likely to report their recent pregnancy/birth as mistimed or unwanted than wanted (RRR=1.8 and RRR=1.6, respectively) compared to non-pregnant women.

In Model 4, an interaction between education and survey year is included to see whether the education gradient is stronger in the 1990s than in 2013 in explaining the unintended fertility. The main effect of education represents differences in the level of mistimed or unwanted fertility relative to wanted fertility across educational level for 1990-91. The main effect of education is large and positive for 1990 but remains significant only for secondary education after the introduction of the interaction between survey year and education. The interaction term suggests a strong educational gradient of unintended fertility over time. In other words, women with secondary education are less likely to experience unintended fertility over time. For instance, in 1990-91, women with secondary education were significantly more likely to experience mistimed birth than women in 2012 (RRR=2.25). This means that the risk of mistimed fertility declined for secondary educated women over time, which is contrary to the expectation of Hypothesis 3.

Predicted Probabilities. As it is difficult to interpret the interaction in multinomial logistic models, I calculated the predicted probabilities of the interaction term (survey year x wife's education). Table 2.5 presents the predicted probabilities for wanted, mistimed, and unwanted birth

by women's education derived from multinomial logistic regression in Model 4 of Table 2.4. The probabilities are derived by holding all other variables at their (weighted) mean values. The purpose is to investigate whether the educational gradient changes over time and this is evaluated across survey years to study the change over time in intendedness of the last birth of women by their educational level (among women having a higher-order birth). Although unwanted fertility has declined between 1990 and 2012 across all educational categories, the decline is more pronounced for women with a secondary education. The probability of experiencing an unwanted birth significantly declined for women with a secondary education between 1990 and 2012 and suggests that the educational gradient in the risk of having unwanted birth has changed over time. In other words, women with secondary education are significantly less likely to experience an unwanted birth over time compared to less educated women. This result does partially support the hypothesis that educational differences of unintended fertility declined over time (Hypothesis 3) but contrary to expectation. I was expecting a strong negative educational gradient of unintended fertility in early time period and that the educational gradient would decline over time as women education become more common. However, the results show positive educational gradient of unintended fertility in 1990. Women with secondary education had the lowest probabilities of a wanted birth, and women with higher levels of education were no different than those with no formal education.

Table 2.5. Predicted Probabilities of Unintended Childbearing by Education

	No formal education	Primary	Secondary	Higher
1990				
Wanted	0.73	0.70	0.61	0.75
Mistimed	0.09	0.12	0.17	0.08
Unwanted	0.17	0.18	0.22	0.17
2012				
Wanted	0.77	0.73	0.77	0.77
Mistimed	0.10	0.13	0.13	0.14
Unwanted	0.13	0.14	0.11	0.09

Analyses are weighted to account for complex survey design of PDHS 1990-91 & 2012-13.

Note: Predicted probabilities are derived from multinomial logistic regression Model 4 while holding all the other variables at their weighted mean values.

Nonetheless, Table 2.5 does show that the educational gradient of mistimed birth has changed over time such that women with secondary education are less likely to experience mistimed births over time. Interestingly, the educational gradient of mistimed birth has reversed for highly educated women over time. However, there is no significance difference in the probability of having a mistimed birth across any educational categories. As far as wanted births are concerned, women with a secondary education are now significantly more likely to report a wanted birth.

Supplementary Analysis

Table 2.6 shows the results from the full model estimated separately by survey year to examine whether the association between independent variables and intendedness of the birth changes over time. In general, the results of disaggregated analysis by survey years are same as observed in pooled analysis with the exception that the relative risk of experiencing a mistimed pregnancy/birth relative to an unwanted pregnancy/birth is 1.5 times higher for women who perceive that their husband wants fewer children than they do in 1990-91 compared to the women in which they perceive that couple share same desired family size. Also, the risk of experiencing an unwanted birth relative to a wanted birth is higher for working women in 2012-13. However, working women in 2012-13 are 40% less likely to say their most recent pregnancy/birth is mistimed relative to an unwanted pregnancy/birth. Furthermore, I applied a Chow Test (Chow, 1960) to see if the association between the covariates and the outcome has changed over time. With 48 degrees of freedom, the result of Chow Test is highly significant ($p<.005$) shows that association between covariates and response variable has changed over time i.e. between 1990-91 and 2012-13.

Table 2.6: Multinomial Logistic Regression Predicting Fertility Intentions of Higher Order Birth/Pregnancy by Survey Year

	1990-91			2012-13		
Variables	Mistimed vs. Wanted	Unwanted vs. Wanted	Mistimed vs. Unwanted	Mistimed vs. Wanted	Unwanted vs. Wanted	Mistimed vs. Unwanted
Perceived Spousal Concordance (omitted= both want same)						
Husband wants more	0.95	0.75	1.25	1.04	0.87	1.20
Husband wants fewer	1.53	0.62	2.47*	1.27	1.42	0.90
Don't know	0.80	0.80	1.00	0.72	0.72	1.00
Wife's Education (omitted= no formal education)						
Primary	1.12	0.92	1.21	1.49*	1.21	1.23
Secondary	1.72*	1.37	1.26	1.43	0.94	1.53
Higher	0.59	0.82	0.71	1.68*	0.81	2.07*
Couples' Educational Homogamy (omitted=both have no formal education)						
Husband education less than wife	2.78**	1.33	2.08	1.41	1.75*	0.81
Husband education higher than wife	1.16	1.06	1.10	1.01	1.18	0.85
Both have same level of education	1.27	1.65	0.77	1.33	0.97	1.37
Wife's Age (omitted=15-24)						
25 and 34	0.96	2.39**	0.40**	0.88	3.07***	0.29***
35+	0.72	6.47***	0.11***	0.54**	8.99***	0.06***
Couples' Age Difference (omitted=wife is younger by 0-4 years)						
Wife is older by 1-9 years	1.07	0.64	1.68	1.10	0.85	1.29
Wife is younger by 5-9 years	1.37	1.21	1.13	0.88	0.99	0.89
Wife is younger by 10+years	1.28	1.62***	0.75	0.88	1.42*	0.62*
Wife's Work Status (omitted= not working)						
Working	0.90	0.87	1.03	0.85	1.39*	0.61*
Birth Interval (omitted=less than 18 months)						
18-24 months	0.75	1.17	0.64	0.46***	0.59*	0.78
24 months +	0.46***	0.92	0.50**	0.28***	0.77	0.36***

Number of Living Sons (omitted=no living sons)						
1	3.12***	2.42*	1.29	0.73	2.48*	0.30*
2	3.31***	3.58***	0.92	0.78	6.80***	0.11***
3+	2.93***	7.70***	0.38*	0.82	12.64***	0.06***
Experienced Any Child Death (omitted=no)						
Yes	0.69*	1.25	0.55**	0.70*	0.947	0.74
Place of Residence (omitted=rural)						
Urban	1.88**	1.77***	1.06	0.98	1.05	0.94
Household Wealth(omitted=poor)						
Middle	1.08	1.15	0.94	1.31	1.42*	0.92
High	1.13	1.47	0.77	1.33	1.42	0.93
Currently Pregnant (omitted=no)						
Yes	1.79**	1.52*	1.18	1.90***	1.74**	1.09
Unweighted N		3,293			5,711	

Source: PDHS 1990-91 & 2012-13; +(p<0.10), * (p<0.05), ** (p<0.01), *** (p<0.001).
Analyses are weighted to account for complex survey design of PDHS 1990-91 &2012-13.

Discussion

Pakistan is currently in the middle of the fertility transition. However, recent surveys show that fertility decline has stalled in recent years. One of the components of stalled fertility is high level of mistimed and unwanted pregnancies. Recent estimates show that around one-fifth of the births are unintended (both mistimed and unwanted) in Pakistan (NIPS, 2013), and I argue this may be related to changes in women's roles in a patriarchal society. Specifically, I argue that gender necessarily and differentially affects the reproductive decision-making of women, yet the role of gender in fertility research has generally been overlooked. Because Pakistan is a male-dominated society, I examined the association between women's perception about their husband's desired family size and intendedness of the last pregnancy/birth as reported by women. Using the Pakistan Demographic Health Survey of 1990-91 and 2012-13, I aimed to examine whether women's empowerment (proxied by women's education) accompanied by perceived spousal concordance on desired family size influence the intendedness of the last birth.

Analysis suggests that over time unwanted fertility has declined in Pakistan, consistent with the transition theory argument that unwanted fertility is high at the start of fertility transition but declines as the transition proceeds. The main objective of this chapter is to examine the association between women perceived spousal concordance on desired family size and unintended fertility. In patriarchal societies, such as Pakistan, husband's fertility desires take precedence. Therefore, during the course of demographic transition, unintended fertility may not be high because of lack of access to family planning services and decline in desired family size but it may be that gender dynamics of the society are not changing at the same time. As such, women may not be able to fully act on their fertility desires. In this perspective, women's perception of their partner's fertility goal is an important predictor of how women themselves

classify the intendedness of a birth. I hypothesized that women may report high unintended fertility in case of women's perceived discordance on desired family size.

Overall, this analysis does not support the hypothesis (Hypothesis 1) that women are more likely to characterize a birth as unintended when there is perceived discordance on desired family size. The results suggest that a woman is less likely to characterize her birth as unintended (mistimed or unwanted) when she is unaware of her partner's fertility desires, though this is only true for higher-order births. If women do not know what their husbands want, and their births are less likely to be unintended, this suggests that women's fertility behaviors are thus reflecting their own desires. It may possible that those who do not know spouses' fertility desires have more pronatalist attitudes and therefore they are less likely to report unintended pregnancy/birth. Analyses of background characteristics of these women reveals that more than 80% of these women have no formal education and 60% living in rural areas (not shown). Prior research has shown that women with no education are more pronatalist and are more likely to rationalize their behavior (see Schultz, 1993; Bbaale and Mpuga, 2011). Also, large fertility differentials by women's education are observed during the fertility transition. In other words, childbearing desires decline first among educated women and last among less educated women (Cleland, 2002). Also, cultural and social barriers may restrict spousal communication on reproductive matters which may leave the women uncertain about their partner's fertility desires. In turn, women who do not know about their husband's desired family size may report that their birth is intended because they may assume that the lack of communication reflects pronatalist attitudes.

Considering the socio-cultural environment of the country, lack of knowledge about spouses' fertility desires may also suggest that couples are not communicating about their fertility desires. In developing societies, gender and social norms of the societies prohibit open

discussion on reproductive health issues (Kamran et al., 2011). Pakistan is a male-dominated society, and generally husbands' opinions and desires carry more weight in household decision-making, including reproductive matters. In this context, it is reasonable to assume that women may experience communication barriers especially related to reproductive matters.

The second objective of this chapter is to examine whether women's absolute education is related to unintended fertility controlling for women's perceived spousal concordance on desired family size (Hypothesis 2). Women's education is generally equated with empowerment and provides women resources and enables them to make informed choices (Jejeebhoy, 1995) as well as provide women economic opportunities to pursue goals other than childbearing (Uchudi, 2001; Martin, 1995; Jejeebhoy, 1995). Formal education also promotes the discussion and use of family planning methods by increasing the degree of communication between spouses (Martin 1995). Recall that in last two decades a substantial improvement in women education is observed in Pakistan. Therefore, it is important to examine whether women's empowerment is transferring into their reproductive life sphere. In this perspective, I hypothesized that educated women will be less likely to experience an unintended pregnancy/birth. The results show that, compared to women with no formal education, educated women are *more* likely to have mistimed higher-order birth rather than a wanted or unwanted birth and are no different at all in the risk of a wanted versus unwanted birth. This unexpected finding could be the result of a form of measurement error; less educated women are more likely to rationalize their behavior after having a birth than educated women (Cleland, 2002). It is also possible that educated women may more accurately assess their reproductive intentions (or are willing to report their true intentions) and thereby more likely to report their recent birth as mistimed as compared to uneducated women. Relatedly, another plausible reason for the increase in mistimed births

among educated women is the questionnaire wording on fertility intentions. DHS questionnaires are written in English but designed for a foreign country cultural setting before being translated into the local languages of the respective countries. The translation into local languages may signify different meanings in different cultural context, and this may bias women's reporting of intendedness of birth. In this context, educated women may be in a better position to understand the question accurately and thus more likely to accurately report their pregnancy intentions compared to less educated women.

Of course, more mistimed fertility among educated women could result from ineffective contraceptive methods or contraceptive failure, perhaps due to limited access to family planning services especially in rural areas. A recent study on abortion estimates in Pakistan shows that women resort to induced abortion to avoid unintended fertility (2.25 million abortion annually). In Pakistan, women are not generally allowed to move out of home alone especially in rural areas, and health centers are usually not at close distance. So, even though women may want to use contraceptives, they may not be able to access these facilities. Despite the initial success of the Lady Health Worker (LHW) program launched in 1994 to provide family planning services to women at their homes, the program is now facing serious challenges such as poor infrastructure, inadequate management, scarce and low quality of services along with financial problems, and low density of workers (one LHW is responsible for a population of 1000 women in a community) (Hafeez et al., 2011; OPM, 2009). In addition to financial and management problems, program faces challenges in recruiting LHWs to work in hard-to-reach or remote areas mainly in these areas candidates do not meet the educational criteria set by the program (OPM, 2009).

The third objective of this chapter was to see whether the educational gradient of unintended fertility has changed over time (Hypothesis 3). Diffusion of smaller family ideals and access and availability of family planning methods has resulted in decline in unintended fertility (Westoff and Bankole, 1997). However, studies show that diffusion could not account for socioeconomic differentials and observed that educational gradient of unintended fertility has increased over time, with less educated being more likely to experience unintended fertility (Finer and Henshaw, 2006). The results show that the educational gradient in the risk of having unintended birth has changed over time but only for higher-order births and not in the expected direction. I was expecting a negative educational gradient unintended fertility in earlier time periods; however, the results show that unintended fertility was actually higher among women with secondary education in 1990, consistent with work in some other contexts (Raymo et al. 2015). A plausible reason for this unexpected result may be that women with this level of education had low fertility ideals but little power to implement them. And there was no evidence that the highly educated were less likely to have an unintended birth. Women with any degree of education were a select group in 1990 and therefore they incurred higher opportunity costs of unintended childbearing. Educated women likely had a hard time in balancing work-family life, particularly when higher education brings them more economic opportunities but the household division of labor does not change. But at the same time, this group may be more vocal and clear about their fertility intentions and behavior and thus willing to consider births unintended. Nonetheless, there is a strong educational gradient for unwanted higher-order births over time. Women with a secondary education are less likely to have unwanted birth over time.

Limitations

The major limitation of the study is the cross-sectional nature of the data. In cross-sectional data, it is difficult to develop causal relationship between variables of interest. Unfortunately, no panel level study is available in Pakistan that has collected detailed data on birth intentions and corresponding couple-level variables. One of the disadvantages of cross sectional nature is the temporal ordering of outcome and independent variables; the independent variables are derived from current status of the respondent rather than at the time when the event happened. As such, perceived spousal concordance in desired family size is measured at the time of survey, not before the pregnancy was conceived. Borrowing from literature analyzing cross-sectional data (e.g. Williams and Sobieszczyk, 2003; Testa, 2014), I assume that women's perception about their husband's fertility desires at the time of survey are the same around the time of conception, but this may not necessarily be true.

Another major limitation of the study is the lack of data on husbands' attitudes regarding the intentions of the most recent pregnancy/birth, husbands' perceptions of their wives' desired family size, and information about spousal communication on reproductive health matters. There may be biases inherent in the retrospective measurement of pregnancy intentions; women may not recall correctly about their feelings at the time of conception or the feelings about the earlier unwanted or mistimed conception could change over time. Some women may not wish to report a pregnancy as unwanted or mistimed especially after the birth of a child from that pregnancy. In addition, women probably do not report unintended pregnancies that do not end in a live birth (i.e., in induced abortion or some other outcome) (Bongaarts, 1990; Joyce et al., 2000).

This chapter also highlighted the need for more refined measures of women's empowerment other than women's education. For instance, women's decision-making power,

freedom of mobility, gender attitudes and beliefs of a woman or her husband, women's educational and career aspirations, interspousal communication, and community level gender specific measures, to name a few, may provide a better insight into the role of women's empowerment on fertility behavior. Although the PDHS 2012-13 asked women in detail about their attitudes toward wife-beating and their role in household decision making, I was unable to study change over time because the PDHS 1990-91 did not have these variables or asked them in a different manner.

Conclusion

Further research is required to understand the extent to which spousal concordance influences the intendedness of births and other reproductive health behaviors. Some studies have shown that fertility preferences are generally concordant across couples and that women's fertility preferences can accurately serve as a proxy for men's fertility preferences (Diro and Afework, 2013; Yadav et al., 2010). However, given the social changes in Pakistani society over the last two decades (especially increases in women's education), husbands and wives may have become increasingly likely to differ in their reproductive roles (Planning Commission, 2015) or, conversely, could have become more likely to discuss reproductive matters. Power differentials by gender may be particularly important for reproductive decisions in developing countries. In societies where patriarchal systems prevail and where men are the main decision makers, men's attitudes and desires toward fertility shape the fertility outcomes of the couple (DeRose et al., 2002; Mason and Smith, 2000). Therefore, for a broader understanding of the dynamics influencing fertility behavior, it is imperative to study fertility within the perspective of the current gender systems, ideally with data from both men and women (Dyson and Moore, 1983; Miller, 1997).

Education is believed to provide tools and resources to women to make informed choices. However, these results suggest that despite the improvement in female education in Pakistan over the past few decades, many women seem to be unable to assert their preferences even though they seem to be communicating more about fertility preferences (as evidenced by fewer women reporting they do not know their spouse's fertility preferences). The findings suggest that the government and social organizations need to put their efforts into ensuring that the changes happening at societal level (i.e., increasing women's education) are translating into interpersonal relationships by changing the cultural milieu of the society that accepts and celebrates women's empowerment. Improvement in women's education alone does not seem to be enough to fully and truly empower women, since higher levels of education are confined to a relatively small section of the urban population. The number of such educated women as a proportion of the country's population is still quite small. For such change, educating men about the importance of women education for their family well-being is important. This can be achieved by including men in the fertility dialogue and meeting the reproductive demands of the men, especially young generations, may prove a way forward. This will not only increase spousal communication on reproductive matters but also reduce misconceptions about family planning and help avoid unwanted pregnancies. A recent qualitative study in Punjab, Pakistan found that men are willing to talk about their fertility intentions and behaviors and to participate in family planning, highlighting the need for male health workers to cater to men's reproductive health needs (Kamran et al., 2013). Organized advocacy alongside an inclusive couple-level strategy, therefore, appears to be the two-pronged approach that could bring understanding, harmony, and spousal concordance between equally empowered men and women with regard to fertility decisions and other reproductive health behaviors.

CHAPTER III:

CHANGING GENDER ROLES AND SPOUSAL AGREEMENT ON FERTILITY INTENTIONS: A CASE OF PAKISTAN

Introduction

Decisions to have a child, and when, are essentially a dyadic matter, and so a couple's agreement on having a child is important in shaping their fertility intentions and desires as well as their actual reproductive behavior. Although scholarship on reproductive attitudes and behaviors has long recognized the importance of both partners' fertility intentions and desires in shaping a couple's attitudes and behavior (Stein et al., 2014; Rosina and Testa, 2009; Thomson, 1997; Morgan, 1985; Fried and Udry, 1979), family planning research as well as policy formulation has until recently used data gathered from the female segment of the population. Conventional fertility analysis assumes women's responses about the frequency and timing of past childbearing are more accurate than men's reports as they are the actual bearer of children. Further, it is assumed that women's responses about their partner's fertility intentions is also accurate (Morgan, 1985; Korenman et al., 2002; Williams, 1994; Khan et al., 2007) because couples can be considered a single entity who have similar fertility goals (Dodoo and Tempenis, 2002; Thomson, 1997; Greene and Biddlecom, 2000).

In societies in which fertility is almost entirely marital and divorce is uncommon, data on dates of birth and number of children collected from wives can largely be assumed to be identical for husbands. But for more subjective fertility-related information, this is less likely to be true. Though women's proxy reports about their partner's fertility goals are not problematic in most cases, it is also reasonable to expect that some wives might be unaware of their husband's fertility intentions if couples have not discussed their intentions with one another. This is evident

from studies done on couples' reproductive intentions and behaviors that have shown discrepancies in husband and wife reports (Diro and Afework, 2013; Becker, 1996). Some degree of spousal disagreement on fertility intentions and preference is also inevitable because fertility intentions are not static and are reassessed over the individual life course (Rosina and Testa, 2009). One of the reasons for the limited research on spousal concordance on fertility intentions and behavior is lack of couple-level data. Though some surveys have questions on partners' attitudes and desires, research has shown that these responses are not very reliable, especially on subjective matters, and favor the respondent's own fertility attitudes and desires (Testa and Toulemon, 2006; Thomson and Hoem, 1998; Thomson, 1997). This justifies examining couple-level fertility intentions to clearly understand the couple's fertility decision-making process (Stykes, 2015; Stein et al, 2014; Morgan, 1985).

Study Setting

Attention to gender issues and spousal dynamics in reproductive intentions is especially imperative in a patriarchal society experiencing changing gender role dynamics. Pakistan, the sixth most populous country in the world, is one such society, where men enjoy greater decision-making authority both inside and outside the home sphere (Sathar, 2000). Women in traditional societies like Pakistan have to submit to their partner's will, as the husband is usually the sole breadwinner. However, over the last two decades a shift is observed in the socio-cultural context of Pakistani society. The government is increasingly improving women's status by investing in women's education and designing and implementing policies to protect women's rights. For instance, during the last two decades a gradual improvement in female literacy occurred, with rates increasing from 21% in 1990 to 47% in 2011-12 (Pakistan Bureau of Statistics, 2015), although this level is still low and gender disparities remain large (men's literacy is at 70%).

Women are also increasingly entering in the labor force, though most of them are working in the agriculture sector. The female labor force participation rate has increased from 16.2% in 2000-01 to 24.3% in 2011-12 (Pakistan Labor Force Survey, 2013). Women's share of wage employment in the non-agricultural sector has increased over time; it was 8% in 1990-91, 9% in 2001-02 and rose to 15.8% in 2014-15 (Pakistan Labor Force Survey, 1991-92, 2001-02, 2014-15).

Pakistan is also interesting because of its stage in the fertility transition. After experiencing early fertility declines, fertility has stalled in recent years (Hardee and Leahy, 2008; Sathar et. al., 2009). According to the transition theory, during the fertility transition women's desires for larger families may decrease more quickly than men's (Mason and Smith, 2000). With increases in education and greater exposure to opportunities outside home, women may internalize smaller family size ideals, yet the gender dynamics of the society may remain pronatalist, possibly leading to more disagreement in a couple's fertility intentions. In Pakistan, the few studies on couples' fertility decision-making process are dated, preceding the dramatic increases in women's educational and economic status. Mahmood (1998) used the matched couple data set of PDHS 1990-91 and found that only 60% of the couples reported similar attitudes on different fertility-related questions and 40% had dissimilar fertility desires. She also found that desire for fewer children was higher among women but that women were more likely to disapprove of family planning, perhaps due to illiteracy and adherence to traditional ideals of large family. In an analysis of five Asian countries, including Pakistan (Mason and Smith, 2000), there was no evidence of influence of gender stratification on spousal agreement on desire to stop having children, but that in highly gendered societies, the husband's influence was stronger in deciding whether to use contraception than wives.

After a gap of almost 20 years, the Pakistan Demographic Health Survey (PDHS) 2012-13 has collected data on fertility intentions from both husbands and wives at household level, enabling researchers to re-visit the role of couples' fertility intentions in an era of rapidly changing gender roles. In this paper, I will use this newly available data to not only look at how couples' education influences spousal agreement on fertility intention but also, using couple-level data from nearly twenty years earlier (PDHS 1990-91), to observe change over time in the relationship between couples' education and spousal agreement on fertility intentions. The focus on observing change over time is important because of a growing emphasis on women's over the past two decades in Pakistan at both governmental and household level.

Gender and Reproductive Decision-Making

Research has long recognized the importance of couple-level fertility preferences and intentions and their influence on couples' reproductive behavior and outcomes (Rosina and Testa, 2009; Morgan, 1985; Fried and Udry, 1979; Beckman et al., 1983; Thomson, 1997; Thomson and Hoem, 1998), even if few studies actually analyze both members of a couple. Men and women (and husbands and wives) may not necessarily share the same fertility attitudes and goals (Bankole, 1995; Ezeh, 1993; Lasee and Becker, 1997). Becker (1996) studied multiple Demographic Health Survey (DHS) reports both in developed and developing countries and reviewed the congruence between husbands and wives on a number of reproductive measures. He found high level of agreement among couples on reproductive events such as number of children. However, he observed that husband-wife concordance on subjective matters of fertility such as desired family size, partner's fertility intentions, and similar measures was between 60 - 70%. Other studies have found similar findings (Salway, 1994; Hohmann-Marriott, 2009).

The research on spousal concordance on fertility intentions is inconclusive on how fertility decisions are made in cases of disagreement among couples. However, most of the research on spousal agreement on fertility intentions and preferences is carried out in western countries, particularly the US. It is clear from these studies that "spousal dominance is a function of the prevailing socio-cultural system" (Bankole 1995). For example, some studies found that in cases of discordant fertility intentions, wives' characteristics have greater influence on a couple's fertility intentions than husbands' characteristics because women enjoy legitimate control in areas of contraceptive use and fertility (Beckman, 1984; Rosina and Testa, 2009; Miller and Pasta, 1994). For instance, being employed increases the risk of conflict among couples on fertility intentions and gives women more decision-making authority regarding having their first child (Rosina and Testa, 2009). Conversely, Stein et al. (2014) found that effect of male partner fertility intentions about whether to have a child was stronger than the female partner's in Germany. Jansen and Liefbroer (2006) and Thomson (1997) observed that fertility intentions and attitudes of both partners play an equal role in making fertility decisions. They argued that in modern societies couples enjoy equal bargaining power and thereby have equal influence on each other decisions.

However, research on the influence of a couple's individual and shared characteristics on spousal agreement on fertility intentions is rare in developing countries. In societies marked with high gender inequalities, men significantly influence the reproductive decision making particularly when husband and wife have discordant fertility preferences. For instance, Ezeh (1993) found that husband's characteristics, particularly attitudes toward contraception, strongly influence the wives' attitude toward contraception but reverse is not true. Similarly, DeRose and

Ezeh (2005) found that husband's education strongly influences wife's intention to stop childbearing than her own education.

Changing Gender Roles and Spousal Agreement on Fertility Intentions

Changing gender roles also make understanding spousal agreement on fertility behaviors and intentions important. Women's increased participation in higher levels of education – and the greater economic opportunities this affords them – provides more bargaining power and decision-making authority within the household (Rosina and Testa, 2009; Stein et al., 2014). In particular, education is believed to provide women with the tools and resources to make informed decisions (Jejeebhoy, 1995), along with more options that can affect their childbearing intentions or the desired number of children (Scheon et al., 1999; Stein et al., 2014). An extensive body of research has found that women's empowerment, especially women's education, influences a range of reproductive attitudes and behaviors (Edmeades et al., 2012; Mason and Smith, 2000; Upadhyay and Karasek, 2012; Schuler et al., 1997; Bbaale and Mpuga, 2011; Bloom et al., 2001; Uchudi, 2001; Kishor, 2000). Educated women are socialized in an environment (such as school, work place) that favors smaller family ideals and they have skills and behavioral norms to accept new ideals and also have great aspirations for themselves as well as for their children. Educated women, therefore, challenge the traditional family norms and are better able to make informed choices. In this perspective, it is reasonable to assume that with increases in education, women's relationships with their husbands, particularly communication, will improve and become more egalitarian and that the value and demand of having more children will decrease (Uchudi, 2001). Thus, I hypothesize that spousal disagreement on fertility intentions will be higher among couples in which women are highly educated. The desire to have

an additional child will be lower among educated women because of the opportunity costs they will incur by having a child.

Hypothesis 1: Spousal disagreement on fertility intentions will be higher among couples in which wife is highly educated than wives with no formal education.

Hypothesis 1a: When disagreement occurs, women with higher education will be more likely to have husband who want additional child than women with no formal education.

Couples' Educational Homogamy and Spousal Agreement on Fertility Intentions

As the desire to have a child is a future event, in this context, fertility intentions are influenced by individual as well as by partner characteristics such as education, economic status, and the values a person attach to desire for children. While the inverse relationship between women's education and fertility is well established in the literature (see e.g. jeejhboy, 1995; Uchudi, 2001; Schultz, 1993), less is known about the influence of partner's or couples' relative education on fertility attitudes and behaviors of women. (Basu, 1999; Nitsche et al., 2015). Couples' educational differences, particularly when the husband is more educated and older than his wife, influence reproductive attitudes and preferences (Gebreselassie and Mishra, 2007). For instance, studies in developed countries have found that childlessness is more common among less educated men (Kravdal and Rindfuss 2008; Nisen et al. 2013).

However, this may not be true in less industrialized societies. Educational differences between husband and wife is an indicator of relative power and significantly influences fertility attitudes and behaviors in various settings (Wolff et al., 2000; Beegle et al., 2001; Omondi-Odhiambo, 1997; Uchudi, 2001; Bbaale and Mupga, 2011; Adamchak and Mbizvo, 1994). For instance, Beegle et al. (2001) found that when a woman is more educated than her husband, she is more likely to utilize maternal health care services in Indonesia. Similarly, DeRose (2007) and

DeRose and Ezeh (2005) found that men's education has more influence on wives' fertility intentions but not vice versa in Ghana. Therefore, it may be reasonable to expect that gender differences in fertility intentions may operate through a couple's relative education. In other words, it is possible that differential educational pairing of partners may influence their fertility intentions and may create more disagreement.

As is common in developing countries, educating males is a priority because sons are important for old age security, and so men's education (and thus husband's) education tends to be higher than women's. Further, most of the marriages are arranged by parents and cousin's marriages are very common in Pakistan. Marriages are largely decided on the basis of patrilineal lineage, and educational and age differentials are not considered important. As a result, women tend to "marry up" and men tend to "marry down" or with partner of equal socioeconomic status. With the changes happening at the societal level as women's education increases, bringing them more economic potential, the dynamics of assortative mating are changing and women are increasingly "marrying down" (Schwartza and Hanb, 2014). However, the negative influence of women's education on fertility that is seen generally is not necessarily applicable (Ibisomi and Odimegwu, 2011). Instead, the socio-cultural environment of the society may protect men's dominance over reproductive matters because women's improving educational status must be weighed against a backdrop of patriarchy. Put differently, women's education may bring them more economic independence and general decision-making power but does not necessarily increase their ability to make reproductive decisions within marriage (DeRose et al. 2002). This prevailing gender inequality often compels women to adjust their fertility intentions because of actual or anticipated conflict with their husbands or due to their desires to conform to normative expectations (Thomson, 1997; DeRose and Ezeh, 2005; Basu, 1999). However, with the changes

happening at the societal level, it seems likely that couples may have more disparate fertility goals and thereby more disagreement on fertility intentions in more recent years. Further, the disagreement will be more pronounced among couples in which the wife is more educated than her husband. A wife's higher status may pose a significant threat to a husband's gender identity as the breadwinner and household head, leading to conflicting fertility intentions (Tichenor 2005). Therefore, in this study, I use couple educational homogamy as a measure of relative power to examine whether disagreement is higher in non-normative couples (i.e., those in which the husband has less education than the wife). Further, I expect that husbands will be more likely to desire an additional child to assert male dominance.

Hypothesis 2: Spousal disagreement on fertility intentions will be higher among couples in which wife is more educated than her husband.

Hypothesis 2a: When the disagreement occurs, husband will be more likely to desire another child in couples in which husband is less educated than his wife.

Diffusion and Spousal Agreement on Fertility Intentions

Pakistani society, however, is evolving and increasingly accepting of smaller family ideals as diffusion processes occur through other means, such as government programs and the media (Casterline 2001; Bongaarts and Watkins, 1996). The diffusion perspective holds that it is first the attitudes, behaviors, and values of an innovative and educated group that favors fertility decline that then diffuses to other groups such as uneducated individuals through media exposure or through direct contact with educated women (Casterline, 2001; Cleland, 2001). Just two or three decades ago, it was rare for women to receive any level of education, making higher levels more selective and perhaps more influential for an individual women's own fertility ideals and behavior. As education expanded, higher levels of education have become more common for

women, and further, women's status more generally has improved, perhaps weakening the impact of women's own education level. Therefore, it is of particular interest to know whether individual-level education still has the same influence on reproductive decision making, or whether the education gradient of reproductive decision making has declined over time?

Hypothesis 3: Wife's education has a stronger influence on disagreement among couples on having a(nother) child in 1990-91 than in 2012-13.

Hypothesis 3a: When the disagreement occurs, women with higher education will be less likely to desire a(nother) child in 2012-13 than in 1990-91.

Other Factors Related to Fertility Intentions

Of course, education and spousal homogamy are not the only factors that influence plans for additional children. Age, parity, employment status, place of residence, experience of child mortality, and household wealth status are all associated with fertility intentions (Hakim 2003; Hayford and Morgan 2008). Spousal agreement on fertility intentions varies by age. The desire to have additional children declines with increasing age for both men and women. Large spousal age differences (common in patriarchal societies) negatively affect spousal agreement on fertility intentions, particularly when the wife is younger than her husband. This in turn compromises a women's ability to negotiate and make informed reproductive choices (Longfield et al., 2004; Luke, 2005; Kaestle et al., 2002). Younger women are more likely to be in agreement with their husbands to have additional children because they are more influenced to follow the social norms (Hagewen and Morgan, 2005; McQuillan et al., 2015). In general, there is an association between women's work and fertility (Joshi, 2002), but there are inconsistencies. For instance, Bruce and Dwyer (1998) found that women's employment has little effect on their control over their fertility when women work merely due to economic pressure. Others argued that it is not

the women's employment per se but their control over their earnings that influences the demand for children (Kirtz and Mankinwa-Adebusoye, 1993; Mahmud 1993). Fertility intentions may also be linked to parity, though the evidence is mixed. The accuracy of intentions varies either by desired parity or by parity at the time intentions are recorded (Quesnel-Vallée and Morgan 2003; Thomson, 1997; Testa, 2014). McQuillan et al. (2015) found that the association between parity and fertility intentions are significant and negative; fertility intentions decline with each additional child. Socioeconomic differences also influence couples' fertility intentions. For example, couples residing in urban areas are less likely to desire for another child (Rabbi, 2014) and women belonging to a high wealth household are more likely to desire for smaller family and are better able to achieve their fertility goals than poor women probably because of better access, resources, and knowledge about contraception (Mahmood and Ringheim, 1998; Bbaale and Mpuga, 2011; NIPS, 2013; Hayford, 2012). Also, previous experience of child mortality may influence couples' agreement on having another child, as couples may want to replace their deceased child (Dodoo, 1993).

Decomposing Factors Attributable to Changes in Spousal Agreement on Fertility Intentions Over Time

In addition, another objective of this study is to understand and explain the sources of change in spousal disagreement on fertility intentions over the last two decades. Studies done on the reproductive attitudes and behaviors of couples have shown that both changes in the composition of a population as well as how various characteristics relate to behavior are important in explaining spousal agreement on fertility behaviors (Pillai and Teboh 2011; Muhoza et al., 2013). Recall that massive social changes happened in Pakistani society over the last two decades particularly improvement in women's education. Further, not only are there more

women who are educated, for instance, but it is possible that education (or other factors) are now linked differently to fertility intentions and spousal agreement. The purpose of decomposition is to discern how much of the change in spousal agreement is general or structural (the composition of population) in nature or whether certain characteristics matter more or less over time. In other words, decomposition is used to understand the relative role played by compositional factors, in this case changes in women's absolute and relative education in last two decades, in explaining change in spousal agreement on fertility intentions over time. To what extent are shifts in spousal agreement driven by changes in the overall population composition (i.e., change in the proportion of women with higher levels of education) versus changes in how specific characteristics affect agreement?

Data and Methods

In this chapter, my unit of analysis is the couple. In Pakistan, marriage is universal, so all couples are married couples and all fertility is marital fertility. In both the PDHS 1990-91 and 2012-13, information on fertility preferences (discussed below) is collected from both men and women, making this the ideal data set to study how changes in gender roles influences couple-level decision-making for reproductive behaviors. For the PDHS 1990-91, I have selected for analysis a matched set of currently married, fecund women aged 15-49 and their husbands (of any age). The initial sample size was 1,365 married couples, but there were several restrictions that reduced the sample size. First, I dropped cases in which a husband had more than one wife (n=67). I also excluded women who were sterilized or declared infecund (n=92). I also dropped men who were sterilized or those who reported that their wives were infecund (n=36) and those who had missing information on the future fertility preference variable (n=7). This yielded a final analytical sample of 1,163 couples.

For the PDHS 2012-13 couple analysis, a matched set of currently married, fecund women aged 15-49 and their husbands aged 15-49 were selected, yielding a sample size of 2,798 couple. In 134 cases, a husband had more than one wife, so I dropped these cases. I also dropped women who were sterilized or declared infecund (n=287) and those who had missing information on the fertility preference question (n=5). I also dropped men who were sterilized or reported that their wives were infecund (n=22) and had missing information on future fertility preference variable (n=3). My final analytical sample is therefore 2,347 couples.

As the main objective of this study is to examine change over time in couples' agreement in fertility intentions, I pooled both datasets, and this yielded the pooled analytical sample of 3,510 couples. The objective of pooling the datasets is not only to increase the sample size to obtain more precise estimates but also to investigate the effect of time. The gap of more than twenty years between two surveys facilitates observing change in gender relations which may affect reproductive intentions and decision making. To capture the structural change over time, I included survey year as a dichotomous variable (with 1990-91 as the reference category) in multivariate analysis.

Measures

Dependent Variables. Couple's agreement in fertility intentions variable is based on question about future fertility intentions. The DHS asks both men and women about their future fertility intentions "Would you like to have (a/another) child or would you prefer not to have any (more) children?" However, the question wording is slightly different for pregnant and non-pregnant women and also for men whose wives were pregnant at the time of survey. Currently married, non-sterilized women who were not pregnant and men whose wives were not pregnant were asked "Would you like to have (a/another) child, or would you prefer not to have any

(more) children?" Currently married, non-sterilized, pregnant women were asked "After the child you are expecting now, would you like to have another child, or would you prefer not to have any more children?" For men, whose wife/wives were pregnant at the time of survey, the DHS asks "After the (child/children) you and your (wife (wives)) are expecting, would you like to have another child, or would you prefer not have any more children?" The response categories were 1) have another child; 2) no more; 3) undecided/don't know. Respondents who were undecided are categorized as they want a(nother) child. Studies on fertility intentions and desired family size have shown that respondents who give a non-numeric response or were undecided are more similar in characteristics to those who wanted more children and did not have a clear wish to stop childbearing (Becker and Sutradhar, 2007; Mahmood and Ringheim, 1997; Olaleye, 1993). Retaining these cases is important, as a substantial percentage (40%) of the respondents in 1990 gave a non-numeric response to question on fertility intention. However, the percentage of non-numeric responses has dropped significantly over the period of time as evident from various studies on DHS (Bongaarts, 2011). Still, a non-negligible percentage of men and women (13%) responded that they were undecided or didn't know in PDHS 2012-13.

For this study, I have two versions of this measure. The first dependent variable is a simple dichotomous variable contrasting couple's agreement versus disagreement on fertility intentions. I constructed couple agreement indicators by comparing the responses of wives with those of their husbands. The couple-level construct of fertility intention is defined as: *Agreement on fertility intentions* in which both partners either want a(nother) child or don't want a(nother) child versus *disagreement on fertility intentions* in which either only wife wants or only husband wants a(nother) child. I am also interested which partner wants additional children when there is disagreement. Therefore, the second dependent variable measures, among *those who disagree,*

who wants a child? This is again a binary construct: only wife wants versus only husband wants a(nother) child.

Independent Variables. The two main independent variables are wife's education and couple educational homogamy. *Wife's education* is categorized into three categories: no formal education (reference category), primary education (grade 1-5), secondary and above education (grade 6 & above). *Couples' educational homogamy* is categorized as: have same level of education, wife is more educated than husband, husband is more educated than wife, and both have no formal education (reference).

Other control variables. Although the main interest is to investigate how gender and education influence couple agreement about future fertility, I controlled for socioeconomic and demographic variables that are related to fertility intentions. The control variables are husband's age, couple's age difference, women work status, parity (number of living children), experiencing any child death, rural-urban residence, and household wealth.

Husband's current age is represented by a three-category measure: below 35 years old (reference), 35-44 years old, and 45 years old and above. *Couples' age difference* is also included in the analysis and is categorized as: wife is older by 1-9 years, wife is younger by 0-4 years (reference), wife is younger by 5-9 years, and wife is younger by 10+ years. *Women's work status* is a dichotomous measure, with 0 for not working, and 1for working. A dummy variable for *experiencing any child death* is also included in the analysis. To account for the *urban-rural* differentials, l included a dummy for urban-rural residence with rural as reference category. *Household wealth* is based on information on the wealth index as provided in the PDHS 1990-91 and PDHS 2012-13, constructed from information on household asset data including ownership of a number of consumer durables as well as standard of living and dwelling characteristics

(National Institute of Population Studies, 1991, 2013; Mahmood and Bashir, 2012; Rutstein and Johnson, 2004). The wealth index originally consisted of five categories (poorest, poorer, middle, higher, and highest). For the sake of simplicity, I merged the poorest and poorer into one category of 'poor' and higher and highest into 'high,' with poor being the reference category. To account for current pregnancies, a dummy for currently pregnant women is included in the analysis. A substantial number of couples disagree on number of living children (110 in 1990 and 81 in 2012); therefore, I included a dummy for disagreement on number of living children to account for this because disagreement among couple on number of living children affects their fertility preferences differently. As I restricted my couple level sample to husband's with one wife only and dropped all those cases in which husband has more than one wife, the disagreement on number of living children may mean that either husband or wife are widowed or divorced and have children from the previous marital relationship.

Analytical Strategy

The aim of the paper is to observe change over time in couples' fertility agreement by women's actual and relative education level. I used both bivariate and multivariate analytical techniques to study the association between couples' fertility intentions and couples' education. A bivariate analysis is used to identify patterns of associations between couples' fertility intentions and couples' education (wife's education and couples' educational homogamy) and their individual and shared background characteristics across surveys. I then moved to multivariate analysis. Multivariate analysis is done in two stages. In the first stage, I looked at the relationship between couple agreement vs. disagreement in fertility intention by wife's education and couple's educational homogamy controlling for all other background couple-level, individual, and shared variables. In other words, in the first stage the dependent variable is

defined as agreement vs. disagreement in fertility intentions among couples irrespective of who disagree.

In the second stage, I looked at the couples who have discordant fertility intentions. In this case, the dependent variable is again dichotomous in nature and is defined as only husband wants a(nother) child vs. only wife wants a(nother) child (reference). The main objective of this second analysis is to determine, among those with disagreement, the pattern of disagreement by education. In other words, does women's absolute and relative education give them more power and say in shaping their fertility intentions and thereby lead to disagreement on fertility intentions?

Because the analyses use a binary dependent variable, I used logistic regression. Logistic regression analysis is a multivariate technique which allows for estimating the probability of occurrence of an event, by predicting a binary dependent variable from a set of explanatory variables. The logistic regression model is of the form,

$$\ln [(\pi i)/(1-\pi i)] = X'\beta = \sum bi\ xi$$

where πi is the probability of couples' disagreement in fertility intentions in case of first stage analysis and probability that husband wants a(nother) child at second stage of analysis, bi are estimated regression coefficients, and xi are the couples' individual and shared background characteristics.

For both set of analyses, Model 1 is the zero order model and includes survey year. Model 2 includes wife's education, and couple's educational along with dummy for survey year. Model 3 adds all the couple-level, individual, and shared characteristics. In Model 4, I include the interaction of wife's education with survey year to test whether the education gradient of disagreement has changed or remained constant over time.

Further, I employed regression-based decomposition technique for non-linear models (an extension of the Blinder– Oaxaca decomposition method for non-linear regression models such as logistic regression models) (Fairlie, 2005; Power et al., 2011) to identify the factors that influence spousal agreement on fertility preferences over the last two decades[2]. Decomposition analysis quantifies change over time or across groups into components attributable to compositional changes (i.e., differences in the proportion with various characteristics) between surveys and components attributable due to change in the effect of explanatory variables (i.e., differences in the coefficients due to changes in population behavior) (Blinder 1973; Oaxaca 1973; Powers et al. 2011). I used the Stata *mvdcmp* package developed by Powers et al. (2011) to carry out the multivariate logistic regression decomposition. Both changes in population composition and population behavior related to spousal agreement on fertility preferences (effect) are important. In this study, I used regression based decomposition analysis to see how much change in couple's agreement on having another child is due to changes in women's and couple's relative characteristics, particularly women's absolute and relative education, and how these factors shape differences across surveys conducted at different times. All the analysis is weighted to account for clustering due to sampling design and non-response.

Results

Descriptive Results[3]

Table 3.1 presents the percentage distribution of individual and couple's shared characteristics, along with disagreement in fertility intentions, by survey years. The majority of

[2] Decomposition analysis is done on the full sample only (i.e., the analysis predicting spousal agreement versus disagreement on fertility preferences) to identify the factors responsible for change in spousal agreement on fertility preferences at population level.

[3] All the analyses are weighted to account for complex survey design of PDHS 1990-91 & 2012-13.

couples agree about their future fertility intentions, with a slight increase between 1990 (75%) and 2012 (82%). Disagreement among couples on fertility intentions declined by 27% from 1990 to 2012, though when a couple disagrees, in more than two-thirds of the cases it is because the husband wants a(nother) child both in 1990 and 2012.

As expected, women's education improved between 1990 and 2012. In 1990, only 11% of women had a secondary or higher-level education, increasing to 30% by 2012. Around 82% of women had no formal education in 1990, declining to 54% by 2012. The percentage of couples having the same level of education doubled between 1990 and 2012, with a substantial decline in the percentage of couples in which neither member had any education (47.8% vs. 22.3%). However, a gendered pattern is evident in terms of couple's educational homogamy – in around 40-45% of couples in both time periods, the husband is more educated than his wife.

Table 3.1. Weighted Sample Characteristics of Couples by Survey Year

Characteristics	1990	2012
Couple Fertility Intentions		
Agreement (both want or both don't want a(nother) child)	75.1	81.7
Disagreement (either husband or wife wants a(nother) child)	24.9	18.3
Only wife wants	30.1	32.6
Only husband wants	69.9	67.4
Wife's Education		
No formal education	81.8	53.7
Primary	7.1	16.6
Secondary and above	11.1	29.7
Couples' Educational Homogamy		
Both have no formal education	47.8	22.3
Husband is less educated than wife	2.7	10.0
Husband is more educated than wife	39.8	45.3
Both have same level of education	9.7	22.4
Wife's Age		
15-24	31.3	24.3
25-34	45.6	44.1
35+	23.2	31.6
Husband's Age		
Below 35	46.0	50.0
35-44	29.4	33.5
45 & above	24.6	16.5
Couples' Age difference		
Wife is older by 1-9 years	5.4	11.5
Wife is younger by 0-4 years	35.9	43.2
Wife is younger by 5-9 years	34.6	32.7
Wife is younger by 10+years	24.1	12.6
Wife's Work Status		
No	83.0	73.3
Yes	17.0	26.7
Parity		
0-2	35.2	47.6
3	14.8	15.3
4 and above	50.0	37.1
Experienced Any Child Death		
No	69.7	78.6
Yes	30.3	21.4
Place of Residence		

Rural	69.4	64.8
Urban	30.6	35.2
Household Wealth		
Poor	43.1	37
Middle	19.6	18.1
High	37.3	44.9
Currently Pregnant		
No	83.1	85.4
Yes	16.9	14.6
Disagreement on Number of Living Children		
No Disagreement	89.6	97.3
Disagreement	10.4	2.7
Unweighted N	1,163	2,347

Source: PDHS 1990-91 & 2012-13.
Analyses are weighted to account for complex survey design of PDHS 1990-91 & 2012-13.

In both 1990 and 2012, a larger proportion of husbands were in the youngest age category except that in 2012, only 16% of the husband were above 45 years old. This is due to the differential male sample selection in 1990 and 2012; recall that there were age restrictions for husbands (up to age 49) in 2012 but not in 1990. The pattern of couple's age difference is similar across surveys, although the proportion of couples in which the wife is older nearly doubled. Similarly, the proportion of women who were 10 or more years younger than their husbands dropped by half. In 2012, more than one quarter of the women were in work force. There was a large decline in the percentage of couples with four and more children and in the percentage of couples who experienced child mortality across surveys. The majority of couples resided in rural areas in both survey years, and less than half belonged to high-wealth households. The disagreement among couple on number of living children was high in 1990 (10%) but dropped dramatically by 2012 (2.7%).

Figure 3.1 shows the relationship between wife's education and agreement in couple's fertility intentions. The graph shows that there is no variation in couple's fertility intention by wife's education. The bivariate relationship between agreement on couple's fertility intentions and women's education does not support my hypothesis that disagreement on fertility intentions would be higher among couples in which the wife has higher education (Hypothesis 1a). While disaggregating by survey year would have been preferable, small cell sizes by wife's education precluded this, particularly for 1990 sample. For instance, there were only 23 women with primary education and 41 women with secondary and above education who have reported disagreement on having a(nother) child in 1990.

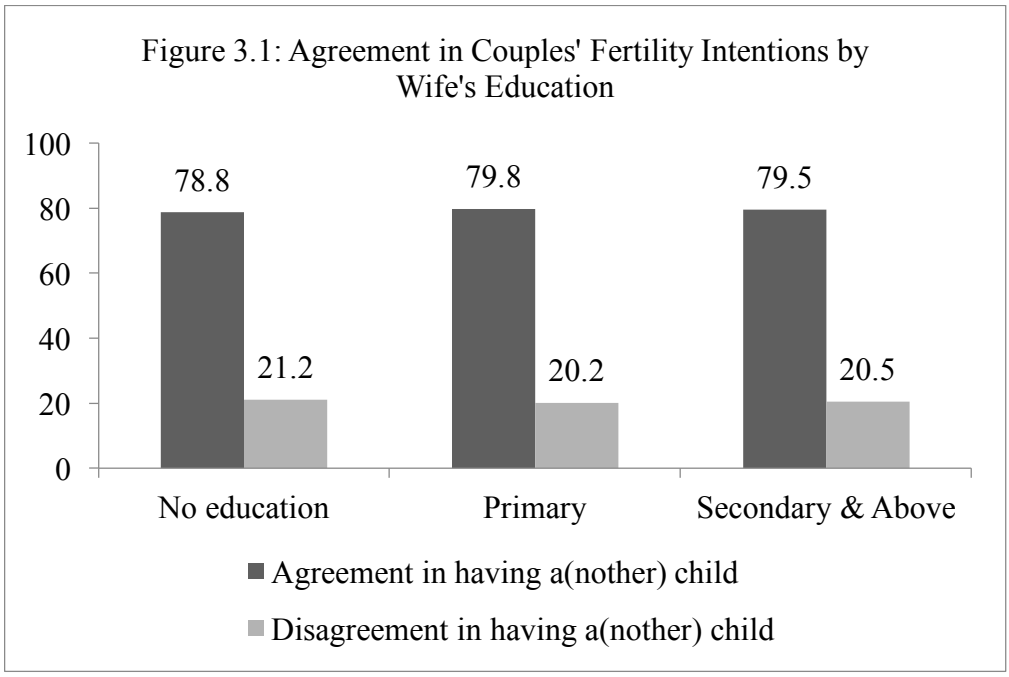


Figure 3.1: Agreement in Couples' Fertility Intentions by Wife's Education
100
80
60
40
20
0
78.8
21.2
79.8
20.2
79.5
20.5
No education
Primary
Secondary & Above
Agreement in having a(nother) child
Disagreement in having a(nother) child

Multivariate Results

First Stage Analysis: Agreement vs. Disagreement in couples' fertility intentions. Table 3.2 presents the pooled logistic regression analysis of couples' disagreement on fertility intentions. Table 3.2 includes three models. Model 1 is the zero-order model and only has year dummy. Model 2 includes the wife's education and couple educational homogamy along with dummy for survey year (Hypothesis 1 & Hypothesis 2); in Model 3, I added all individual and couple-level shared characteristics as control variables. I also tested an interaction of wife's education with survey year (not shown) to test whether the education gradient is more strongly associated in the 1990s than in 2013 with spousal disagreement, discussed below (Hypothesis 3).

Model 1 shows the odds of disagreement among couples on having a(nother) child relative to agreement has declined significantly between 1990 and 2012. Model 2 includes women's absolute and couple's relative education. Contrary to expectations (Hypothesis 1), the odds of disagreement on having a(nother) child are 37% lower for wives with primary education than wives with no formal education. Interestingly and as expected (Hypothesis 2), the disagreement among couples on fertility intentions is 2.1 times higher for those in which wife is more educated than her husband relative to couples with no formal education.

Table 3.2. Pooled Logistic Regression Predicting Couple's Disagreement on Fertility Intention

Variables	Model 1 Disagreement vs. Agreement	Model 2 Disagreement vs. Agreement	Model 3 Disagreement vs. Agreement
Year (omitted=1990)			
2012	0.68*	0.68*	0.82
Wife's Education (omitted=no formal education)			
Primary		0.63*	0.62*
Secondary &Above		0.72	0.76
Couples' Educational Homogamy (omitted=both have no formal education)			
Wife is more educated than husband		2.10*	2.36*
Husband is more educated than wife		1.15	1.24
Both have same level of education		1.22	1.44
Husband's Age (omitted=below 35)			
35-44			0.92
45 and above			0.80
Couples' Age Difference (omitted=wife is younger 0-4 years)			
Wife is older by 1-9 years			1.09
Wife is younger by 5-9 years			1.18
Wife is younger by 10+ years			1.05
Wife's Work Status (omitted=No)			
Yes			0.70*
Parity (omitted=0-2)			
3			3.07***
4 and above			3.21***
Experienced Child's Death (omitted=no)			
Yes			1.12
Place of Residence (omitted=rural)			
Urban			1.04
Household Wealth (omitted=poor)			
Middle			0.68*
High			0.89
Currently Pregnant (omitted=No)			
Yes			1.51**
Disagreement on number of living children (omitted= no disagreement)			
Disagreement			1.68*
Constant	0.33***	0.32***	0.13***
Unweighted N	3,510	3,510	3,510

Source: PDHS 199091 & 2012-13; + (p<0.10), * (p<0.05), ** (p<0.01), *** (p<0.001).
Analyses are weighted to account for complex survey design of PDHS 1990-91 & 2012-13.

Model 3 includes all the individual and couple-level socio-demographic characteristics to see how these variables influence the disagreement among couples on fertility intentions. Including these variables does not change the relationship between the variables of interest as the odds ratios for wife's education and couple's educational homogamy essentially remain unchanged. As in Model 2, wives with primary education are 38% less likely to report disagreement on fertility intentions than wives with no education. Similarly, couples in which the wife is more educated than her husband have higher odds of disagreement on having a(nother) child (OR=2.36) as compared to couples in which both husband and wife have no formal education. The odds of disagreement remain higher for couples in which wife is more educated than her husband even when the reference category for couple's educational homogamy is changed. However, the coefficient for time variable (i.e. year) becomes insignificant in Model 3, indicating that the level of disagreement among couples on fertility intentions is almost the same for 1990 and 2012 after accounting for the shifts in socio-demographic characteristics.

The odds of disagreement among couples are significantly lower for working women than non-working women. Having more than two children substantially increases the odds of disagreement among couples about having another child (OR=3.07 and 3.21 for couples with 3 and 4 or more children, respectively). Couples who belonged to the middle household economic strata are significantly less likely to disagree on having a(nother) child than couples belonging to poor households. Currently pregnant women are significantly more likely to report disagreement on fertility intentions than non-pregnant women (OR=1.68). Couples who disagree about the number of living children are 1.7 times more likely to have disagreement on fertility intentions as compared to couples who agree on the number of living children. As I restricted my couple level sample to husbands with one wife only, the higher risk of spousal disagreement on fertility

intentions among couples who disagree on number of living children may be because either the husband or wife are widowed or divorced and have children from the previous marital relationship.

I also examined the interaction between survey year and wife's education to observe how women's education influenced spousal disagreement in fertility intentions over time (not shown). Recall that it was rare for women to receive any level of education a couple of decades ago in Pakistan, making higher levels more selective and perhaps more influential for an individual women's own fertility ideals and behavior. As education expanded, higher levels of education have become more common for women, and further, women's status more generally has improved, perhaps weakening the impact of women's own education level. Therefore, I was expecting that as the diffusion of smaller family ideals through different means of communication other than education occurs, the educational differences in spousal disagreement will decline over time. However, the interaction was not significant and did not alter the direction and significance of other variables.

Second Stage Analysis: Discordant Fertility Intentions (Husband wants a(nother) child vs. Wife wants a(nother) child). Table 3.3 shows the result of pooled logistic regression models for those couples who disagree on having a(nother) child; that is, it asks which partner wanted a(nother) child. Table 3 has four models. Model 1 includes a dummy for the year variable to observe change over time. Model 2 adds wife's education and couple educational homogamy (Hypothesis 1a & Hypothesis 2a). Model 3 adds all individual and couple-level shared socio-demographic characteristics. In Model 4, I include the interaction of wife's education with survey year to observe whether there was a shift in the educational gradient over time in who (husband or wife) wants an additional child (Hypothesis 3a).

Model 1 shows that when the couples disagree, there is no difference in who (husband or wife) wants another child over time. Model 2 shows that the odds that only the husband wants a(nother) child are 3 times higher for women with secondary and above education than their peers with no formal education (Hypothesis 1a supported). The results do not support Hypothesis 2a that husbands would be more likely to intend for a(nother) child in couples in which husband is less educated than his wife. Husbands are less likely to intend an additional child in couples who have same level of education compared to couples with no education (OR=0.31). The odds ratios of the variables of interest essentially remain unchanged in Model 3 which controls for all individual and couple level socio-demographic characteristics except that the odds ratio for women with secondary and above education has increased to 4.2 (from 3.1). Couples in which the husband is 45 years old or more are more likely to have husbands who want an additional child relative to their wives than couples in which husband is less than 35 years old.

Table 3.3. Pooled Logistic Regression Predicting Who (Husband or Wife) Want Another Child

Variables	Model 1 Only husband vs. Only wife	Model 2 Only husband vs. Only wife	Model 3 Only husband vs. Only wife	Model 4 Only husband vs. Only wife
Year (omitted=1990)				
2012	0.89	0.86	0.85	0.72
Wife's Education (omitted=no formal education)				
Primary		1.23	1.38	1.58
Secondary & above		3.14*	4.22*	1.97
Couples' Educational Homogamy (omitted=both have no formal education)				
Husband is less educated than wife		0.53	0.49	0.47
Husband is more educated than wife		0.94	0.95	0.97
Both have same level of education		0.31+	0.34+	0.37+
Husband's Age (omitted=below 35)				
35-44			1.26	1.28
45 & above			1.90+	1.97+
Couples' Age Difference (omitted=wife is younger 0-4 years)				
Wife is older by 1-9 years			1.30	1.31
Wife is younger by 5-9 years			1.09	1.10
Wife is younger by 10+ years			1.19	1.19
Wife's Work Status (omitted=No)				
Yes			1.31	1.33
Parity (omitted=0-2)				
3			1.42	1.41
4 and above			1.66	1.70+
Experienced Child's Death (omitted=no)				
Yes			0.85	0.83
Place of Residence (omitted=rural)				
Urban			1.07	1.1
Household Wealth (omitted=poor)				
Middle			0.98	0.98
High			0.76	0.72
Currently Pregnant (omitted=no)				
Yes			0.90	0.91
Disagreement on number of living children (omitted= no disagreement)				
Disagreement			0.66	0.62
Interaction between survey year and wife's education (omitted=1990 & no formal education)				
Primary				0.89
Secondary and Above				2.84+
Constant	2.32***	2.34***	1.35	1.45
Unweighted N	764	764	764	764

Source: PDHS 1990-91 & 2012-13; + (p<0.10), * (p<0.05), ** (p<0.01), *** (p<0.001).
Analyses are weighted to account for complex survey design of PDHS 1990-91 & 2012-13.

In Model 4, I added the interaction between survey year and wife's education to examine the changing influence of women's education on spousal agreement over time. The main effect of wife's education becomes insignificant after the inclusion of the interaction term, meaning that impact of education on who (husband or wife) wants another child is insignificant in 1990. However, the interaction between survey year and women with secondary education is marginally significant ($p<0.10$), suggesting that the impact of women's higher education (secondary and above) is getting stronger over time. In other words, over time women with secondary and above education are more likely to have husbands who want another child relative to their own desire to stop childbearing. This result supports my hypothesis (Hypothesis 3a) that the desire to have another child declined among educated women over time.

Decomposition Analysis

Recall that spousal disagreement on having another child has declined between 1990 and 2012, from 25% to 18.3% (Table 3.1). It is possible that the compositional shifts in the population play a large role in the decline. To calculate the amount of change attributable to compositional changes versus changes in coefficient (effects of sociodemographic characteristics) for each variable, I performed decomposition analysis based on the logistic regression models run separately for PDHS 1990 and 2012 (Table A3.1 in this chapter appendix). I present two alternative sets of estimates (Table 3.4). The only difference is that the first set of estimates hold population composition at 2012 (for the rates component) and coefficients at 1990 (for the composition component) (Col 2 & 3) whereas the second set of estimates holds population composition at 1990 and coefficients at 2012 (Col 5 & 6). Difference between two estimates are mainly due to "differences in the weights applied to changes in coefficients or composition" (Van Hook et al., 2004).

Table 3.4. Decomposition Analysis of Change in Spousal Disagreement Among Married Couples 1990-2012

	Coefficients Fixed at 1990		Coefficients Fixed at 2012	
	Due to difference in Characteristics (Comp.)	Due to difference in coefficients (Rates)	Due to difference in Characteristics (Comp.)	Due to difference in coefficients (Rates)
Spousal Disagreement	E	C	E	C
Wife's Education (omitted=no formal education)				
Primary	8.59	-31.76	17.65	-44.21
Secondary & above	12.88	11.92	9.67	18.94
Couples' Educational Homogamy (omitted=both have no formal education)				
Wife is more educated than husband	-14.34*	-17.83	-5.59	-39.17
Husband is more educated than wife	-1.34	84.60	-3.77	57.28
Both have same level of education	-5.65	57.92	-21.24	79.71
Husband's Age (omitted=below 35)				
35-44	0.55	15.81	0.14	10.73
45 and above	-4.05	65.43	0.03	26.09
Couples' Age Difference (omitted=wife is younger 0-4 years)				
Wife is older by 1-9 years	-0.56	13.95	-3.81	17.84
Wife is younger by 5-9 years	-0.23	196.71	1.99	110.42
Wife is younger by 10+ years	11.94	-263.15	-12.61	-81.56
Wife's Work Status (omitted=No)				
Yes	8.20	-4.60	9.23	-4.31
Parity (omitted=0-2)				
3	-0.90**	199.73	-2.27***	122.73
4 and above	29.02***	401.07	51.54***	177.06
Experienced Child's Death (omitted=none)				
Yes	2.51	-49.93	-0.28	-20.95
Place of Residence (omitted=rural)				

Urban	0.51	105.11	-2.60	71.87
Household Wealth (omitted=poor)				
Middle	-1.72*	77.23	-0.65	42.46
High	3.39	90.99	-0.12	65.16
Currently Pregnant (omitted=No)				
Yes	2.24*	-0.26	2.36	-0.13
Disagreement on number of living children (omitted= no disagreement)				
Disagreement	5.04	48.65	12.54	7.59
Constant		-957.67		-569.77
Total	56.09	43.91	52.22	47.78

Note: (1) Results based on regression models (Tables A3.1). (2) Estimates are based on STATA package mvdcmp described in Powers, Yoshioka and Yun (2011).
Analyses are weighted to account for complex survey design of PDHS 1990-91 & 2012-13.

Aggregate Decomposition. The overall decomposition indicates that 56% of the overall change in spousal agreement on having another child is attributable to compositional changes in the population, and 44% of the change in contraceptive use is attributable to differences in the effects of characteristics (coefficient changes).

Detailed Decomposition. In this section, I explored the compositional factors that are basis of change in spousal agreement on fertility preferences over the last two decades. As shown in Table 3.4, I have two sets of decomposition results, switching the year at which coefficients are fixed. With respect to overall decrease in spousal disagreement on having additional children between 1990 and 2012 attributable to the compositional changes in the variables, the most important compositional factors that contributed significantly are parity, couple educational homogamy, household wealth, and currently pregnant women.

Difference due to Characteristics/Compositional Changes. Parity (number of living children) is the single largest contributor to the compositional component of the change in spousal disagreement on fertility preferences. Higher parity is associated with increase in spousal disagreement on having another child, as observed in Table 3.2. However, the proportion of couples having 4 and more children is higher in 1990 than in 2012 (Table 3.1). The compositional changes in couples having 4 and more children contributes 29% to the overall difference (decline) in the spousal disagreement on having another child between 1990 and 2012. However, the impact of higher parity on spousal disagreement is substantially higher (51.5%) when examined using the coefficients at 2012 than at the beginning of interval (1990). Put differently, holding the effect of higher parity fixed at 1990 levels, the changes in the composition of couples having 4 and more children would have contributed 29 percentage points to the overall difference in spousal disagreement between 1990 and 2012, but the contribution

would be 51.5 percentage-point if 2012 coefficients are used, means by changing the context. This suggests that spousal disagreement tend to be lower in 1990 than in 2012 for the couples with higher parity.

Compositional shifts in the distribution of couples in which wife is more educated than her husband (Table 3.1) would contribute by about 14% in overall difference in spousal disagreement between these two-time points. Similarly, compositional changes in couples belonging to middle wealth household and currently pregnant women significantly contributes to observed differences in spousal disagreement on having another child, accounting for 1.72% and 2.24% respectively of the overall difference between 1990 and 2012.

The analysis shows that the contribution due to the difference in the coefficients (effects) is insignificant, suggesting that the compositional changes are more important in explaining the observed decline in spousal disagreement on having another child.

Discussion

Having a child is essentially a couple-level decision, but studies on couples' fertility decision making are rare. Although it has long been recognized that both partners' fertility desires and intentions influence a couples' reproductive behavior, the majority of research has focused on women. The key assumption from this literature is that couples have similar fertility intentions and therefore a wife's report about her husband's fertility desires and goals are fairly accurate (e.g. Diro and Afework, 2013). However, in patriarchal societies such as Pakistan where men are the main decision-makers, men's attitudes and desires toward fertility shape the fertility outcome of society (DeRose et al., 2002; Mason and Smith, 2000). In this perspective, a wife's report on reproductive *events* can largely be assumed to be identical for husbands. But for more

subjective fertility related matters such as desire to have an additional child, this is less likely to be true.

To examine spousal agreement on fertility intentions is important not only to understand the gender context of the society but because of marked improvement in women's education in Pakistan in recent decades (Pakistan Bureau of Statistics, 2013, 2015: Planning Commission, 2015). Women's increased participation in higher levels of education – and the greater economic opportunities this affords them – provides them more bargaining power and decision-making authority within the household (Rosina and Testa, 2009; Stein et al., 2014). In particular, education is believed to provide women with the tools and resources to make informed decisions (Jejeebhoy, 1995), along with more options that can affect their childbearing intentions or the desired number of children. Therefore, this improvement may translate into more bargaining power and may give women the ability and power to make informed decisions. Pakistan represents a very interesting case in which gender roles are changing dramatically because of women's increasing participation in education and the labor force (though the rates are still very low). Despite changes in gender roles at societal level, in Pakistan, the household unit and family still remains highly gendered. In other words, changes happening at public sphere seem to have been slow to translate to interpersonal relationships, possibly generating more disagreement among couples. Therefore, it is unclear whether women's education has, in fact, improved their bargaining resources, specifically in terms of deciding about their reproductive intentions.

The primary goal of this study is therefore to examine how couples' relative education influences the spousal agreement on fertility intentions. Second, when disagreement among couples arises, whose views prevail? Because of the increased exposure to alternative ideas, women may be more likely to have different fertility desires than their husbands. This is a

common pattern seen over the course of demographic transition (Mason and Smith, 2000), with the desire for smaller families developing among women earlier than men. There are few studies on couples' fertility decision making in the Pakistan context, mainly due to the lack of couple-level data. The Pakistan Demographic Health Survey (PDHS) 2012-13 collected data from both men and women more than twenty years after the last couple-level data collection in 1990-91. This provides an opportunity to examine fertility from the couple's perspective and to look at change over time in spousal agreement in fertility intentions. The main contribution of this study, then, is the examination of changes in agreement in couples' fertility intentions over time, with a focus on how changes in women's education (both individual and relative to her husband) are related to agreement.

The results show that over time spousal agreement on having an additional child has risen. However, still around one fifth of couples disagree on having an additional child in 2012. Among the couples who disagree on fertility intentions, in the majority of cases, it is the husband who wants a(nother) child. My main hypothesis (Hypothesis 1) is that the couple is more prone to disagree about having a(nother) child if the woman is highly educated because educated women may have smaller family ideals that they can articulate but have little power to enact. My findings do not support this hypothesis. The results show that the risk of disagreement among couples is the same among couples in which the wife has secondary and above education and among couples with wives having no formal education. However, women with primary education are significantly less likely to have discordant fertility intentions than women with no formal education. In other words, having some level of education decreases the risk of disagreement on fertility intentions among couples. This is somewhat surprising. One of the plausible reasons could be that educated women are better able to communicate their fertility

desires with their husbands and thereby leading to less disagreement among couples on fertility intentions and preferences. It could be the result of selection bias. It is possible that educated women married with men who share the same fertility goals and appreciate the smaller fertility ideals (Basu, 1999). It could be that these women have postponed their marriage and fertility to complete their education and therefore have not yet achieved their desired fertility goals. I also hypothesized about relative, rather than just absolute, education. My findings support the hypothesis that spousal disagreement on fertility intentions will be higher among couples in which wife is more educated than her husband (Hypothesis 2). It is uncommon in Pakistani society for a wife to be more educated than her husband. When it happens, it may challenge traditional gender norms, and a husband may feel that his masculinity is threatened. If this is the case, husbands could 'do gender' by dominating over decisions about reproductive intentions and preferences (Khan et al., 2002; Mason and Smith, 2002).

I expected that when disagreement occurs, women with higher education will be less likely to desire an additional child relative to their husbands compared to women with no formal education. The study findings support this hypothesis and show that the odds that only husband wants a(nother) child relative to that of their wives are three times higher in couples in which wife has secondary and above education (Hypothesis 1a). This also supports the transition theory argument that educated women are the forerunner of fertility decline. However, I did not find support for my hypothesis that husband will be more likely to desire for another child relative to their wives in couples in which husband is less educated than his wife in case of disagreement on fertility intentions (Hypothesis 2a). It may also possible that in these cases women have more say in decision-making or may be more articulate in expressing her desires. Educated wives may help husbands appreciate the value of smaller families, and men's exposure to mass media can be

a source to desire for smaller family independent of their wife's education. Another plausible reason is that because this is a select group in which the husband is less educated than his wife, these husbands may have characteristics that are in favor of smaller families. In other words, by marrying a more educated wife, this husband has already broken the traditional norms and demonstrated that "he can be as modern as she is" (Basu, 1999).

I also did not find strong support for my hypothesis of change over time in spousal agreement by women's education (Hypothesis 3). The findings suggest that level of spousal disagreement by women's education remains the same between 1990-91 and 2012-13. However, I do find some weak evidence that women with secondary and above education are slightly more likely to have husbands who want a(nother) child over time (Hypothesis 3a). This may imply that although women's absolute and relative levels of education are improving, their education has not empowered themselves in terms of decision-making. This suggests that the changes that are happening at societal level (as evident from women's access to education and the decline in gender gap in education) are slow to translate into interpersonal relationship at the household level. It may also possible that education alone is not enough to empower women to make informed choices without being accompanied by socio-cultural changes throughout society. It is not the woman but the couple that makes decisions regarding fertility. So, in this context, women's education alone cannot change the socio-demographic and cultural landscape of the society; men's education and increased awareness and celebration of women empowerment is also important ingredient in bringing change.

Limitations

This study has several limitations. First, women's education may be a weak proxy to women's empowerment. There are several other variables identified in literature such as wife's

gender role ideologies, attitudes towards wife beating, ownership of assets, healthcare decision making, spousal communication on fertility related issues to name few that can be more valuable in examining the influence of women's improved status on shaping couple's fertility intentions. However, much of these alternatives measures of women empowerment are not available in PDHS 1990-91 or were asked in different ways across surveys. Another limitation of this study is the cross-sectional nature of data. As mentioned before, fertility preferences are not static and are reassessed by couples over time with respect to changes in their socioeconomic situation. It would be valuable to have longitudinal data that has prospective measure of couple's fertility preferences to see how couples' fertility attitudes and behaviors are shaped over time according to their individual and shared characteristics. Also, I could not disaggregate data by parity because of small sample size. A parity-specific approach is a promising direction because fertility intentions are not static and are reassessed over the individual life course.

Conclusion

Pakistan is the sixth most populous country in the world. Though the fertility rate declined sharply in 1990s, recent demographic surveys show that fertility has stalled in recent years (Hardee and Leahy, 2008; Sathar et. al., 2009). Moreover, Pakistan is a patriarchal society, and women's position in the society remains contested. However, gender roles are changing dramatically because of women's increased exposure to education. The literature on couples' fertility intentions and preferences is almost non-existent in Pakistan, which is problematic given that gender dynamics of the society are changing so rapidly. This study is therefore an attempt to build that gap. It explored the decision-making process in the context of changes happening in Pakistani society (namely, the government's increased commitment to improve women's education).

The findings of this chapter highlight the importance of collecting data from both husbands and wives to gain the better understanding of a couples' fertility decision-making process. Studying discordant fertility intentions is also important because of changing gender roles, particularly in patriarchal societies like Pakistan. There is evidence that gender roles are changing dramatically at societal levels (Pakistan Bureau of Statistics, 2013; Planning Commission, 2015) but whether they are translating into reproductive sphere is less clear; the results here suggest they are not. Couples' agreement on fertility intentions is also an important predictor of later reproductive behavior. Researchers have cited spousal fertility intentions as an important mechanism for explaining the inconsistency between desired and actual reproductive behavior (Miller and Pasta; 1995; Toulemon and Testa, 2006; Testa, 2010). Fertility preferences are an important indicator to assess the pace of demographic transition in a country and have implications for devising effective population policy and strategies to achieve lower fertility. They also help policy makers in understanding the dynamics of couple fertility decision making processes. This study is exploratory in nature because of the data limitations, but it is the first study to investigate whether improvement in women's education and couple's educational homogamy influences the spousal agreement on fertility intentions and in case of disagreement whose views prevail. More extensive data on couples' fertility intentions and preferences as well as their views on gender role ideologies is needed to fully examine the fertility decision-making among dyads.

CHAPTER IV:

COUPLE'S FERTILITY INTENTIONS, CHANGING GENDER ROLES, AND CONTRACEPTIVE USE IN PAKISTAN

Introduction

Although scholarship on reproductive attitudes and behaviors has long recognized the importance of both partners' fertility intentions and desires for fertility behavior (Stein et al., 2014; Rosina and Testa, 2009; Thomson, 1997; Morgan, 1985; Fried and Udry, 1979), family planning research as well as policy formulation has, until recently, used data gathered from the female segment of the population. Conventional fertility analysis assumes that because women are the actual bearer of children, their reports on fertility attitudes and behaviors are more accurate. However, this perspective does not consider the role of gender on reproductive attitudes and behaviors, ignoring the power and authority men enjoy in reproductive decision-making.

This is particularly true in patriarchal societies, where the socio-cultural and economic structure of the society protects men's authority in all spheres of life, including reproductive ones. This is evident from studies done on couples' reproductive intentions and behaviors that show discrepancies in husbands' and wives' reports (Diro and Afework, 2013; Becker, 1996). For example, Casterline, Sathar, and Haque (2001) found that Pakistani men feel quite justified in not using contraception, and more women cited their husband's objection as a reason for non-use of contraceptives than men cited their wives' objections to non-use. The growing literature on men's influence on fertility demonstrates women's inability to translate their fertility intentions into behavior (Ezeh 1993, Bankole and Singh, 1998; Dodoo, 1998). As DeRose and Ezeh (2005) argue, fertility decline in patriarchal societies cannot occur without changes in

men's fertility ideals, a shift in reproductive decision-making power that favors women, or some combination of the two. In this view, research on either men or women data may produce misleading results, particularly estimates of unmet need derived from women data only (Dodoo, 1993), and calls for couple-level data analysis to consider a gendered influence on couples' fertility decision-making. This chapter, therefore, examines the relative influence of husbands' and wives' fertility preferences in shaping their reproductive behavior in Pakistan.

Study Setting

With respect to its familial structure and fertility, Pakistan, the sixth most populous country in the world, is a patriarchal society where men play a major role in contraceptive practice, and women's position in society is increasingly contested. Pakistan started its family planning program in the early 1960s. Despite this early start, fertility declined slowly. Estimates show a decline of around 1.5 births per women between the 1980s and 1990s (Sathar et. al., 2009). After the 1990s, the fertility rate continued to decline but at a slower pace; the latest Pakistan Demographic Health Survey (PDHS) 2012-13 shows the total fertility rate (TFR) stagnating at 3.8, only slightly lower than 4.1 children per women in 2006-07. The key to fertility decline is contraceptive use (Bongaarts, 1997; Bongaarts et al., 1984). Though contraceptive use increased sharply between 1990 and 1998 (12% vs. 28%), the increase was short-lived. The contraceptive prevalence rate (CPR) is very low and seems to have plateaued. Overall, 35% of currently married women in Pakistan are currently using a contraceptive method (26% using modern methods), which is only a five-percentage point increase from 2006-07 (NIPS, 2013). Thus, the early success in lowering fertility levels seems to have disappeared, yet the reasons underlying the stagnation of fertility decline are unclear. Recent evidence suggests that Pakistani women on average are having 0.9 more births than they want and 16% of the births are

unintended in nature (either mistimed or unwanted) (NIPS, 2013). Although the desire to stop childbearing is high among currently married women (42.3%), the majority of women are not using contraception to avoid unwanted births. Married women who want no additional children but are not using contraception cited their husband's disapproval as the most common reason among non-fertility related reasons (Mahmood and Ringheim 1996, 1997; Casterline et. al 2001; Agha 2010).

However, Pakistan exemplifies a society in which gender roles have changed dramatically, as evident from significant increases in women's education and participation in labor force. Over the last two decades a shift has occurred in the socio-cultural context of Pakistani society. The government is increasingly improving women's status by investing in women's education and designing and implementing policies to protect women's rights. For instance, during the last two decades a gradual improvement in female literacy occurred, with rates increasing from 21% in 1990 to 47% in 2011-12 (Pakistan Bureau of Statistics, 2015). Although the level is still low and gender disparities remain large (men's literacy is at 70%), this increase in the female literacy rate brings hope for future generations. Gender parity in education has also improved for both primary and secondary education (Pakistan Bureau of Statistics, 2015). These changes imply that women may be more empowered than in the past. Malik and Courtney (2011) found that higher education brought more economic independence and social status for women, who started challenging the deep-rooted social norms that discriminate against women. In other words, education is an agent of change for women to control their lives. Women are also increasingly entering in the labor force, though most of them are working in the agriculture sector. Female labor force participation rate has increased from 16.2% in 2000-01 to 24.3% in 2011-12 (Pakistan Labor Force Survey, 2013). Women's share in wage employment in

the non-agricultural sector has also increased over time; it was 7.98% in 1990-91, 8.95% in 2001-02 and rose to 15.8% in 2014-15 (Pakistan Labor Force Survey, 1991-92, 2001-02, 2014-15).

What is interesting about Pakistan's fertility stall, then, is that it coincides with marked improvement in women's education and overall socioeconomic position. Education provides women access and resources to regulate their fertility behavior (see e.g. Bbaale and Mpuga, 2011; Uchudi, 2001; Jejeebhoy, 1995). According to PDHS 2012-13, the CPR is much higher among women with higher education than women with no formal education (44% vs. 30%) (NIPS, 2013). Given the change in gender roles and relations in Pakistan, it seems likely that women's power has increased, which should allow them to assert their own preferences for contraceptive use and childbearing behaviors. However, given that women tend to want smaller families as their education and social statuses improve, the stagnation in fertility levels implies that women are still unable to assert their own preferences. Gender changes at the societal level sometimes are slow to translate into gender changes in interpersonal relationships. In other words, with increases in education and greater exposure to opportunities outside home, women may internalize smaller family size ideals, yet the gender dynamics of the society may remain pronatalist, thereby leading to more disagreement in a couple's fertility intentions and contraceptive use.

The combination of a fertility stall and improving women's status suggests that the gendered dynamics of reproductive decision-making need to be considered. Fertility decision-making requires the involvement of both partners; therefore, spousal agreement on fertility preferences and attitudes are often cited as important determinant of their subsequent behavior (Irani et al., 2014; Bankole and Singh, 1998; Bankole and Audam, 2011). Although men's

influence on fertility decision-making is acknowledged, little is known about the influence of men's fertility preference in relation to his wife's use of contraception in Pakistan. Shah (1974) found strong support for interspousal communication in predicting couples' use of contraception. Two other studies by Mahmood (1997, 1998) found a strong influence of a husband's desire for no more children on couples' contraceptive use. Another study by Mahmood and Ringheim (1997) examined husbands and wives' data separately to look at the gender differences in the desire to stop childbearing, focusing on a couple's family planning attitudes by using matched couple data of PDHS 1990-91. They found strong influence of a couple's discussion and approval of family planning on the desire for no more children among both husbands and wives.

One of the reasons for the limited research on spousal concordance on fertility intentions and behavior is, until recently, a lack of couple-level data. After a gap of almost 20 years, the Pakistan Demographic Health Survey (PDHS) 2012-13 has collected data on fertility intentions from both men and women at household level (PDHS 1990-91 collected data from couples at household level). In this chapter, I will use this couple-level data to look at how couples' agreement on fertility preferences, as well as women's absolute education predicts contraceptive use. Specifically, this study has three objectives: 1) when couples disagree on fertility preferences, whose (husband or wife) fertility preferences (desire for another child) have more influence on contraceptive use? 2) does women's absolute education influence contraceptive use? and 3) has the education gradient changed over time, as might be expected when diffusion occurs?

Answering these questions will help in better understanding the role of gender and couple dynamics in use of contraception. The extent to which contraceptive use is influenced by the couple's fertility preferences will shed light into the role of gendered power in reproductive

decisions. The analysis will provide important insights for policy makers and other stakeholders to address the seemingly stalled fertility in Pakistan by considering gender differences in fertility preferences and power relations within household. Further, this study contributes to the existing literature on couples' fertility preferences and subsequent behavior by taking advantage of one of the few couple-level datasets available. Moreover, this study explores change over time in the relationship between women's education and contraceptive use to examine whether an education gradient still exists. The focus on observing change over time is important because of increased focused on women's empowerment (namely education) over the past two decades in Pakistan at both governmental and household level.

Gender and Reproductive Decision-Making

Gender necessarily and differentially influences fertility intentions and decision-making processes. High levels of unmet need in developing countries and correspondingly lower levels of contraceptive use among women reflects women's inability to translate their preferences into behaviors. As such, researchers have increasingly underscored the need to examine the influence of men on women's reproductive intentions and behaviors. Presser (1997) pointed out the lack of analysis of the gender systems prevalent in most demographic research, highlighting the importance of this dimension in explaining female and male reproductive behavior. The societal gender system is actually critical for fertility research because, as Mason (1997) notes, it comprises the "entire complex of interactions, roles, rights and statuses that surround men and women in a given society or culture." Power differentials by gender may be particularly important for reproductive decisions in developing countries. In societies where patriarchal systems prevail and where men are the main decision-makers, men's attitudes and desires toward fertility shape the fertility outcomes of the couple (DeRose et al., 2002; Mason and Smith, 2000).

Couples may not share the same fertility desires and goals, particularly in patriarchal societies, and this may inhibit contraceptive use. Although it seems clear that contraceptive use will be high when both husband and wife want to stop or postpone their childbearing and low when both want to have additional children, it is less clear what would happen when couples disagree on future childbearing. Past research is mixed. In societies where gender equality is high, husbands' and wives' desires have equal influence on fertility decisions (see e.g. Thomson, 1997). But studies in developing countries, primarily in an African context, have found that men's fertility desires and attitudes have significant influence on shaping couples' reproductive attitudes and behaviors. Men tend to be more pronatalist than women, and women's actual or perceived knowledge of husband's fertility preferences and attitudes toward contraceptive use may prevent them from utilizing family planning services (Bankole and Audham, 2011; Casterline et al., 1997; Casterline et al., 2000; Ezeh, 1993; Kulczycki, 2008; Lasee et al., 1997; Mbizvo and Adamchak, 1991; Yadav et al., 2010; Mahmood and Ringheim, 1996; Ogunjuyibe et al., 2009; Kamau, 1996; Kimuna and Adamchak's, 2001; Bankole, 1995). For instance, Mason and Smith (2000) found that negotiation between husbands and wives on whether to use contraception is influenced by gender stratification, with the husband possessing more negotiation power in more highly gender-stratified communities. Similarly, Dodoo (1998) found that contraceptive use is higher when the husband wants to stop childbearing rather than the wife. This shows the relative dominance and authority of a husband on women's fertility choices and behaviors, particularly use of contraception, that may result from the economic dependency of women on their husbands and their low status in patriarchal societies. This warrants the examination of male fertility preferences and perspectives in conjunction with their partner's fertility preferences and desires.

We might expect that agreement would be higher in patriarchal societies, as women may continuously adjust their preferences according to their husband's desires. As DeRose et al. (2002) found in Ghana, both partners are willing to adjust their fertility preferences and behaviors in accordance with the more pronatalist partner, usually the husband. However, when disagreement occurs, gender inequality would likely favor men's preferences. Given that men have more control on reproductive decisions as evident from women's reports of their husband's disapproval of family planning as major reason for not using contraception (see e.g. Casterline et al., 2001; Zaidi and Hussain, 2015), I expect that the husband's fertility preference will dominate.

Hypothesis 1: When couples disagree, contraceptive use will be higher among couples in which the husband does not want another child but the wife does than couples in which husband wants another child but wife does not.

Women's Education and Reproductive Decision-Making

Education is another widely-studied determinant of fertility preferences and behavior. Education is believed to provide women with the tools and resources to make informed choices as well as present them alternative choices that can influence their fertility desires (Jejeebhoy, 1995; Scheon et al., 1999; Stein et al., 2014). As a proxy for women's empowerment and status, women with different educational attainment levels will behave differently in terms of fertility preferences and behaviors that reflect their "attitudes, opportunities, or constraints" (Perelli-Harris et al., 2010). An extensive body of research has found that women's empowerment, especially women's education, influences a range of reproductive attitudes and behaviors (Edmeades et al., 2012; Schuler et al., 1997; Mason and Smith, 2000; Kishor, 2000; Bloom et al., 2001; Upadhyay and Karasek, 2012). For instance, studies have found that women with a

primary and secondary level education are significantly more likely to use contraceptives than women with no formal education (see e.g. Mahmood and Ringheim, 1996). In general, women's education is associated with lower fertility desires and higher contraceptive use, and, as mentioned earlier, there is a marked improvement in women's education in last two decades in Pakistan. Although women's education has increased, it is still rare for women to achieve higher levels of education, and so a positive education gradient likely still exists for contraceptive use.

Hypothesis 2: Educated women (both primary and secondary and above educated) will be more likely to use contraception than women with no formal education.

Diffusion and Reproductive Decision-Making

However, Pakistani society in general is evolving, and couples are exposed to modern family ideals through different means of communication other than education. In other words, diffusion processes are occurring which promote smaller family ideals (Casterline 2001; Bongaarts and Watkins, 1996). It is first the attitudes, behaviors, and values of an innovative and educated group that favors fertility decline that then diffuses to other groups such as individuals with no formal schooling through media exposure or through direct contact with educated women (Casterline, 2001; Cleland, 2001). Just two or three decades ago, it was rare for women to receive any level of education. Educated women were a select group, making higher levels rarer and perhaps more influential for individual women's fertility ideals and behavior. As education expanded, higher levels of education have become more common for women, and further, women's status more generally has improved, perhaps weakening the impact of women's own education level. Therefore, it is of particular interest to know whether individual-level education still has the same influence on reproductive decision making, or whether the education gradient of contraceptive use has declined over time. Given the widespread diffusion of smaller

family ideals, I expect that the influence of a wife's own education on contraceptive use will be stronger in 1990 than in 2012.

Hypothesis 3: The educational gradient (women's absolute education) in contraceptive use will decline over time.

Other Factors Influencing Couples' Reproductive Preferences and Behaviors

Of course, couples' fertility preferences and women's education are not the only factors that influence couples' reproductive attitudes and behaviors. Spousal educational homogamy, age, parity, employment status, place of residence, experience of child mortality, and household wealth status are all associated with the decision to have another child and thus contraceptive behavior (Hakim, 2003; Hayford and Morgan, 2008).

Though I expect that rising education among individual women would enable them to assert more control over fertility behaviors, in settings with strong gender inequities in power, it is possible that women's own education may not translate into key fertility behaviors if husbands' preferences are paramount (Bankole, 1995; Mason and Smith, 2000; DeRose et al., 2002; DeRose, 2003). Research has found inconsistent results of the influence of husband's absolute and relative education on a couple's reproductive intentions and behavior, with some studies observing that the husband's education is strong predictor of couples' use of contraception (e.g., DeRose et al., 2002; DeRose and Ezeh, 2005; Ezeh, 1993; Gubhaju, 2009). Similarly, studies have documented a positive association between women's age and contraceptive use (Ibisomi, 2014; Jones et al., 2012). However, large spousal age differences (common in patriarchal societies) negatively affect contraceptive use, particularly when the wife is younger than her husband. This in turn compromises a women's ability to negotiate and make informed reproductive choices (Longfield et al., 2004; Luke, 2005; Kaestle et al., 2002).

Scholarship on fertility and women's employment has found inconsistency in the direction and strength of relationship (Joshi, 2002). Some studies found that women's employment has little effect on their control over their fertility when women work merely due to economic pressure (Bruce and Dwyer, 1998). It is also argued that it is not women's employment per se but control over earnings that influences the demand for children (Kirtz and Mankinwa-Adebusoye, 1993; Mahmud (1993). Higher parity is associated with higher probability of contraceptive use (Achana, 2012; Lasee and Becker, 1997). Socioeconomic differences also influence couples' use of contraception. For example, women residing in urban areas and belonging to a high wealth household are more likely to use contraception probably because of better access, resources, and knowledge about contraception (Mahmood and Ringheim, 1998; Bbaale and Mpuga, 2011; NIPS, 2013). Also, previous experience of child mortality may influence contraceptive use, as couples may want to replace their deceased child (Dodoo, 1993).

Decomposing Factors Attributable to Change in Current Contraceptive Use Over Time

In addition, I conduct decomposition analysis to understand and explain the sources of change in contraceptive use over the last two decades in Pakistan. Studies done on reproductive attitudes and behaviors of couples have shown that both changes in compositional and behavioral characteristics are important in explaining the change in use of contraception (Pillai and Teboh 2011; Muhoza et al., 2013). For instance, Pillai and Teboh (2011) observed that 45% of the change in modern contraceptive use in Cameroon was attributable to compositional changes and 37% of the change in contraceptive use was due to changes in coefficients between 1991 and 2004. Similarly, Muhoza et al. (2013) found that changes in the effect of women's characteristics particularly women's education and place of residence contributed 78% of the change in contraceptive use in Rwanda between 2005 and 2010. Recall that massive social changes

happened in Pakistani society over the last two decades particularly improvement in women's education. Also, there is a substantial increase in current contraceptive use between 1990 and 2012 (12% vs. 35%) in Pakistan (NIPS, 2013). Further, not only are there more women who are educated, for instance, but it is possible that education (or other factors) are now linked differently to couples' fertility preferences and contraceptive use. The purpose of decomposition is to discern how much of the change in contraceptive use is general or structural (the composition of population) in nature or whether certain characteristics matter more or less over time. In other words, decomposition is used to understand the relative role played by compositional factors, in this case changes in women's absolute education in last two decades, in explaining change in contraceptive use over time. Do changes in the overall population composition – for instance, more educated women – matter more, or is it that the relationship between various characteristics have changed in their association with contraceptive use over time?

Data and Methods

In this chapter, the unit of analysis is again the couple. In Pakistan, marriage is universal, so all couples are married couples and all fertility is marital fertility. In both the PDHS 1990-91 and 2012-13, information on fertility preferences (discussed below) is collected from both men and women, making this the ideal data set to study how changes in gender roles influences couple-level decision-making for reproductive behaviors. The only difference between two surveys is the selection of husbands. In 1990-91, a random fraction of husbands of female respondents were interviewed regardless of age, but in 2012-13, an independent sample of men aged 15-49 were selected for interview, some of whom can be matched with spouses who were also interviewed.

For PDHS 1990-91, I have selected for analysis a matched set of currently married, fecund women aged 15-49 and their husbands (of any age). The initial sample size was 1,365 married couples, but there were several restrictions that reduced the sample size. First, I dropped those cases where a husband had more than one wife (n=67). I limit my analytical sample to fecund couples because of the focus on current contraceptive use. Therefore, I excluded women who were pregnant (n=199) or who were sterilized or declared infecund (n=86). I also dropped those men who were sterilized or those who reported that their wives were infecund (n=43). This yielded a final analytical sample of 970 couples.

For the PDHS 2012-13 couple analysis, a matched set of currently married, fecund women aged 15-49 and their husbands are selected, yielding a sample size of 2,798 couple. In 134 cases, a husband had more than one wife, so I dropped these cases. I also dropped those women who were pregnant (n=376), were sterilized or were declared infecund (n=292). I also dropped those men who were sterilized or those who reported that their wives were infecund (n=24). My final analytical sample is therefore 1,972 couples.

As one of the objective of this study is to examine whether educational gradient of contraceptive use has changed over time, I combined both datasets, and this yielded the pooled analytical sample of 2,942 couples. The main objective of pooling the datasets is not only to increase the sample size to obtain more precise estimates but also to investigate the effect of time. The gap of more than twenty years between two surveys facilitates observing change in gender relations which may affect reproductive intentions and decision-making. To capture the structural change over time, I included survey year as a dichotomous variable (with 1990-91 as the reference category) in multivariate analysis.

Measures

Dependent Variable. The dependent variable for this analysis is current contraceptive use. The information on current contraceptive use is only collected from women. Following other studies, a couple is considered to be using contraceptives if the wife reports current use of any method (Dodoo, 1993; Bankole and Audam, 2011). The question on current contraceptive use is asked of currently married, non-sterilized and non-pregnant women. The women were asked "Are you currently doing something or using any method to delay or avoid getting pregnant?" Current contraceptive use is thus a dichotomous measure. Current contraceptive use refers to both modern and traditional methods.

Independent Variables. Couple's Agreement in Fertility Intentions is constructed from question on desire for additional children.The DHS asks both men and women about their future fertility intentions. Currently married, non-sterilized women who were not pregnant and men whose wives were not pregnant were asked "Would you like to have (a/another) child, or would you prefer not to have any (more) children?" The response categories were 1) have another child; 2) no more; 3) undecided/don't know. Respondents who were undecided are categorized as they want a(nother) child. Studies on fertility intentions and desired family size have shown that respondents who give a non-numeric response or were undecided are more similar in characteristics to those who wanted more children and did not have a clear wish to stop childbearing (Becker and Sutradhar, 2007; Mahmood and Ringheim, 1997; Olaleye, 1993). Retaining these cases is important, as a substantial percentage (40%) of the respondents in 1990 gave a non-numeric response to question on fertility intention. However, the percentage of non-numeric responses has dropped significantly over time as evident from various studies on DHS

(Bongaarts, 2011). Still, a non-negligible percentage of men and women (13%) responded that they were undecided or didn't know in PDHS 2012-13.

Since I am particularly interested in examining disagreement among couple on having a child, I used an interaction approach that combines the spouses' joint fertility preferences on the use of contraception instead of an additive approach which looks at the influence of each partner's fertility preference on use of contraception (Bankole, 1995). Therefore, the couple-level construct of fertility intention is defined as: both want a(nother) child, only wife wants another child (reference), only husband wants another child, and both don't want a(nother) child. Constructing a variable in which both partners' preferences are included, rather than interacting two separate variables, is a straightforward approach to examine the relative strength of the influence of each partner's fertility preferences on contraception.

Second independent variable of interest is wife's education. Wife's education is categorized into three categories: no formal education (reference category), primary education (grade 1-5), secondary and above education (grade 6 & above).

Other Control Variables. Control variables include: couple educational homogamy, wife's current age, couple's age difference, women work status, parity (number of living children), experiencing any child death, rural-urban residence, household wealth, and an indicator of disagreement on number of living children. *Couple educational homogamy* is measured as: have same level of education, husband is less educated than wife, husband is more educated than wife, and both have no formal education (reference). *Wife's current age* is represented by a three-category measure: 15-24 years old (reference), 25-34 years old, and 35 years old and above. *Couples' age difference* is also included in the analysis and is categorized as: wife is older by 1-9 years, wife is younger by 0-4 years (reference), wife is younger by 5-9

years, and wife is younger by 10+ years. *Women's work status* is a dichotomous measure. *Parity* is represented by a three-category measure: 0-2 living children (reference), 3 living children, 4 and above living children. A dummy variable for *experiencing any child death* is also included in the analysis. To account for the *urban-rural* differentials, l included a dummy for urban-rural residence with rural as reference category. *Household wealth* is based on information on the wealth index as provided in the PDHS 1990-91 and PDHS 2012-13, constructed from information on household asset data including ownership of a number of consumer durables as well as standard of living and dwelling characteristics (National Institute of Population Studies, 1991, 2013; Mahmood and Bashir, 2012; Rutstein and Johnson, 2004). The wealth index originally consisted of five categories (poorest, poorer, middle, higher, and highest). For the sake of simplicity, I merged the poorest and poorer into one category of 'poor' and higher and highest into 'high,' with poor being the reference category. A substantial number of couples disagree on number of living children (110 in 1990 and 81 in 2012); therefore, I included a dummy for disagreement on number of living children to account for this because disagreement among couple on number of living children affects their fertility preferences differently.

Analytical Strategy

I used both bivariate and multivariate analytical techniques to study the association between couples' fertility intentions and current contraceptive use. A bivariate analysis is used to identify patterns of associations between couples' contraceptive use, wife's education, and couples' fertility preferences and their individual and shared background characteristics across surveys. I then moved to multivariate analysis. Logistic regression models are used because the outcome of interest (current contraceptive use) is dichotomous in nature. The logistic regression model is of the form,

$$\ln [(\pi i)/(1-\pi i)] = X'\beta = \sum bi\ xi$$

where πi is the probability of using contraceptives, bi are estimated regression coefficients, and xi are the background characteristics, consisting of couples' fertility intentions, wife's and couple's education, wife's age, couple's age difference, wealth index, parity, type of residence, experience of child mortality, and an indicator for disagreement on number of living children.

In the first model, I regress current contraceptive use on couples' fertility intention along with survey year in the pooled PDHS 1990-91 and PDHS 2012-13 dataset (Hypothesis 1). In the second model, I added wife's education (Hypothesis 2). The third model includes the control variables. In the final model, I tested the interaction between survey year and wife's education to determine whether education gradient of contraceptive use has changed over time (i.e., between 1990-91 or in 2012-13) controlling for all other variables (Hypothesis 3).

To identify the key sources of change in use of contraception over the last two decades, I used regression-based decomposition technique for non-linear models (an extension of the Blinder– Oaxaca decomposition method for non-linear regression models such as logistic regression models) (Fairlie, 2005; Power et al., 2011). Decomposition analysis quantifies change over time or across groups into components attributable to compositional changes (i.e., differences in the proportion with various characteristics) between surveys and components attributable due to change in the effect of explanatory variables (i.e., differences in the coefficients due to changes in population behavior) (Blinder 1973; Oaxaca 1973; Powers et al. 2011). I used the Stata *mvdcmp* package developed by Powers et al. (2011) to carry out the multivariate logistic regression decomposition. Both changes in population composition and population behavior related to contraceptive use (effect) are important. In this study, I used regression based decomposition analysis to see how much change in use of contraception is due

to changes in women's characteristics, particularly women's absolute education, and how these factors shape differences across surveys conducted at different times. All the analysis is weighted (sampling weights are used to account for clustering due to sampling design and non-response).

Results

Descriptive Results[4]

Table 4.1 presents the percentage distribution of couples shared and individual characteristics, along with current contraceptive use across both surveys. The results show that contraceptive use has increased markedly between 1990-91 and 2012-13. In 2012, 41% of couples reported that they are currently using any contraceptive method, whereas only 12% were couple were using any contraceptive method in 1990. Note that prevalence of current contraceptive use in the analytical sample differs from overall current contraceptive use at the national level among married women in Pakistan (35%). The discrepancy in contraceptive use can be the result of sample selection. The national level contraceptive use is estimated by using women's data only, whereas here I created matched couple dataset which may lead to overestimate of current contraceptive use in this sample. Overall, the majority of couples in both surveys agreed on their fertility preferences (either want or don't want a(nother) child) (76% in 1990 and 82% in 2012), with more couples in both time periods agreeing they want additional children than agreeing they do not want any more children. In the case of disagreement among couples, twice as many couples consisted of husbands who wanted another child than vice versa in both time periods (18% vs. 6% & 11.7% vs. 6%). However, a 35% decline is observed in couples in which only husband wants a(nother) child between 1990 and 2012.

[4] All the analyses are weighted to account for complex survey design of PDHS 1990-91 & 2012-13.

An improvement is observed in wives' education between 1990 and 2012. In 1990, more than 80% of the women had no formal education, declining to 53% by 2012. Similarly, only 12% of the women had a secondary or higher education in 1990, increasing to 30% by 2012. The percentage of couples having the same level of education almost doubled between 1990 and 2012, with a substantial decline in the percentage of couples in which neither member had any education (46.8% vs. 22.2%). However, a gendered pattern is evident in terms of couple's educational homogamy – in around 40-45% of couples in both time periods, the husband is more educated than his wife.

An increase is observed in the percentage of working women; more than one quarter of women were working in 2012. In both time periods, the majority of women were in younger age categories. The pattern of couples' age difference is similar across surveys, although the proportion of couples in which the wife is older increased by 62% between these two-time periods. Similarly, the proportion of women who were 10 or more years younger than their husbands dropped by half. The majority of couples had more than two children, although the proportion having only two children doubled between 1990 and 2012 (9.5% vs. 18.1%). At the same time, a substantial decline is observed in the percentage of couples with 4 or more children. More than two thirds of couples have not experienced child mortality. More than two thirds of the sample belonged to rural areas, and more than 50% of the respondents belonged to poor or middle wealth household. Disagreement on the number of living children is small across both surveys, and it declined in 2012.

Table 4.1. Weighted Sample Characteristics of Couples by Survey Year

Characteristics	1990	2012
Percent Using Contraceptives	11.7	41.0
Couples' Fertility Preferences		
Both want a(nother) child	49.9	47.8
Only wife wants	6.1	6.0
Only husband wants	18.1	11.7
Both don't want a(nother) child	25.9	34.5
Wife's Education		
No formal education	81.3	53.2
Primary	6.9	16.9
Secondary & higher	11.9	29.8
Couples' Educational Homogamy		
Both have no formal education	46.8	22.2
Husband is less educated than wife	2.7	9.7
Husband is more educated than wife	40.6	45.3
Both have same level of education	10.0	22.9
Wife's Age		
15-24	22.4	21.1
25-34	39.4	44.0
35+	38.3	34.9
Couples' Age Difference		
Wife is older by 1-9 years	4.6	12.0
Wife is younger by 0-4 years	37.2	43.0
Wife is younger by 5-9 years	33.8	32.4
Wife is younger by 10+ years	24.5	12.7
Parity		
0	10.9	13.4
1	12.1	12.8
2	9.5	18.1
3	14.1	16.4
4 & above	53.4	39.3
Experience of Child Mortality		
No	70.0	77.8
Yes	30.0	22.2
Wife's Work Status		
No	83.9	72.8
Yes	16.1	27.2
Place of Residence		
Rural	68.8	64.3
Urban	31.2	35.7
Household Wealth		
Poor	43.2	36.1
Middle	19.0	18.5

Higher	37.8	45.5
Disagreement on Number of Living Children		
No Disagreement	90.5	97.4
Disagreement	9.5	2.6
Unweighted N	970	1,972

Source: PDHS 1990-91 & 2012-13

Analyses are weighted to account for complex survey design of PDHS 1990-91 & 2012-13.

Figure 4.1 shows the relationship between couple's fertility preferences and current contraceptive use across both surveys. There is an increase in contraceptive use across all categories of couples' fertility preferences between 1990 and 2012. Contraceptive use is higher when couples agree on fertility preferences (either want or don't want a(nother) child); however, the increase is more pronounced when both the husband and wife don't want more children. An increase in contraceptive use among couples who agree to have more children indicates that these couples are probably using contraceptives to space their childbearing. Surprisingly, the bivariate relationship does not support the argument (Hypothesis 1). I expected that the husband's fertility preferences would have more influence on contraceptive use (i.e., when couples disagree, contraceptive use will be lower among couples in which husband wants more children but wife does not). Instead, contraceptive use is higher among these couples, and the difference in contraceptive use between those in which only the wife wants and only the husband wants has widened between 1990 and 2012. This suggests that a wife's preferences have more weight in deciding about use of contraception.

Figure 4.2 presents the relationship between wife's education and contraceptive use. The graph shows that contraceptive use is higher among educated women than women with no education (Hypothesis 2). Contraceptive use has increased between 1990 and 2012 across all educational categories for wives; however, the increase is larger among women with no education and primary-educated women. This suggests that education's association with contraceptive use seems to have weakened over time (Hypothesis 3). The proportion of women with primary education who reported using contraceptives has increased from 21% to 48% between 1990 and 2012 and from 6% to 33% among women with no formal schooling.

Figure 4.1: Current Contraceptive Use by Couple's Fertility Preferences: PDHS 1990 & 2012

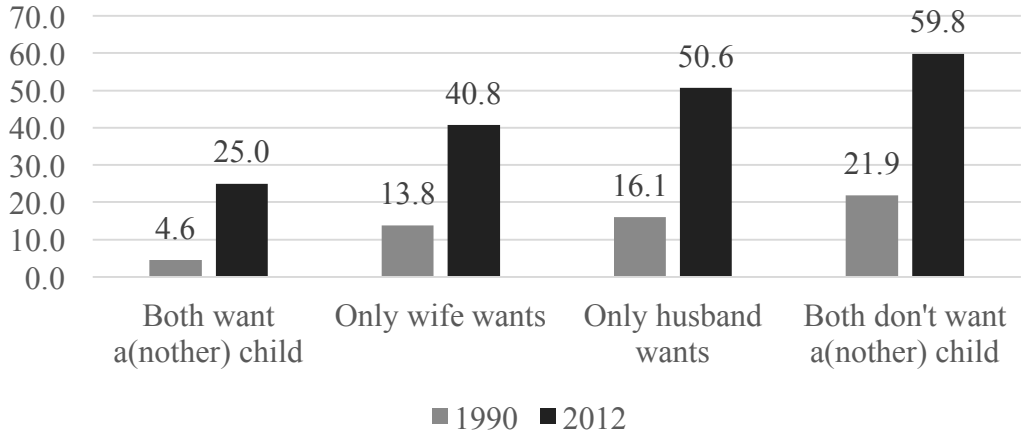
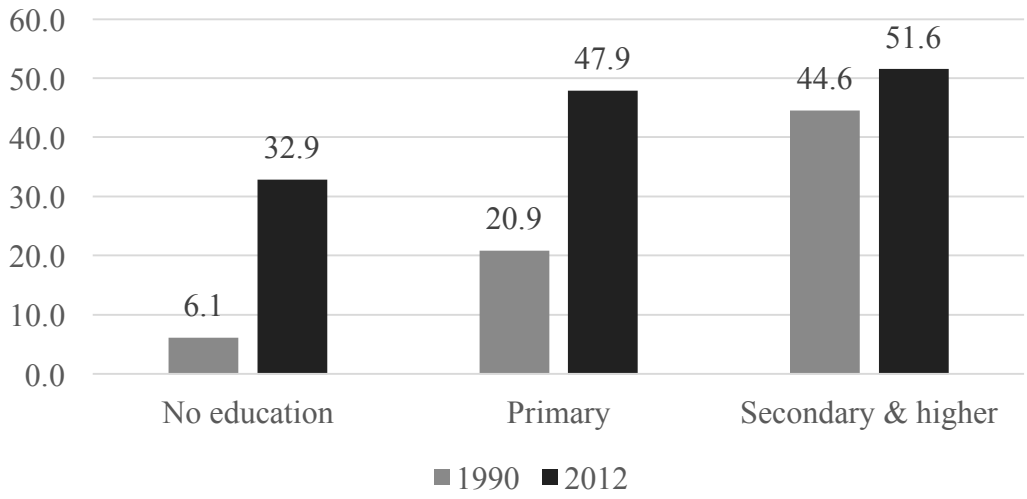


Figure 4.2: Current Contraceptive Use by Wife's Education: PDHS 1990 & 2012



Multivariate Results

Table 4.2 shows the results of the pooled logistic regression to examine change over time in the relationship between couples' fertility preferences, couples' relative education and couples' current contraceptive use. Table 4.2 has four models. Model 1 includes couples' fertility preferences along with a dummy for survey years (Hypothesis 1); in Model 2, I added the wife's education (Hypothesis 2); Model 3 includes all individual and couple-level shared characteristics as control variables. In Model 4, I include the interaction of wife's education with survey year (Hypothesis 3).

Model 1 shows that the odds of using contraception increased significantly between 1990 and 2012. The odds of contraceptive use are 5.6 times as high in 2012 than in 1990. Looking at the results for fertility preferences, the findings largely support the expectation that contraceptive use is significantly higher among couples in which both husband and wife agree to have no more children and lower when both want another child compared to couples in which wife wants another child but husband does not. The analysis does not support Hypothesis 1 of male dominance (in the case of disagreement, contraceptive use will be higher when the husband wants no more children but the wife does compare to when the wife wants no more children but husband does). The relationship between couple's joint fertility preferences and contraceptive use does not depend on which partner wants another child. Rather, the preferences of both spouses exert equal influence on contraceptive use when conflict arises. In other words, the odds of contraceptive use when only the wife wants another child are not significantly different from when only the husband wants another child.

Table 4.2. Pooled Logistic Regression Models Predicting Current Contraceptive Use

Variables	Model 1	Model 2	Model 3	Model 4
Survey Year (omitted=1990)				
2012	5.64***	4.55***	5.07***	8.23***
Couples' Fertility Preferences (omitted= wife wants another but husband does not)				
Husband wants another but wife does not	1.44	1.43	1.57	1.63
Both don't want a(nother) child	2.09**	2.01**	2.28**	2.33**
Both want another child	0.45**	0.39***	0.57*	0.60+
Wife's Education (omitted=no formal education)				
Primary		2.41***	1.99**	3.12*
Secondary & higher		3.34***	3.20***	9.80***
Couples' Educational Homogamy (omitted= both have no formal education)				
Husband is less educated than wife			1.06	1.06
Husband is more educated than wife			1.14	1.09
Both have same level of education			0.84	0.82
Wife's Age (omitted=15-24)				
25-34			0.66*	0.68+
35+			0.32***	0.34***
Couples' Age Difference (omitted=wife is younger by 0-4 years)				
Wife is older by 1-9 years			1.05	1.02
Wife is younger by 5-9 years			1.01	1.01
Wife is younger by 10+ years			1.26	1.31
Wife's Work Status (omitted=not working)				
Yes			1.22	1.17
Parity (omitted= 0-1)				
2-3			3.52***	3.34***
4 & above			4.33***	4.09***
Experience of Child Mortality (omitted=no)				
Yes			0.96	0.96
Place of Residence (omitted=rural)				
Urban			1.53*	1.49*
Household Wealth (omitted=poor)				
Middle			1.71**	1.75**
High			1.41	1.48+
Disagreement on Number of Living Children (omitted= no disagreement)				
Disagreement			0.78	0.82
Interaction (omitted= 1990 & No formal Education)				
Primary				0.57
Secondary & higher				0.25***
Constant	0.13***	0.10***	0.03***	0.02***

Source: PDHS 1990-91 & 2012-13; + (p<0.10), * (p<0.05), ** (p<0.01), *** (p<0.001).
Analyses are weighted to account for complex survey design of PDHS 1990-91 & 2012-13.

Model 2 includes wife's education to examine whether a positive education gradient still exists in contraceptive use. The relationship between a couple's fertility preferences and contraceptive use essentially remains the same. The results show that women's own education has significant influence on couple's contraceptive use. The findings support the positive educational gradient hypothesis (Hypothesis 2) that educated women are more likely to use contraception than women with no formal education, particularly among women with secondary and above education. The odds of contraceptive use are 3.3 times as high for women with secondary and higher educated women and 2.4 times as high for women with primary education than women with no formal education. Primary and secondary educated women are also significantly different from each other in terms of contraceptive use (not shown), with secondary and above educated women being more likely to use contraceptives than primary educated.

In Model 3, I added individual- and couple-level shared sociodemographic characteristics. Including these variables does not change the relationship between the variables of interest. Primary and secondary educated women remained significantly different from each other in terms of contraceptive use (not shown) even when I controlled for background variables. Couples' relative education has no influence on contraceptive use. Model 3 shows that women aged 35 and above are 66% less likely to use contraceptives than younger women aged 15-24. The odds of using contraceptives are 4.3 times as high among couples with 4 and more living children and 3.5 times as high for couples with two to three children than couples who either have one or no living child. Urban couples and couples belonging to middle wealth households are 53% and 71% more likely to use contraceptive than their rural counterparts and couples belonging to poor wealth household, respectively. Being in the work force, previous experience

of child mortality, and age difference among spouses are not associated with current contraceptive use.

Model 4 tests the interaction between survey year and wife's education to examine whether the education gradient of contraceptive use has changed or remains constant over time. The interaction between survey year and wife's education supports Hypothesis 3 and indicates that the influence of women's education on contraceptive use has lost strength over time. The main effect of education suggests that in 1990 contraceptive use was significantly higher among women with secondary and above education followed by women with primary education. Interestingly, when I added the interaction term between survey year and wife's education, the magnitude of the coefficient for survey year increased dramatically. This means that contraceptive use increased significantly among women with no formal education between 1990 and 2012; that is, contraceptive use has increased across all educational groups over time but more substantially among women with no schooling.

Decomposition Analysis

Recall that contraceptive use increased substantially from 12% to 41% between 1990 and 2012 among sampled couples (Table 4.1), so it is important to understand how changes in the population composition has influenced the change in contraceptive use. To calculate the amount of change attributable to compositional changes versus changes in coefficient (effects of sociodemographic characteristics) for each variable, I performed decomposition analysis based on the logistic regression models run separately for PDHS 1990 and 2012 (Table A4.1 in this chapter appendix).

Table 4.3. Decomposition Analysis of Change in Current Contraceptive Use Among Married Couples 1990-2012

Current Contraceptive Use	Coefficients Fixed at 1990		Coefficients Fixed at 2012	
	Due to difference in Characteristics (Comp.)	Due to difference in coefficients (Rates)	Due to difference in Characteristics (Comp.)	Due to difference in coefficients (Rates)
	E	C	E	C
Couples' Fertility Preferences (omitted= wife wants another but husband does not)				
Husband wants another but wife does not	-1.85	-1.89	-1.45	-1.43
Both don't want a(nother) child	4.99*	-2.95	3.17*	-4.61
Both want another child	0.71	7.19	0.59+	8.06
Wife's Education (omitted=no formal education)				
Primary	4.67*	-0.37	2.62	-1.06
Secondary & higher	13.25***	-4.73+	12.57**	-13.93+
Couples' Educational Homogamy (omitted= both have no formal education)				
Husband is less educated than wife	-0.32	-0.86	1.87	-3.59
Husband is more educated than wife	-0.03	-4.61	0.47	-6.01
Both have same level of education	-2.51	-0.10	-1.03	-0.26
Wife's Age (omitted=15-24)				
25-34	-0.79	13.15+	-1.77**	17.19+
35+	2.21**	16.83*	2.37***	17.93*
Couples' Age Difference (omitted=wife is younger by 0-4 years)				
Wife is older by 1-9 years	-0.04	-0.74	1.09	-2.30
Wife is younger by 5-9 years	-0.08	3.33	0.09	3.73
Wife is younger by 10+ years	-3.49	5.54	0.85	3.35
Wife's Work Status (omitted=not working)				
Yes	1.24	0.94	-0.02	1.85
Parity (omitted= 0-1)				
2-3	9.99***	2.51	3.5+	4.29

4 & above	-14.46***	-4.63	-7.7*	-3.98
Experience of Child Mortality (omitted=no)				
Yes	0.16	1.6	0.45	1.38
Place of Residence (omitted=rural)				
Urban	0.97+	-5.5	1.16+	-7.35
Household Wealth (omitted=poor)				
Middle	-0.24**	4.25	-0.01	4.84
High	1.59	-6.01	1.83	-8.46
Disagreement on Number of Living Children (omitted= no disagreement)				
Disagreement	3.59*	-4.44*	-1.31	-1.40*
Constant		61.94+		72.43+
Total	19.55	80.45	19.35	80.65

Source: PDHS 1990-91 & 2012-13; +(p,0.10), *(p<0.05), **(p<0.01), ***(p<0.001).
Note: (1) Results based on regression models (Tables A4.1). (2) Estimates are based on STATA package mvdcmp described in Powers, Yoshioka and Yun (2011).
Analyses are weighted to account for complex survey design of PDHS 1990-91 & 2012-13.

Aggregate Decomposition. I present two alternative sets of estimates (Table 4.3). The only difference is that the first set of estimates hold population composition at 2012 (for the rates component) and coefficients at 1990 (for the composition component) (Col 2 & 3) whereas the second set of estimates holds population composition at 1990 and coefficients at 2012 (Col 5 & 6). Difference between two estimates are mainly due to "differences in the weights applied to changes in coefficients or composition" (Van Hook et al., 2004). The overall decomposition indicates that 20% of the overall change in contraceptive use is attributable to compositional changes in the population, and 80% of the change in contraceptive use is attributable to differences in the effects of characteristics (coefficient changes). Of the coefficients, the intercept accounts for most of the change in contraceptive use (60% & 72% based at which year the coefficients are fixed) (Table 4.3). The importance of the intercept essentially means that change in contraceptive use between 1990 and 2012 is due to general changes and "not behavior specific to a particular segment of the population" (Hayford, 2013).

Detailed Decomposition. In this section, I explored the compositional factors that are basis of change in contraceptive use over the last two decades. As shown in Table 4.3, I have two sets of decomposition results, switching the year at which coefficients are fixed. A negative percentage means that given factors lead to decline in contraceptive use and positive percentage means that given factors lead to an increase in contraceptive use between two surveys.

Difference due to Characteristics/Compositional Changes. Women's education is the single largest contributor to the compositional component of the change in contraceptive use. In other words, an increase in the proportion of educated women is associated with increase in contraceptive use. Women's education accounts for 17.9% (primary 4.7% and secondary 13.2%) of the overall increase in contraceptive use, with changes in secondary and above education

(13.2%) significantly contributing to the change in contraceptive use. Compositional shifts in couples' joint fertility preferences as evident from the increase in the proportion of couples in which both partners do not want to have more children (Table 4.1) contributed significantly but modestly to the increase in contraceptive use (5%). However, the impact of couples' joint fertility preferences on the increase in contraceptive use is substantially lower when examined using the coefficients at 2012 than at the beginning of interval (1990). Put differently, the changes in the composition of couples in which both partners do not want another child would have contributed 5 percentage points to changes in contraceptive use if 1990 coefficients are used, but the contribution would be only 3.2 percentage points if 2012 coefficients are used means by changing the context. This suggests that contraceptive use tended to be higher in 1990 than in 2012 for the couples in which both husband and wife do not want additional children.

Though there were only small changes in the age composition of women in the sample, a decrease in women aged 35+ (Table 4.1) contributed significantly to increased use of contraception (2.2%). Higher parity is also associated with increase in contraceptive use, as observed in Table 4.2. Therefore, an increase in the proportion of couples with two to three children in the sample contributed significantly to the increase in contraceptive use (10%). However, a decline in the proportion of couple with 4 and more children in the sample had a negative impact on use of contraception (14.5%). Similarly, a decline in the proportion of women belonging to middle wealth households in the sample had a negative impact on use of contraception.

Difference due to Coefficients. The analysis shows that the contribution due to the difference in the coefficients (effects) of wife's age and wife's higher education is significant, suggesting a differential impact of wife's age and education on contraceptive use. The analysis

shows that impact of wife's higher education on contraceptive use has declined over time, and wife's age has become more important over time.

Discussion

Scholarship on fertility attitudes and behaviors is coming to the consensus that the dynamics of a couple's reproductive decision-making process cannot be fully understood by only using data from one partner (Bankole, 1995). Therefore, more recent surveys on reproductive-related matters are now collecting data from both men and women. The growing literature on men's influence on fertility reflects women's inability to translate their fertility intentions into behavior (Ezeh 1993; Bankole and Singh, 1998; Dodoo, 1998). Attention to gender issues and spousal dynamics in reproductive intentions is especially important in a patriarchal society experiencing changing gender role dynamics such as Pakistan. In other words, with increases in education and greater exposure to opportunities outside home, women may internalize smaller family size ideals even though their partners may remain pronatalist, thereby leading to more disagreement in a couple's fertility intentions, which in turn predicts their reproductive behavior (Bongaarts, 1991; Ezeh, 1993; DeRose and Ezeh, 2005).

The goal of this study is to examine how a couple's disagreement on fertility preferences are associated with contraceptive use, especially in light of changing educational patterns among women and the diffusion of small family ideals. Primarily, I am interested in which spouse's future fertility desires are more strongly associated with contraception when disagreement occurs. Second, is women's absolute education still an important correlate of contraceptive use? Third, has the education gradient changed over time, as might be expected when diffusion occurs?

As demonstrated elsewhere, contraceptive use has increased between 1990 and 2012 (11.7% vs. 41%). The majority of couples agree on their fertility preferences (either both want or don't want another child), with couples more often agreeing that they do want another child than that they do not want more children. Disagreement among couples on the desire for additional children decreased between 1990 and 2012; however, husbands are more pronatalist than their wives in both time periods, consistent with work suggesting that during the course of transition in highly gendered society, women are first to internalize the desire for smaller families (Mason and Smith, 2000). The results also show that women's education has increased over time, supporting the argument that gender roles are changing dramatically in Pakistan.

My findings suggest that couples' joint (agreement/disagreement) fertility preferences are an important predictor of contraceptive use. It is straightforward and easy to understand that when both spouses do not want to have another child then they will tend to use contraception compared to couples who both want to have more children. However, my analysis does not support the male dominance hypothesis that in the case of disagreement, contraceptive use will be higher when only the husband wants additional children than vice versa (Hypothesis 1). Instead, both husbands' and wives' fertility preferences are equal associated with the odds of using contraception. Some other studies also found similar results (see e.g. Bankole, 1995; Bankole and Singh, 1998), but this finding does not support the male dominance argument that men have more power in reproductive decision-making in patriarchal societies. This result indicates that even if men have more authority in household decision-making, "that power does not seem to drive contraceptive use among couples in favor of the husband's fertility preference" (Bankole & Audam, 2011).

One reason for this finding may be that men may be indifferent when it comes to women's reproductive needs, in part because contraception is usually considered as women's domain. Most of the family planning methods and programs are women-focused. For instance, outreach programs, such as the Lady Health Worker (LHW) program, provide information and contraceptives to women at their homes, particularly in rural areas in Pakistan. This may give women access, ability, and 'permission' to use contraception when they do not want to have another child even if their husband does. Men and women may also think differently about contraception. Studies have shown that men usually report higher contraceptive use than women (Bankole and Audam, 2011). However, their reports could depend on which method is used and its frequency. For instance, a husband may report current use of condom if he used it once during the last week, whereas a wife may report that couple is not using contraception currently if her frame of reference is all episodes of intercourse. Another plausible reason for not finding support for the male dominance hypothesis is that women adjust their fertility preferences according to their partner's desires, particularly in patriarchal societies (DeRose et al., 2002).

My second objective is to see whether women's absolute education influences the use of contraception given changes in gender roles more broadly. Women's education is strongly associated with contraceptive use and lower fertility. Participation in educational activities delay the onset of fertility and provide women with more economic opportunities outside home which in turn increases the opportunity cost of childbearing and childrearing (Bbaale and Mpuga, 2011; Singh, 1994; Schultz, 1993). Well-educated women may have more decision-making power, particularly in a highly-gendered society where women's status is contested (Jejeebhoy, 1995). The results support my hypothesis (Hypothesis 2) that educated women, especially those who have secondary and above education, are significantly more likely to use contraception than

women with no formal education. Though women's education has increased markedly in Pakistan, educated women are still a select group, particularly at higher levels.

The third objective of this study was to ask whether women's own education remains as strongly linked to contraception in more recent years; that is, whether the education gradient remains constant or changed over time. The result of this study support the expectation (Hypothesis 3) that the education gradient has lost strength over time as contraceptive use has increased substantially among uneducated women. This is not surprising as other studies have found similar results that contraceptive use is increasing among women with no formal education (see e.g. Bhat, 2002; McNay et al., 2003) and provides evidence of an ongoing, if slow, fertility transition. But at the same time, it shows that women own socioeconomic characteristics such as education are no longer the only predictors of their fertility behavior. An increase in contraceptive use among women with no formal education over time can be described as a "spillover effect" (McNay et al., 2003). In other words, women's own individual characteristics (such as having a low level of education) may be negatively linked to fertility, yet they are influenced by the fertility behavior of others (i.e., educated women). It also implies that the aspiration of a better life, the technological innovation, and the realization or desire of investing more in their children's education, especially among girls (as evident from increases in girls' education over time), may have encourage women with no formal education to regulate their fertility behavior (Bhat, 2002).

The findings of this study show that a couple's joint fertility preferences are an important predictor of contraceptive use and highlight the importance of using couple-level data to understand couples' reproductive attitudes and behaviors. This is especially important in the era of markedly changing gender roles and relations at the societal level. Although men's dominance

over reproductive decisions has been believed to be a force delaying the onset of fertility transition (Caldwell and Caldwell 1987; Caldwell et al. 1992; Kritz 1999), the result of this study suggests that men and women's fertility preferences exert equal influence on the use of contraception. This finding asks for more in-depth analysis of couples' fertility attitudes and behaviors particularly over the reproductive life course of the couples; it may possible that the influence of gender operates differently by number of living children. Similarly, results suggest that the positive association between women's own education and contraceptive use has weakened over time. Although contraceptive use is higher among educated women, women with no formal education are driving the fertility decline. This suggests that women with no formal education are becoming more receptive of modern family ideals, perhaps due to increased exposure to mass media that introduces them to alternative lifestyles that favor smaller families. Therefore, it is important to examine the fertility behavior of women with no education, particularly the role of diffusion process in use of contraception.

Limitations

This study has several limitations. First, women's education is a poor proxy for women's empowerment. There are several other variables identified in literature, such as wife's gender role ideologies, attitudes towards wife beating, ownership of assets, healthcare decision-making, and spousal communication on fertility-related issues, among others. Such factors could be valuable in examining the influence of women's improved status on shaping couple's fertility intentions and behaviors. However, much of these improved measures of women's empowerment are not available in PDHS 1990-91 or were measured inconsistently across surveys, preventing inclusion in the analysis. Another limitation of this study is the cross-sectional nature of the data. As mentioned before, fertility preferences are not static and are

reassessed by couples over time. It would be valuable to have a longitudinal data that have a prospective measure of a couple's fertility preferences to see how a couple's fertility attitudes and behaviors are shaped over time according to their individual and shared characteristics.

Finally, I was unable to consider empirically the role of mass media on contraceptive use for two main reasons. First, mass media exposure is totally different in both time periods. In 1990, there was only one state run television channel and radio, and its family planning messages were direct, mainly promoting and encouraging couples to use family planning methods. As such, the influence of mass media exposure on uptake of contraception will be vary in two time periods. Second, survey questions directly ask respondents about family planning knowledge and their sources of information. But these questions do not capture the diffusion of smaller family ideals via other mediums like TV serials, shows, and social media. In Pakistan, new private TV channels exposed women (and men) to new modes of family and lives.

Conclusion

This study is an important contribution to understanding couple's reproductive attitudes, preferences, and behavior over time particularly when gender roles are changing dramatically. This study has some important policy implications. First, the finding that contraceptive use does not depend on which partner wants another child suggests it is time to revisit the family planning program. Therefore, the low level of current contraceptive use may be the result of supply-demand gap as evident from the increase in "unmet need" over time (NIPS, 2013). A recent review study by Zaidi and Hussain (2015) finds that inadequate and poor access to family planning services, lack of availability, and cost of modern methods are stronger reasons for the low uptake of modern contraception than husband disapproval and religious beliefs about family planning.

Second, men's role in fertility decision-making should not be ignored. This is true in traditional societies where women's access to services is limited, and spousal communication on family planning is limited because of cultural norms that do not support open discussion of sexual matters. Pakistan's family planning program mainly focuses on women, but the low level of contraceptive use may be the result of unmet needs of the men as well as women. Another study by Kamran et al. (2013) found that husbands cited cost and lack of availability of family planning services as main reasons for not using contraceptives. As the gender dynamics of the society favors male dominance, it would be advantageous to target men because it may possible that it is the unmet need for family planning among men that hinders further fertility decline due to low contraceptive use among couples. A couple's fertility preferences and contraceptive use are essentially a dyadic decision; therefore, efforts to promote family planning will be more effective when husbands are more approving of contraception and revise their fertility goals with changes in their wife's fertility desires (Bankole and Singh, 1998).

Finally, though women's education has a significant influence on a couple's reproductive behavior, the finding of increase contraceptive use among women with no formal education shows that the fertility transition is indeed underway in Pakistan, even if the pace is slower than in earlier years or other contexts. Furthermore, the increase in contraceptive use among women with no education lends support to the diffusion theory argument that fertility transition can happen even at lower level of socioeconomic development primarily due to diffusion of smaller family ideals through various means of communication. In this regard, it is important to identify the sources of diffusion – which sources and modes of communication are women most likely to be receiving family planning messages? Is this interaction happening at the household level, where educated members of the household are influencing the behavior of less educated

members? Is it community level factors such as the proportion of literate women in the community or proportion of women using contraceptives that influence the reproductive behavior of less educated women? To what extent are mass media channels in spreading the smaller family ideals among women having no schooling?

Despite the increase in contraceptive use among women with no formal education, the high TFR (4.4) and high levels of unwanted fertility among women with no formal education indicates that these women are not fully able to achieve their desired fertility (NIPS, 2013). Therefore, an in-depth analysis of the contraceptive behavior of these women is required to understand what methods of contraception they are using, how effective these methods are, how consistent these women are in using contraception, and whether what they are doing to control their fertility is enough? Nevertheless, the increase in contraceptive use among women with no formal education provides the evidence that fertility transition is undergoing in Pakistan, though at a slow pace. Strong political will is required to promote effective family planning methods and overcome the supply side barriers to family planning use.

CHAPTER V:

CONCLUDING REMARKS AND FUTURE IMPLICATIONS

Scholarship on fertility attitudes and behaviors has long recognized the importance of incorporating men into fertility research; however, family planning programs and research still remain largely women-focused. The focus on women, rather than couples, is mainly due to the lack of availability of couple-level data. Though some surveys have questions on partner's attitudes and desires, research has shown that these responses are not very reliable, especially on subjective matters, and is biased towards the respondent's own fertility attitudes and desires (Testa and Toulemon, 2006; Thomson and Hoem, 1998; Thomson, 1997). It is also reasonable to expect that some wives might be unaware of their husband's fertility intentions if couples have not discussed their intentions with one another. This is particularly true in societies marked with high gender segregation, in which the husband's fertility desires and attitudes take precedence in decisions about family formation and planning, and communication between spouses about fertility may be limited.

Familial systems play a significant role in reproductive behaviors and outcomes because the pace at which the fertility transition occurs is significantly affected by gender. Scholars, who over the last several decades observed a quick decline in fertility in developing countries, argue that empowering women to make decisions about desired family size can change gender relations and gender systems in traditionally male-dominated settings, which may coincide with changes in the education system and labor market (Dyson 2001; Malhotra 2012; Mason 1997; McDonald 2000; McNay 2005). However, changes in gender relations at the societal level sometimes are slow to translate into interpersonal relationships.

Applying a gendered lens to fertility behaviors in a patriarchal developing country with high fertility may be an important step in understanding fertility behaviors and the variation seen across contexts. Pakistan, the sixth most populous country in the world, is one such society. After experiencing early fertility declines, fertility has stalled in recent years (Hardee and Leahy, 2008; Sathar et. al., 2009). The CPR rose from 12% in 1990-91 to 28% in 2000-01 but has remained around 35% since then (NIPS, 2013). The early success in lowering fertility levels seems to have disappeared, yet the reasons underlying the stagnation of fertility decline are unclear. This is especially intriguing because Pakistan exemplifies a society in which gender roles have changed dramatically, as evident from significant increases in women's education and participation in labor force (Pakistan Bureau of Statistics, 2015). Changes in gender roles are often accompanied by shifts in women's fertility preferences, yet the gender dynamics of the society – and of intimate relationships – may not shift as well, with pronatalism remaining a strong force. This could affect how couples communicate and negotiate fertility behavior. However, the spousal dynamics of fertility decision-making are understudied in Pakistan, and this is important because it may help explain the fertility stall. Of particular importance is the relationship between spousal concordance and reproductive outcomes, which have not been investigated thoroughly, especially with respect to gender. In a gendered perspective, not only the gendered dimensions of fertility but spousal agreement on reproductive matters is often considered an important indicator of a couple's future reproductive behavior as well as potential contraceptive practices.

Due to the dearth of couple-level data, much of the research on fertility intentions and behaviors in Pakistan has used intentions as an individual-level (specifically, a female-level) construct and ignored the role of husbands in reproductive decision-making, with a few

exceptions (e.g. Mahmood, 1998; Mahmood and Ringheim, 1997; Casterline et al., 2001). These limited and dated studies have shown that discordance on fertility attitudes and intentions exists among spouses and influences the reproductive behavior of couple. Moreover, women's perception about their husband's fertility attitudes and desires influence their behavior, particularly the use of contraception. The most recent Pakistan Demographic Health Survey (PDHS) 2012-13 provides a unique opportunity to address the limitations of past work, as it collected data on men's fertility behavior and intentions for the first time in over twenty years. Although PDHS is cross-sectional in nature, comparing the trends over time nonetheless help in our understanding of gender dynamics by including husbands' fertility intentions alongside wives' and exploring the influence of discordance in couple' fertility intentions.

Capitalizing on the availability and richness of this recent individual and matched couple dataset, this study addresses the gaps in the existing literature on couple's fertility decision-making processes in an era of changing gender roles, using women's education as a proxy. In general, the increase in women's education over the last two decades permits investigating whether women's education has, in fact, improved their bargaining power in terms of fertility decisions. The literature on couples' fertility intentions and preferences is almost non-existent in Pakistan, which is problematic given that gender dynamics of the society are changing so rapidly. This dissertation, therefore, is designed to fill this gap and to gain better understanding of couples' fertility decision-making in a patriarchal society undergoing massive social changes. Specifically, this dissertation provides better understanding of 1) the association between a woman's perceived concordance with her spouse on desired family size, her own level of education, and unintended pregnancy/birth, 2) how spousal agreement on fertility intentions (i.e. desire to have another child) is influenced by women's absolute and relative education, and 3)

how both spousal agreement on fertility intentions as well as women's own education influence current contraceptive use.

This dissertation makes a valuable contribution to the existing research on the gendered dynamics of fertility decision-making processes in Pakistan. The first empirical chapter focuses on the relationships between women's perceived spousal concordance on desired family size, women's own education, and the experience of unintended fertility. Moreover, to examine whether women's empowerment is transferring into their reproductive life sphere or not, I test if the associations between women's education and unintended fertility changed over time. The second empirical chapter looks at how women's absolute and relative education are associated with spousal agreement on fertility intentions. Put differently, I ask whether women's absolute and couples' relative education predicts which partner (husband or wife) wants additional children when there is disagreement in fertility intentions. In this chapter, again, I was able to examine whether the educational gradient (women's absolute education) of spousal agreement has changed over time. The third and final empirical chapter sought to examine the associations between a couple's joint fertility preference, women's own education, and current contraceptive use and to examine if the influence of women's education on contraceptive use has changed over time.

Key Findings

Pakistani Women's Perceived Spousal Concordance on Desired Family Size and Birth Intendedness

In the first empirical chapter (Chapter II), I sought to examine women's perception of their husband's fertility desires relative to their own, as well as women's absolute education, and how these are linked to the intendedness of women's most recent pregnancy/birth. Fertility

levels in a society can decline if unwanted pregnancies are checked, but without significant declines in desired family size, the fertility transition cannot reach the stage of replacement level. Pakistan is currently in mid-transition phase, and according to transition theory, unwanted fertility may be high not only because of a reduction in desired family size and lack of access to family planning but because gender relations and cultural norms may not be changing at the same time. As such, women may not be able to fully act on their fertility desires. Research on the fertility transition has generally overlooked the role of gender in various contexts but doing so may prove especially informative considering the apparent stall in the fertility decline in Pakistan that is occurring even as women's socioeconomic position is improving. When women are more educated and aware, then they are more likely to challenge the existing societal norms specifically related to the reproductive sphere. In light of increased levels of education and economic development and legal reforms that support greater gender equality, one might expect spousal preference to change at the same time. However, Pakistan's culture and socioeconomic structures remain male-dominated. This suggests that fertility preferences may not change at the same time, in the same way, for men and women, which may make women's perception of their partner's fertility goal an important predictor of how women themselves classify the intendedness of a birth.

The findings of the first empirical chapter demonstrate that though unintended fertility has declined in Pakistan (consistent with the transition theory argument that unwanted fertility is high at the start of fertility transition), 1 in every 5 pregnancies/births were still unintended in nature in 2012-13. Interestingly, there is a twofold increase in the share of women who reported that their husbands want more children than they want between 1990 and 2012. However, there is a substantial decline in proportion of women who report that they don't know about their

husband's desired family size between 1990 and 2012 for both first and higher-order births respectively (45% vs. 12% and 33.5% vs. 9%), indicating that over time spousal communication about reproductive matters has increased in Pakistan. The bivariate analysis suggests that women are more likely to report unintended fertility in case of perceived discordance on desired family size. Contrary to expectation, the multivariate analysis shows that perceived spousal concordance on desired family size in general is not related with intendedness of the birth. However, a woman is less likely to characterize her birth as unintended (mistimed or unwanted) when she is unaware of her partner's fertility desires, though this is only true for higher-order births. If women do not know what their husbands want, and their births are less likely to be unintended, this suggests that women's fertility behaviors are thus reflecting their own desires. As such, this may imply that those who do not know spouses' fertility desires may have more pronatalist attitudes and therefore they are less likely to report unintended pregnancy/birth.

Based on these results, I argue that women's proxy reports of their husband's fertility ideals are important to understand the cultural dynamic of a patriarchal society beyond improvement in women's education initiative. In societies such as Pakistan, where all fertility is within marital unions and men's authority is uncontested, it is the men's fertility desires that take precedence (Ezeh, 1993; Dodoo, 1998; Bankole, 1995). Women continue to have unintended children despite their own desires because they perceive that their husband wants more children than they do. These women may have internalized the pressure of their husbands' desire for additional children. The findings also highlighted the importance of improving spousal communication on reproductive matters. Poor spousal communication on fertility-related matters is considered as an important determinant of low contraceptive use (Bongaarts et al., 2012). In developing societies, the gender and social norms prohibit open discussion on

reproductive health issues. Pakistan is a male-dominated society, and generally husbands' opinions and desires carry more weight in household decision-making, including reproductive matters. In this context, it is reasonable to assume that women may experience communication barriers, especially related to reproductive matters. Enhanced spousal communication helps couples in understanding the fertility desires of each other and can be an effective tool to reduce unintended fertility.

The first application also demonstrates that compared to women with no formal education, educated women are more likely to have a mistimed birth rather than a wanted or unwanted birth. These results are consistent with other studies that found similar results (Adetunji, 1998; Westoff, 1981). One possible explanation could be that that educated people believe that fertility is within their conscious control and thus are more receptive to family planning methods. Therefore, they expect that they can plan each pregnancy/birth. When they fail to meet this expectation, they are more open to report a pregnancy/birth as mistimed than individuals with no formal schooling (Adetunji, 1998; Westoff, 1981). Of course, more mistimed fertility among educated women could result from ineffective contraceptive methods or contraceptive failure, perhaps due to limited access to family planning services. In Pakistan, women are not generally allowed to travel alone and health centers are often distant, although the Lady Health Worker (LHW) program was launched in 1994 to provide family planning services to women at their doorsteps in rural areas. Despite the program's success, the LHW program is facing serious challenges such as poor infrastructure, inadequate management, scarce and low quality of services along with financial problems, and low density of workers (one LHW is responsible for a population of 1000 women in a community) (Hafeez et al., 2011; OPM, 2009).

So, even though women may want to use contraceptives, they may not be able to access these facilities.

The high prevalence of mistimed births among educated women could also be the result of measurement error as well; less educated women are more likely to rationalize their behavior – and consider it intended – after having a birth than educated women (Cleland, 2002). It is also possible that educated women may more accurately assess their reproductive intentions (or are willing to report their true intentions) and thereby more likely to report their recent birth as mistimed as compared to uneducated women. The result shows that the educational gradient in the risk of having unintended birth has changed over time but only for higher-order births and not in the expected direction. I was expecting a negative educational gradient unintended fertility in earlier time periods; however, the results show that unintended fertility was actually higher among women with secondary education in 1990, consistent with work in some other contexts (Raymo et al. 2015). A plausible reason for this unexpected result may be that women with this level of education had low fertility ideals but little power to implement them. And there was no evidence that the highly educated were less likely to have an unintended birth. Women with any degree of education were a select group in 1990 and therefore they incurred higher opportunity costs of unintended childbearing. Educated women likely had a hard time in balancing work-family life, particularly when higher education brings them more economic opportunities but the household division of labor does not change. But at the same time, this group may be more vocal and clear about their fertility intentions and behavior and thus willing to consider births unintended. Nonetheless, there is a strong educational gradient for unwanted higher-order births over time. Women with a secondary education are less likely to have unwanted birth over time.

If educated women are, in fact, better able to understand and willing to report their true fertility intentions, using a current measure of women's perception about her partner's desired family size is a poor proxy to study the role of gender in reproductive intentions and behaviors, especially when gender roles and relations are changing at societal level. Thus, this measure does not fully capture the gendered dimension of fertility, specifically in the context of a highly male dominated society. In male-dominated societies, women's reports of their fertility intentions likely incorporate, to some unknown degree, broader cultural norms. Women are also more likely to adjust and revise their fertility intentions due to actual or anticipated conflict with their husbands.

Given the marked improvement in women's education over the last two decades, which provides women the ability to make conscious fertility choices and more decision-making power, high levels of unintended pregnancy and stalled fertility rates may imply that fertility decision-making is still not within women's control. Put differently, women do not seem to be able to convert their improved status into more equitable relationship with their husbands in which they can freely discuss and exert their fertility preferences. Alternatively, it may possible that improved education has not yet changed women's views about challenging high fertility norms and male authority.

Predicting Spousal Agreement on Fertility Intentions by Women's Absolute and Relative Education

The second chapter (Chapter III) highlights the importance of collecting data from both husbands and wives to gain a better understanding of a couples' fertility decision-making process. Specifically, in this chapter, I sought to examine 1) how women's absolute and relative education influences the spousal agreement on fertility intentions, 2) when disagreement among

couples arises, whose views prevail and 3) if the association between spousal agreement on fertility intentions and women's absolute education has changed over time. Scholarship on fertility decision-making has long recognized the role of men in reproductive matters, but most research remains women-focused. Prior research suggested that men and women may not necessarily share the same fertility goals and that men's attitudes and desires toward fertility shape the fertility outcome of society (DeRose et al., 2002; Mason and Smith, 2000). In this perspective, a wife's report on reproductive *events* can largely be assumed to be identical for husbands. But for more subjective fertility related matters such as desire to have an additional child, this is less likely to be true.

Examining spousal agreement on fertility intentions is important not only to understand the gender context of the society but because of marked improvement in women's education in Pakistan in recent decades. Because of the increased exposure to alternative ideas, women may be more likely to have different fertility desires than their husbands. This is a common pattern seen over the course of demographic transition (Mason and Smith, 2000), with the desire for smaller families developing among women earlier than men. Drawing on the richness of matched couple-data from PDHS 1990-91 and 2012-13, this chapter contributes to the existing literature on spousal agreement on fertility intentions, with a focus on how changes in women's education (both individual and relative to her husband) are related to agreement.

Overall, I found that although disagreement on fertility intentions has declined between the two survey periods, still around one fifth of couples disagree on having an additional child in 2012. Among the couples who disagree on fertility intentions, in the majority of cases, it is the husband who wants another child. Interestingly, a gendered pattern is observed in spousal disagreement on fertility intentions in regard to a couple's relative education. I found that

disagreement on having additional children is higher among couples in which husband is less educated than his wife. Though the gender gap in education is shrinking in Pakistan, in general, husbands are more educated than their spouses. It is uncommon in Pakistani society for a wife to be more educated than her husband. When it happens, it may challenge traditional gender norms and may pose a significant threat to men's gender identity. The result suggests that couples pay for their non-normative behavior with higher levels of disagreement. In my view, it is not about lack of homogamy in education but failure to comply with a social norm that affects the propensity to experience more disagreement. However, I did not find compelling evidence of an influence of women's own education on the risk of disagreement on fertility intentions. This is somewhat surprising. One plausible reason could be that educated women are better able to communicate their fertility desires with their husbands, thereby leading to less disagreement among couples on fertility intentions and preferences. It could also be the result of selection bias. It is possible that educated women are married to men who share the same fertility goals and appreciate smaller fertility ideals (Basu, 1999). It could be that these women have postponed their marriage and fertility to complete their education and therefore have not yet achieved their desired fertility goals.

The second empirical chapter also demonstrates that when disagreement occurs, women with higher education will be more likely to have husbands who desire an additional child than women with no formal education (OR= 3.14). This supports the transition theory argument that educated women are the forerunner of fertility decline. There was initial evidence in the full sample that disagreement on fertility intentions is higher among non-normative couples (i.e., the husband is less educated than his wife). However, although there is more disagreement when husbands are less educated than their wives, I did not find support for my hypothesis that it is the

husband who will be more likely to desire another child. This may imply that in these cases women have more say in decision-making or may be more articulate in expressing their desires. Educated wives may help husbands appreciate the value of smaller families, and men's exposure to mass media can be a source to desire for smaller family independent of their wife's education. Another plausible reason is that because this is a select group in which the husband is less educated than his wife, these husbands may have characteristics that are in favor of smaller families. I also did not find strong support for my hypothesis of change over time in spousal agreement by women's education; the decomposition analysis indicated that 56% of the overall change in spousal agreement on having another child is attributable to compositional changes in the population. There is evidence that gender roles are changing dramatically at societal levels (Planning Commission, 2013), but whether they are translating into reproductive sphere is less clear; the results here suggest they are not.

Studying discordant fertility intentions is also important because of changing gender roles, particularly in patriarchal societies like Pakistan. Couples' agreement on fertility intentions is also an important predictor of later reproductive behavior. Researchers have cited pousal fertility intentions as an important factor in explaining the inconsistency between desired and actual reproductive behavior (Miller and Pasta; 1995; Toulemon and Testa, 2006; Testa, 2010). Fertility preferences are an important indicator to assess the pace of demographic transition in a country and has implications for devising effective population policy and strategies to achieve lower fertility. When disagreement occurs, in more than two third of the cases, it is the husband who is more pronatalist, and disagreement is more common among non-normative couples. These findings highlight the importance of collecting data from both husbands and wives to gain

the better understanding of a couples' fertility decision-making process particularly when massive social changes are happening at societal level.

Predicting Contraceptive Use by Couple's Joint Fertility Preferences and Women's Education

The third and final empirical chapter (Chapter IV) examines how a couple's disagreement on fertility preferences are associated with contraceptive use, especially in light of changing educational patterns among women and the diffusion of small family ideals. Primarily, I sought to understand whose (husband or wife) fertility preferences (desire for another child) are more strongly associated with contraception when disagreement occurs. Second, I asked whether women's absolute education is still an important correlate of contraceptive use. Third, I examined whether the educational gradient changed over time, as might be expected when diffusion occurs. The growing literature on men's influence on fertility demonstrates women's inability to translate their fertility intentions into behavior (Ezeh 1993, Bankole and Singh, 1998; Dodoo, 1998). As DeRose and Ezeh (2005) argue, fertility decline in patriarchal societies cannot occur without changes in men's fertility ideals, a shift in reproductive decision-making power that favors women, or some combination of the two. Given the change in gender roles and relations in Pakistan, it seems likely that women's power has increased, which should allow them to assert their own preferences for contraceptive use and childbearing behaviors. However, given that women tend to want smaller families as their education and social statuses improve, the stagnation in fertility levels implies that women are still unable to assert their own preferences.

The results show that contraceptive use has increased markedly between 1990-91 and 2012-13. In 2012, 41% of couples reported that they are currently using any contraceptive method, whereas only 12% of couples were using any contraceptive method in 1990. In the case of disagreement among couples, twice as many couples consisted of husbands who wanted

another child than vice versa in both time periods (18% vs. 6% and 11.7% vs. 6%). There is an increase in contraceptive use across all categories of couples' fertility preferences between 1990 and 2012, however, the increase is more pronounced when both the husband and wife do not want more children. I expected that the husband's fertility preferences would have more influence on contraceptive use (i.e., when couples disagree, contraceptive use will be lower among couples in which husband wants more children but wife does not); however, the analysis suggests that both husbands' and wives' fertility preferences are equally associated with the odds of using contraception. Despite the popular belief and findings from other settings that men have more power in reproductive decision-making in patriarchal societies (Ezeh, 1993; DeRose and Ezeh, 2005), this result indicates that even if men have more authority in household decision-making, "that power does not seem to drive contraceptive use among couples in favor of the husband's fertility preference" (Bankole & Audam, 2011) in Pakistan.

There are several potential explanations for this unexpected finding. It is possible that women adjust their fertility preferences according to their partner's desires, particularly in patriarchal societies (DeRose et al., 2002). Another may be how family planning methods and programs are presented to men and women. For instance, outreach programs, such as the Lady Health Worker (LHW) program, provide information and contraceptives to women at their homes, particularly in rural areas in Pakistan. This may give women access, ability, and 'permission' to use contraception when they do not want to have another child even if their husband does. However, the program is not available in hard-to-reach or remote areas, and the potential caseload can be prohibitively high (in rural and remote areas of Pakistan, population density is low and one LHW is responsible for a population of 1000 women in a community). In addition, program faces challenges in recruiting LHWs to work in hard-to-reach or remote areas

mainly in these areas candidates do not meet the educational criteria set by the program (OPM, 2009). This finding asks for more in-depth analysis of couples' fertility attitudes and behaviors particularly over the reproductive life course of the couples; it may possible that the influence of gender operates differently by number of living children.

The third chapter also demonstrates that educated women, especially those who have secondary and above education, are significantly more likely to use contraception than women with no formal education. However, the education gradient of contraceptive use has lost strength over time as contraceptive use has increased substantially among women with no formal education. This is not surprising as other studies have found similar results that contraceptive use is increasing among women with no formal education (see e.g. Bhat, 2002; McNay et al., 2003) and provides evidence of an ongoing, if slow, fertility transition. But at the same time, it shows that women's own socioeconomic characteristics such as education are no longer the only predictors of their fertility behavior. In other words, women's own individual characteristics (such as having a low level of education) may be negatively linked to fertility, yet they are influenced by the fertility behavior of others (i.e., educated women). It also implies that aspiration for a better life, technological innovation, and the realization or desire for investing more in their children's education, especially among girls (as evident from increases in girls' education over time), may encourage women with no formal education to regulate their fertility behavior (Bhat, 2002).

Further, the decomposition analysis suggests that 20% of the overall change in contraceptive use is attributable to compositional changes in the population, and 80% of the change in contraceptive use is attributable to differences in the effects of characteristics (coefficient changes). Of the coefficients, the intercept accounts for most of the change in

contraceptive use. This essentially means that change in contraceptive use between 1990 and 2012 is due to general changes and "not behavior specific to a particular segment of the population" (Hayford, 2013). That said, women's education turns out to be the single largest contributor to the compositional component of the change in contraceptive use. In other words, an increase in the proportion of educated women is nonetheless associated with increase in contraceptive use.

The third chapter provides an important insight into the couples' fertility decision-making processes. Consistent with the previous chapter, analyses suggest that couple-level data is useful in understanding the gender dynamics of couples' fertility attitudes and behaviors particularly when gender roles are changing dramatically. Although the analysis did not support the male-dominance hypothesis of fertility decision-making (as the findings revealed that husbands and wives have equal influence on contraceptive use), I still advocate for a couple-level data. For instance, the findings that contraceptive use is higher when both husband and wife agree, therefore, we need information from both on reproductive attitudes and behaviors to better understand spousal fertility decision making dynamics. The results have important policy implications for including men in fertility research. This shows that success of family planning programs depends on if men and women have consensus on reproductive intentions and if men have favorable attitudes toward family planning intentions (Dodoo, 1998). Further, analysis will be benefited if we have information on contraceptive use from both husband and wife (PDHS asks only women about current contraceptive use). Studies in other settings found discrepancies in contraceptive use reports between husbands and wives and also observed that estimates of contraceptive use vary with whose (husband, wife, or both) report is considered in analysis

(Bankole and Audam, 2015). Therefore, the estimates of unwanted fertility or unmet need for family planning may be overstated if based on the data collected from men or women only.

Challenges and Limitations

A major limitation of the study is the cross-sectional nature of the data, which makes it is difficult to identify any causal relationships between variables of interest. Unfortunately, no panel-level study is available in Pakistan that has collected detailed data on birth intentions and corresponding couple-level variables. Although the PDHS is cross-sectional in nature, comparing the trends over time nonetheless help in our understanding of gender dynamics by including husbands' fertility intentions alongside wives' and exploring the effects of discordance in couple' fertility intentions.

In addition to the general limitation of cross-sectional data, there are limitations regarding each empirical chapter which I discuss in turn. In the first empirical chapter, perceived spousal concordance in desired family size is measured at the time of survey, not before the pregnancy was conceived. Therefore, I am unable to establish a temporal order to better measure the association between women' proxy report of their husbands desired family size and birth intendedness. Another major limitation of the study is the lack of data on husbands' attitudes regarding the intentions of the most recent pregnancy/birth, husbands' perceptions of their wives' desired family size, and information about spousal communication on reproductive health matters. Similarly, the retrospective nature of birth intention questions presents another challenge. PDHS asks married women aged 15-49 of the intention status of their last birth that occurred in five years preceding the survey. There may be biases inherent in the retrospective measurement of pregnancy intentions; women may not recall correctly about their feelings at the time of conception or the feelings about the earlier unwanted or mistimed conception could

change over time (see Casterline et al., 2007; Crissey, 2005). Some women may not wish to report a pregnancy as unwanted or mistimed especially after the birth of a child from that pregnancy. In addition, women probably do not report unintended pregnancies that do not end in a live birth (i.e., in induced abortion or some other outcome) (Bongaarts, 1990; Joyce et al., 2000).

Separately, the second and third empirical chapters were only able to draw on a weak proxy to women's empowerment: women's education. There are several other variables identified in the literature such as wife's gender role ideologies, attitudes towards wife beating, ownership of assets, healthcare decision making, and spousal communication on fertility related issues, to name a few, that could be more valuable in examining the influence of women's improved status on shaping couple's fertility intentions. However, much of these alternative measures of women's empowerment are not available in the PDHS 1990-91 or were asked in different ways across surveys. Finally, although I acknowledge that diffusion processes are likely at play, I was unable to assess diffusion, which occurs through different means of communication such as TV, newspaper, and internet in spreading smaller family ideals and the information regarding various ways to achieve family ideals. Specifically, I was unable to consider empirically the role of mass media on contraceptive use for two main reasons. First, mass media exposure is totally different in the two-time periods. In 1990, there was only one state run television channel and radio, and its family planning messages were direct, mainly promoting and encouraging couples to use family planning methods. In the early 2000s, a revolution in electronic media occurred, and a large number of new television channels were launched. These channels brought new and luxurious lifestyle ideals in people's life. However, direct exposure to family planning messages through mass media declined over time. Zaidi

(2015) observed that around 50% of married women were exposed to family planning messages either through television, radio, or newspaper in 2006-07, and this proportion declined to 25% by 2012-13. Second, survey questions directly ask respondents about family planning knowledge and their sources of information. But these questions do not capture the diffusion of smaller family ideals via other mediums like TV serials, movies, and social media. In Pakistan, new private TV channels exposed women (and men) to new modes of family and lives.

Nonetheless, a couple-level approach has its own unique set of challenges. First, the response rate is lower among men (PDHS 2012-13 has a response rate of 79 percent among men) mainly due to their work schedule. The non-response rate is higher among urban populations compared to rural areas, resulting in sample selection bias. Second, a high financial and time cost is associated with collecting data from both husband and wife, which can be curtailed if data on men's fertility attitudes and behaviors is collected from women. Despite all these potential problems, a couple-level approach allows research to consider the differences in socio-demographic characteristics, intentions, and behavior of the partners as well as the interaction between them that affect the couples' reproductive decision making.

Implications and Future Research

This dissertation provides new insight into spousal relationships and communication between partners on reproductive matters and the role of gender in reproductive intentions and behaviors, especially when gender roles and relations are changing at societal level. Each chapter makes a noteworthy contribution to existing research on couples' fertility decision making processes. However, at the same time, this highlighted some important concerns. For instance, I found high levels of mistimed pregnancy/births among educated women in the first empirical chapter. This finding underscores the importance of distinguishing between mistimed and

unwanted births, as they could be quite distinct constructs as well as have different meanings, particularly for well-educated or privileged individuals.

Throughout this dissertation, I argued that it is advantageous to include men's direct reports of their fertility intentions and behaviors; however, in the absence of such data, getting indirect data on men's preferences – by asking women about their perceptions of their partner's beliefs – may provide another way to evaluate the gendered nature of fertility decisions. Further, even if women do not accurately know their husband's fertility preferences, it may be that women's *perception* about their partner's attitudes is more relevant for shaping women's own fertility behavior and outcomes (Bankole, 1995; Ezeh, 1993). Moreover, focusing on women's report of their husband's fertility intention would help in retaining a large representative sample and comparing trends over time (as majority of the fertility surveys have information from women only). However, researchers should also consider the limitations of this approach (i.e., underestimating couples' disagreement). Several scholars have found that proxy responses are not very reliable, especially on subjective matters, and favors the respondent's own fertility attitudes and desires (Testa and Toulemon, 2006; Thomson and Hoem, 1998; Thomson, 1997).

As such, this dissertation highlights the importance of collecting information from both husband and wife to better understand the dynamics of couples' fertility decision-making processes. For instance, the second empirical chapter demonstrate that when couples disagree on having another child, in the majority of cases, it is the husband who wants another child. Furthermore, disagreement on fertility intentions is higher among non-normative couples – those in which a wife is more educated than her husband. These findings demonstrate the gendered nature of fertility decision-making, which we cannot capture by only using women's data. Similarly, the results suggest that changes happening at societal level are slow to translate into

interpersonal relationships, highlighting the importance of collecting information from both men and women to better understand the linkages between social changes and fertility. Recall that during the course of demographic transition, women are first to internalize smaller family norms, and this could lead to more disagreement among couples on fertility intentions and behavior. Likewise, the third empirical chapter suggests that the success of family planning programs depend on if men and women have consensus on reproductive intentions and if men have favorable attitudes toward family planning intentions (Dodoo, 1998). The longitudinal studies of fertility intentions and behaviors have highlighted the importance of collecting information from both husband and wife (see Becker, 1996). Therefore, using information from women only may lead to biased results of unmet need for family planning. In male-dominated societies, women's reports of their fertility intentions likely incorporate, to some unknown degree, broader cultural norms. This may explain why educated women are more likely to use contraception but have no differences in unwanted fertility and may even have an elevated risk of mistimed fertility. Women are more likely to adjust and revise their fertility intentions due to actual or anticipated conflict with their husbands. Moreover, the massive improvement in women's education in Pakistan is a recent phenomenon, so it is possible that changes in women's status may not have yet filtered through societal norms and manifested into reproductive spheres, yet they may change the gendered dynamics of fertility decision-making in favor of women in future. Put differently, women's education may bring them more economic independence and general decision-making power but does not necessarily increase their ability to make reproductive decisions within marriage (DeRose et al. 2002).

The finding that contraceptive use has increased among women with no formal education shows that the fertility transition is occurring in Pakistan, even though at a slow pace. This

suggests that women with no formal education may have realized the importance of smaller families and may have developed aspirations to invest in the education of their children, particularly daughters. More research on women with no formal education is needed to better understand the mechanisms that lead them to regulate their fertility behavior. Is it the influence of fertility attitudes and behaviors of more educated women? Also, work is needed to identify which sources and mode of communication are more effective in sensitizing these women about smaller family norms. Policy makers and family planning program managers could then devise strategies to cater to the unmet need of this specific subgroup of women.

Another potential avenue is improved education about, and access to, family planning itself. Two of the major reasons which women cited for not using contraception were the fear of side effects and failure of contraceptive methods. Therefore, providing women, especially those with no formal education, with detailed and easy-to-understand information about contraception is imperative to increasing their use of family planning methods. Currently, the education and the provision of family planning services in the public sector is not a priority, with the exception of the Lady Health Worker (LHW) program, and many existing services are of poor quality. Although the private sector does provide family planning services, it is mainly active in urban areas and is costly. Increases in contraceptive use among women with no formal education, therefore, provides an opportunity for policy makers (who are concerned about high population growth) to devise strategies to provide efficient family planning services to previously unserved populations, but doing so necessitates a strong political will to make the commitment of "investments in a strong family planning program and in human development" (Sathar, 2013).

This research project has touched some important questions, but there are many more possibilities for future research such as discordant couple fertility intentions and mental well-

being of men and women; estimates of unmet need for contraception among couples; work-family conflict and fertility intentions; gender role ideologies and fertility intentions; unintended fertility and child well-being to name a few. The most recent matched couple data from PDHS 2012-13 provides a unique opportunity for researchers to explore different dimensions of couples' fertility attitudes and behaviors and also to do cross-country comparison. The literature on couples' fertility intentions and preferences is almost non-existent in Pakistan, which is problematic given that gender dynamics of the society are changing so rapidly. In spite of the availability of this rich data, to the best of my knowledge, no study has yet exploit this recent couple-level data to understand fertility scenario of Pakistan.

Second, this dissertation demonstrated the need for a panel study of couples' reproductive attitudes and behaviors. Fertility preferences are not static and are reassessed by couples over time with respect to changes in their socioeconomic situation. It would be valuable to have longitudinal data that has prospective measures of a couple's fertility preferences to see how fertility attitudes and behaviors are shaped over time. Lastly, given the data availability, spousal disagreement on fertility intentions and behaviors can provide useful insights in to parent and children well-being. For instance, the impact of discordant fertility intentions on mental and physical well-being of men and women; the association between unintended childbearing and child outcomes such as physical health and educational achievements.

In addition to informing future research, this dissertation has some important policy implications. Notably, the findings suggest that government and social organizations need to put their efforts into ensuring that the changes happening at the societal level (i.e., increasing women's education) are translating into interpersonal relationships by changing the cultural milieu of the society that accepts and celebrates women's empowerment. Improvement in

women's education alone does not seem to be enough to fully and truly empower women, since higher levels of education are confined to a relatively small section of the urban population. The number of such educated women as a proportion of the country's population is still quite small.

The third empirical chapter suggests revisiting the family planning program in Pakistan, as contraceptive use does not depend on which partner wants another child. Therefore, the low level of current contraceptive use may be the result of supply-demand gap as evident from the increase in "unmet need" over time (NIPS, 2013). The findings demonstrate that men's role in fertility decision-making should not be ignored. This is true in traditional societies where women's access to services is limited, and spousal communication on family planning is limited because of cultural norms that do not support open discussion of sexual matters. Pakistan's family planning program mainly focuses on women, but the low level of contraceptive use may be the result of unmet need among men as well as women. Kamran et al. (2013) found that husbands cited cost and lack of availability of family planning services as main reasons for not using contraceptives, suggesting that men indeed perceive access as a barrier. As the gender dynamics of the society favor male dominance, it would be advantageous to target men because it may possible that it is the unmet need for family planning among men that hinders further fertility decline due to low contraceptive use among couples.

Conclusion

This dissertation highlights the importance of collecting data from both husbands and wives to gain the better understanding of a couples' fertility decision-making process. Researchers have cited spousal fertility intentions as an important variable in explaining the inconsistency between desired and actual reproductive behavior (Miller and Pasta; 1995; Toulemon and Testa, 2006; Testa, 2010). Fertility preferences are an important indicator to

assess the pace of demographic transition in a country and have implications for devising effective population policy and strategies to achieve lower fertility. Studying discordant fertility intentions is also important because of changing gender roles, particularly in patriarchal societies like Pakistan. There is evidence that gender roles are changing dramatically at societal levels (Planning Commission, 2013) but whether they are translating into reproductive sphere is less clear; the results here suggest they are not. Given that women tend to want smaller families as their education and social statuses improve, the stagnation in fertility levels implies that women have been unable to assert their own preferences. Despite marked improvement in women's education in last two decades, the stalled fertility level in Pakistan suggest that gender changes at the societal level are slow to translate into gender changes in interpersonal relationships.

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APPENDIX A: SUPPLEMENTAL ANALYSIS FOR CHAPTER III

Table A3.1. Logistic Regression Models Predicting Spousal Disagreement: PDHS 1990 & 2012

Spousal Disagreement on Fertility Intentions	1990	2012
Wife's Education (omitted=no formal education)		
Primary	0.48	0.68
Secondary &Above	0.81	0.74
Couples' Educational Homogamy (omitted=both have no formal education)		
Wife is more educated than husband	1.36	2.31*
Husband is more educated than wife	1.32	1.11
Both have same level of education	1.96	1.21
Husband's Age (omitted=below 35)		
35-44	0.99	0.94
45 and above	1.00	0.81
Couples' Age Difference (omitted=wife is younger 0-4 years)		
Wife is older by 1-9 years	1.28	1.04
Wife is younger by 5-9 years	1.50	0.95
Wife is younger by 10+ years	0.65	1.55
Wife's Work Status (omitted=no)		
Yes	0.68	0.70
Parity (omitted=0-2)		
3	6.49***	2.19**
4 and above	4.96***	2.60***
Experienced Child's Death (omitted=no)		
Yes	0.99	1.13
Place of Residence (omitted=rural)		
Urban	1.26	0.95
Household Wealth (omitted=poor)		
Middle	0.84	0.61*
High	1.01	0.83
Currently Pregnant (omitted=no)		
Yes	1.50	1.50*
Disagreement on number of living children (omitted= no disagreement)		
Disagreement	1.92*	1.32
Constant	0.07***	0.15***

Source: PDHS 1990-91 & 2012-13; + (p<0.10), * (p<0.05), ** (p<0.01), *** (p<0.001).
Analyses are weighted to account for complex survey design of PDHS 1990-91 & 2012-13.

APPENDIX B: SUPPLEMENTAL ANALYSIS FOR CHAPTER IV

Table A4.1. Logistic Regression Models Predicting Current Contraceptive Use: PDHS 1990 & 2012

Current Contraceptive Use	1990	2012
Couples' Fertility Preferences (omitted= wife wants another but husband does not)		
Husband wants another but wife does not	1.96	1.48
Both don't want a(nother) child	2.97*	2.18*
Both want another child	0.43+	0.63
Wife's Education (omitted=no formal education)		
Primary	2.17	1.88*
Secondary & higher	7.99***	2.72***
Couples' Educational Homogamy (omitted= both have no formal education)		
Husband is less educated than wife	2.22	0.94
Husband is more educated than wife	1.35	0.99
Both have same level of education	0.79	0.77
Wife's Age (omitted=15-24)		
25-34	0.32**	0.79
35+	0.13***	0.41**
Couples' Age Difference (omitted=wife is younger by 0-4 years)		
Wife is older by 1-9 years	1.54	0.99
Wife is younger by 5-9 years	0.83	1.08
Wife is younger by 10+ years	0.81	1.49
Wife's Work Status (omitted=not working)		
Yes	0.99	1.16
Parity (omitted= 0-1)		
2-3	2.60+	3.47***
4 & above	5.11**	4.04***
Experience of Child Mortality (omitted=no)		
Yes	0.84	0.97
Place of Residence (omitted=rural)		
Urban	2.16+	1.34+
Household Wealth (omitted=poor)		
Middle	1.03	1.89**
High	2.04	1.32
Disagreement on Number of Living Children (omitted= no disagreement)		
Disagreement	1.75	0.50*
Constant	0.03***	0.15***
Unweighted N	970	1,972

Source: PDHS 1990-91 & 2012-13; + (p<0.10), * (p<0.05), ** (p<0.01), *** (p<0.001). Analyses are weighted to account for complex survey design of PDHS 1990-91 & 2012-13.