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Examining the Effect of Fertility, Achievement of Ideal Family Size, Unmet Need, and Modern Contraceptive Use on Women's Empowerment in Minya, Egypt

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An abstract of
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Abstract

Examining the Effect of Fertility, Achievement of Ideal Family Size, Unmet Need, and Modern Contraceptive Use on Women's Empowerment in Minya, Egypt
By Ruvani Tharanga Jayaweera

Objective: This research utilizes longitudinal data to assess the association between fertility control and women's empowerment.
Sample: 575 women from Minya, Egypt who participated in the 2005 Egypt Demographic and Health Survey and a follow-up study in 2012.
Methods: Five separate multivariable logistic regression models explored the relationship between fertility, achievement of ideal family size, unmet need for contraception and modern contraceptive use with agency outcomes across five domains.
Results: Total fertility was not associated with women's agency. Unmet need for contraception was associated with lower odds of agency in the childcare decision-making domain (OR: 0.60, 95% CI: 0.38-0.95). Ever use of modern contraception was associated with higher odds of freedom of movement (OR: 1.89, 95% CI: 1.12-3.18).
Conclusion: There is some evidence to support an association between contraceptive use and women's agency. Future research should further explore the temporal relationship between measures for fertility control and women's empowerment.

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Chapter 1: Literature Review

Introduction

During the latter half of the 20th century, the primary focus of many in the international development field was to increase access to modern methods of family planning (1). Throughout this period, much attention was placed on discovering the drivers of fertility decline, with economic marginalization, lack of education, and limited local health infrastructure seen as the primary barriers to contraceptive use and successful fertility regulation (2). Women's autonomy and empowerment began to emerge in the literature as another possible determinant of fertility decline—however, whether or not increased control over one's fertility has the ability to transform gender norms and increase women's empowerment has not been sufficiently tested in developing countries (3). Further exploration of this relationship is fraught with challenges given the bi-directional nature of the relationship between contraceptive use and lower fertility with empowerment. For example, while greater empowerment and increased gender equality may increase women's access to contraception and enable them to control their fertility, it is simultaneously possible that increased reproductive control can enable women to become empowered in other dimensions (4). This literature review seeks examine the existing research on fertility, contraceptive use, and empowerment in order to provide a conceptual framework to explore the effect of contraceptive use and fertility on women's empowerment.

Empowerment

Women's empowerment and gender equity is an articulated goal of many international development bodies both as an end unto itself as well as the means to

achieving various objectives such as child health, fertility decline, and economic development (5, 6). Despite the interest and importance placed on developing strategies and policies that impact women's empowerment in meaningful ways, women's empowerment remains a notoriously difficult concept to define. This next section attempts to explore the various ways women's empowerment has been defined and operationalized in the literature.

Theory

Empowerment has been conceptualized in the literature as autonomy, agency, gender equality, status, power, and bargaining rights (7). Malhotra and Schuler (2005), in their review of the empowerment measurement literature, characterized most empowerment definitions as possessing the following key themes: options, power, choice, and control (7).

Kabeer's (1999) definition of empowerment is often the most utilized; Kabeer conceptualizes empowerment as "the expansion in women's ability to make strategic life choices in a context where this ability was previously denied to them" (8). This definition emphasizes empowerment as a process, rather than an endpoint. In the context of fertility and empowerment, a strategic life choice is the decision of whether and when to have children (6). According to Kabeer (1999), the mechanisms through which individuals are able to make strategic life choices are dependent on their *resources*, *agency*, and *achievements* (8). *Resources* are the context in which agency is exercised, as the distribution and control over resources affects an individual's ability to make and act on their choices (6). For example, education and access to economic resources or wealth can

be considered enabling resources that impact whether a woman is able to make decisions concerning her life. Enabling resources may be *human*, such as educational attainment (9), *economic*, such as earnings or owned property (6), or *social*, such as social interaction outside of marriage and women's position in the community (10). *Agency* refers to a woman's ability to make and act on her own life choices; this agency can be constrained by institutions, culture, and ideology (6). Agency can also be thought of as "embedded self-efficacy," or a woman's realization that she can be an agent of change in her own life (7). Agency has been conceptualized as women's influence in family decisions, their movement in public spaces, and their expression of views favoring equitable roles and rights for women vis-à-vis men (8, 11, 12). Thus, improvements in women's empowerment that seek to enhance agency involve the direct challenge of existing structures of power; similarly, agency that seeks to decrease proximal inequalities (such as the agency to control's one fertility) may also initiate a process of overall societal change (6). Finally, *achievements* comprise the extent to which individuals can realize their full potential, whether through political participation, improved health outcomes, or economic participation (6).

Most other definitions of empowerment can be placed within Kabeer's framework. For example, the United Nations defines empowerment as comprising five main areas: "women's sense of self-worth; their right to have and to determine choices; their right to have access to opportunities and resources; their right to have the power to control their own lives, both within and outside the home; and their ability to influence the direction of social change to create a more just social and economic order, nationally and internationally" (13). This definition clearly fits within Kabeer's principles of

resources (right to access opportunities and resources), *agency* (right to have and to determine choices, right to have power to control their own lives) and *achievements* (women's sense of self-worth, ability to influence the direction of social change). As most other definitions of empowerment adhere to or fit within this framework, this paper will primarily utilize Kabeer's theory of empowerment, particularly to inform the proposed conceptual framework.

Dimensions of Women's Empowerment

Very few studies use validated measures of empowerment (14), making change in empowerment and cross country comparisons extremely difficult to assess. The section below details different metrics that have been used to operationalize women's empowerment for analytic purposes.

The World Economic Forum's (2005) report on women's empowerment utilized the following dimensions to operationalize empowerment: economic participation, economic opportunity, political empowerment, educational attainment, and health and well-being (Table 1.1) (15). These measures almost exclusively focus on factors that could be considered enabling resources for empowerment (such as education and employment opportunities) and achievements (nutrition, access to health), with a lesser focus on measuring agency. Furthermore, these measures are best utilized to assess women's empowerment at a country or state level, rather than at the individual level.

Table 1.1 Selected Aggregate Level Indicators of Women's Empowerment Across Various Domains (Adapted from Lopez-Claros & Zahidi, 2005) (15)

Domain	Measure
Economic Participation	Female presence in the workforce Female unemployment/female youth unemployment Male to female income ratio Economic activity rate Wage equality for similar work
Economic Opportunity	Laws and policies to remove barriers to entry into the workforce (e.g. weeks of paid maternity leave) Availability of government childcare Impact of maternity laws on hiring of women Gender hiring equality in the private sector
Political Empowerment	Number of years a country has had a female president or prime minister in past 50 years Percentage of seats in parliament held by women Percentage of female legislators, senior officials, or managers
Educational Attainment	Total years of schooling Ratio of males to females in all levels of education Ratio of female to male adult literacy
Health and Well-Being	Percentage of births attended Adolescent fertility rate Maternal mortality ratio, the infant mortality rate Effectiveness of government efforts to reduce poverty

The third millennium development goal—promote gender equality and empower women—emphasizes three main outcomes: closing the gender gap in education at all levels, increasing women's share of wage employment in the non-agricultural sector, and increasing the proportion of seats held by women in national parliaments (6). Increasing the proportion of women in school can help change women's cognitive ability to question their surroundings and increases the chances that a woman will prioritize her own well-being; however, it is possible for social and gender inequalities to be reinforced through the educational system (6). Similarly, while paid work can increase a woman's ability to participate in decision-making, the feminization of the labor force, particularly in low-status jobs, can further expose women to exploitative conditions (6). As a result, these

indicators may be poor metrics if we wish to understand empowerment as a process, or if we wish to understand determinants of empowerment at the individual level.

Malhotra and Schuler's (2005) review of empowerment measures suggests six key dimensions of empowerment: economic, socio-cultural, familial/interpersonal, psychological, legal, and political (7). Table 1.2 presents common indicators of women's empowerment across these various domains. One advantage of these indicators over the aggregate level indicators previously mentioned is the framing of empowerment as a process, with each indicator encompassing a different pathway and point along that process. Furthermore, these individual level empowerment indicators recognize that understanding household dynamics and interpersonal relationships are key to women's empowerment (16). Absent from these measures are variables that indicate educational attainment; though much of the previous literature on empowerment often uses education or literacy as a proxy for empowerment, many have pointed out the fallacy of this practice, as it conflates woman's status with empowerment (17, 18). Correlates of woman's status such as educational attainment, labor force participation, or age at first marriage should be considered prerequisites or enabling resources for the process of empowerment rather than an indication of empowerment itself (8).

Table 1.2 Selected Household/Individual Level Indicators of Women's Empowerment Across Various Domains (Adapted from Malhotra et al, 2005) (7)

Domain	Measure
Economic	Women's control over income Relative contribution to family support Access to and control of family resources
Socio-cultural	Women's freedom of movement Lack of discrimination against daughters Commitment to educating daughters
Familial/interpersonal	Participation in domestic decision-making Control over sexual relations Ability to make childbearing decisions, use contraception, access abortion Control over spouse selection and marriage timing Freedom from domestic violence
Psychological	Self-esteem Self-efficacy Psychological well-being
Legal	Knowledge of legal rights
Political	Knowledge of political system and means of accessing it Domestic support for political engagement Exercising the right to vote

The Demographic and Health Surveys (DHS) collect population-based demographic and health data in developing countries that are designed to be compared across countries (19). Since 2009, the DHS has expanded the number of items used to quantify various dimensions of empowerment, primarily within the context of the household (19). The main constructs are displayed in Table 1.3; most indicators fall in the economic and familial/interpersonal domains described by Malhotra and Schuler (2005) (7). Critics of these measures point out that their creation arose from formative research in South Asia, and thus may not be appropriate measures of empowerment in other settings (20).

Kishor and Subaiya (2008) analyzed selected DHS empowerment indicators from the household decision-making, ability to refuse sex, and justification of wife beating

domains from 23 developing countries in Sub-Saharan Africa, North Africa/West Asia, Asia, and Latin America/the Caribbean (21). In their analysis, they found that women's level of participation in decision-making varied across items; thus, participation in one type of decision-making was not always related in participation in another decision (21). They concluded that if decision-making is used as an indicator of empowerment, context should determine which decisions are important to analyze (21).

Table 1.3 Selected Household/Individual Level Indicators of Women's Empowerment Across Various Domains in the DHS (Adapted from Heckert & Fabic, 2013) (19)

Domain	Measure
Economic Empowerment	Who makes decisions about wife's and/or husband's earnings? Wife's earnings relative to husband's Ownership of home/land
Household Decision-making	Who makes decisions about major purchases? Who makes decisions about whether woman can visit relatives? Who makes decisions on woman's healthcare for herself?
Ability to Refuse Sex	Is a wife justified in asking her husband to use a condom if she knows he has a disease that can be transmitted via sex? Is a wife justified in refusing to have sex with her husband if she knows he has sex with women other than his wives?
Contraceptive Decision-making	Who makes decisions about whether to use a method of contraception?
Justification of Wife Beating	Is a husband justified in hitting/beating his wife in any of the following situations: If she goes out without telling him? If she burns the food? If she neglects the children? If she argues with him? If she refuses sex?

Recent research from Egypt has sought to validate measures of empowerment commonly used in empowerment work; Yount and colleagues (2015) conducted an exploratory and confirmatory factor analysis of multiple items related to women's agency

utilizing data from 6,214 married women ages 16–49 who participated in the 2006 Egypt Labor Market Panel Survey (22). The final 15-item model is detailed in Table 1.4. Their results support the idea of the multidimensionality of women's empowerment. They conclude that women's agency in Egypt encompasses financial and household decision-making, freedom of movement, and attitudes on gender based violence; attitudes on general gender roles and rights was eliminated from their final model (22).

Table 1.4 Validated Model of Women's Agency in Egypt Across Three Factors/Domains (Adapted from Yount et al, 2015) (22)

Factor	Item
Financial Decision-making	Who in your family has the final say on the following decisions: Making large household purchases? Making household purchases for daily needs? Visits to friends, family, or other relatives? What food should be cooked each day? Getting medical treatment or advice for yourself? Buying clothes for yourself?
Freedom of Movement	If you wanted to go to the following places, can you go to: The doctor/health unit for treatment? Taking children to the doctor/health unit? The house of friends, relatives, and neighbors?
Gender-Violence Attitudes	Is a husband justified in hitting/beating his wife in any of the following situations: If she burns the food? If she neglects the children? If she argues with him? If she talks to other men? If she wastes his money? If she refuses sex?

Thus, there are a variety of indicators to choose from when operationalizing empowerment; it is clear from a review of the measures used in the literature that indicators should be selected in relation to context and the empowerment construct they are attempting to operationalize.

Relationship Between Fertility Control and Empowerment

Theoretical Pathways

Several theoretical pathways that theorize how declines in fertility could impact women's empowerment are explored in the section below.

Declining Value of Children Reduces Motivation to Subjugate Women

This explanation focuses on how the social and cultural value placed on children are the basis for women's subordination (23). When children hold economic and social value, women are valuable due to their joint reproductive and productive capacity. Thus, there is a strong incentive to control women's sexuality and reproduction at the individual, societal, economic, and political level (3, 14). As resources become scarce, the relative value of children decreases, resulting in declines in fertility. As fertility declines, the importance of marriage and motherhood in women's lives is diminished and the rationale to subjugate women decreases, potentially expanding women's ability to make strategic life choices outside of their decision of whether or not to have children (3, 14). This theoretical pathway is interesting because it places no empowerment prerequisites for the initial fertility decline; rather, women's empowerment is solely a consequence of declining fertility.

Separation of Sex from Procreation Shifts Gender Power Imbalance in Favor of Women

This pathway is grounded in the feminist rationale that female control over means of reproduction (e.g. contraception or abortion) is essential to overcoming patriarchal social, economic, and political systems (14). Steinem argues that while male

"production" holds economic value in patriarchal systems, female "reproduction" does not hold similar weight (3, 24). Thus, when women are able to control their fertility, they are able to achieve a power balance with men. In addition, increased access to contraception results in the separation of sex from procreation, potentially leading to increased sexual empowerment (3).

Contraception Allows Women to Pursue Non-Reproductive Goals

This pathway suggests that improvements in women's empowerment are also possible through better health. As fertility declines, maternal mortality and morbidity also decline, resulting in increases in women's life expectancy. Increased life expectancy as well as decreased time spent raising children gives women more time to engage in activities that may enrich their lives (14). Women have more time to pursue careers (3) and participate in social or political change (14). This pathway is likely to be true when declines in fertility are accompanied by economic and social changes that expand women's access to education and employment opportunities (25). Furthermore, contraceptive use can be considered to be inherently empowering, as it allows women to take control of their own lives (3). If women feel that they are able to control the timing and frequency of childbearing, they may feel empowered to control other aspects of their lives (25).

Empirical Evidence

The following section explores some of the literature on the relationship between fertility control and empowerment.

The Effect of Empowerment on Fertility

Most research on the association between empowerment and fertility explores how empowerment has led to declines in fertility (3). A recent review of 60 studies examined the relationships between women's empowerment and several fertility-related topics, though studies that focused on family planning and contraception alone were excluded (26). While most studies found some positive associations between women's empowerment and lower fertility, longer birth intervals, and lower rates of unintended pregnancy, all but one studied empowerment as an exposure variable, rather than an outcome of fertility control (26). Almost half of the studies reviewed found a combination of significant and non-significant findings, highlighting that the relationship between empowerment and fertility is not always consistent across measures of empowerment (26). Furthermore, most studies were cross-sectional, and thus were unable to address temporality (26). Most of the studies in this review used household decision-making and women's mobility/freedom of movement (usually an index of the number of places a woman can travel to alone or without permission) as operationalized measures of women's empowerment (26). Lee-Rife utilized a life-course approach to studying the effect of reproductive events on empowerment, and found no significant associations between reproductive events (unwanted or mistimed pregnancy, stillbirths, miscarriages, and abortions) and women's mobility and financial discretion (27).

The same review mentioned above also detailed results from seven studies that explored the relationship between empowerment and a woman's desire for more children; most studies found a significant association between at least some measures of women's empowerment and a desire for fewer children (26). Another study using DHS data from

Guinea, Mali, Namibia, and Zambia found that women's empowerment most often was not associated with achieving desired family size (20). The inconsistency in these findings highlight the need for a better understanding of how each empowerment measures operates in each particular study setting.

The Effect of Fertility on Empowerment

Some studies have explored how declines in fertility have led to improvements in health outcomes. For example, multiple studies have shown that global declines in maternal mortality can be attributed to declines in fertility (14). Yount et al (2014) found that fertility decline was significantly associated with absolute improvements in girl's health and well being (28); however, when fertility declines at a faster pace than son preference, reductions in fertility may lead to greater discrimination against daughters. This is also evident in the phenomenon of "missing" girls in India and China, where son preference and declining fertility have resulted in increased female feticide or sex-selective abortion (14).

Other studies have explored how fertility declines have coincided with or led to macro-level increases in the female labor force participation rate, though the directionality of this relationship is unclear (14). At the individual and household level, there is heterogeneity in the findings: studies using DHS data have found that childbearing appears to have little effect on employment (29). In addition, Pande et al (2012) argues that increased female labor force participation may actual disempower women, as they bear the double burden of child rearing and engaging in economic activities; thus, studies that rely on employment as a measure of empowerment should be

interpreted with caution (30). To our knowledge, there have been no studies that have explicitly assessed whether fertility is a predictor of empowerment at the individual level, demonstrating the need for further research in this field.

The Effect of Empowerment on Contraception

The studies mentioned below evaluate empowerment as a predictor of contraceptive use; however, all of these studies rely on cross-sectional data, making it difficult to address the temporality of the associations. Generally, studies have shown that empowerment across various domains is associated with contraceptive use (16, 18, 31) though contraceptive use has been measured in a variety of ways.

Shuler and colleagues' (1994) study on empowerment, credit programs, and contraceptive use in rural Bangladesh found an increase in the utilization of family planning services among women who participated in micro-credit programs, even though these programs did not explicitly provide family planning services (32). Shuler et al (1994) hypothesized that the microcredit programs increased women's ability to overcome obstacles to obtaining contraception (32). Increased access to contraception may also influence their ability to participate more fully in the micro credit programs, by allowing women to control the timing of their births, potentially reducing time spent childbearing and childrearing, and increasing the amount of time and energy they can dedicate to participation in these programs.

Ahmed et al (2010) utilized DHS data from 33 countries to explore the relationship between empowerment in the education and economic domains with maternal health service utilization, particularly ever use of modern contraception (33).

Overall, women in the bottom 20% of wealth, who had no completed primary education, and who scored a zero out of five on the decision-making scales, were less likely to use modern contraception compared to those in the top 20% of wealth, who had completed primary education, and had decision-making power in all five scale items (33). However, all data were cross-sectional, so directionality could not be ascertained; while it is unlikely that use of modern contraception preceded wealth or educational attainment, it is possible that the relationship between decision-making and contraception is bi-directional.

A study using Ethiopia DHS data found that participation in decision-making and lack of justification for domestic violence were associated with the ever use of modern contraception (34); another study using the Eritrea DHS found that women who had a final say in day-to-day household purchases were more likely to have ever used a modern method, but justification of domestic violence was not associated with contraceptive use (35). Do and Kurimoto (2012) assessed the individual contribution of empowerment measures on use of contraception in Ghana, Namibia, Uganda, and Zambia (16). Results from this study were mixed; economic empowerment predicted contraceptive use in Uganda and Namibia, the ability to negotiate sex was weakly associated with contraceptive use and Zambia and Ghana, and lack of justification for domestic violence was weakly associated with contraceptive use in Namibia (16).

Another study found an inverse association between the number of decisions a woman is involved in and the number of places a woman can travel alone with having an unmet need for contraception (defined as not wanting another child, but not currently using a method of contraception) (36). Other studies have also found an association

between freedom of movement and contraceptive use; this is likely because being able to travel to a health center is a precondition for obtaining a method of contraception (18).

The Effect of Contraception on Empowerment

There is a lack of quantitative studies that explore contraceptive use as a predictor of women's empowerment at the individual level, highlighting the need for further research in this field. However, a few studies have explored the empowering effects of contraception in qualitative work as well as at a macro level, which is detailed below.

Focus groups with women in Mali and Zimbabwe attempted to understand the impact family planning has had on women's lives; women reported that contraception was a tool that enabled them to achieve specific goals, such as continuing education or seeking employment (37). Results from the focus groups indicate that family planning improves women's day to day lives, frees them from the fear of unintended pregnancy, and may improve partner relationships and family well-being; however, it is not sufficient for gender equity in the long term, highlighting the need for broader societal change in order for women to take advantage of greater opportunities (37).

Gollub (2000) explored how the female condom could be used as a tool of female empowerment; a review of the literature around female condom interventions points to an empowerment effect of being trained to use a female condom (38). Gollub hypothesizes that the female condom may increase the negotiation of sexual practices between men and women, paving the way for greater equality in other aspects beyond sex (38). In addition, learning how to use female condoms can increase a woman's perception of

empowerment and control over one's body, as well as recognize her entitlement to good health (38).

Data from the United States has sought to explain how the availability of the oral contraceptive pill and abortion gave women the ability to time their pregnancies, allowing them to better plan their careers (3). However, it may be difficult to tease out the effect of contraception as this occurred during a time of general social upheaval and change (3). Education may play a role in reinforcing the relationship between fertility decline and empowerment; however, studies have found that increases in educational attainment doesn't immediately lead to increases in employment opportunities (14).

The Egyptian Context

Egypt was the first Arab nation to implement a policy on population growth (18); despite initial declines in fertility, Egypt has struggled to reduce fertility to the replacement level (39). Data from the 2004 Slow Fertility Transition Survey suggest that son preference and a perceived low cost of childbearing are the primary obstacles to the acceptance of the two child ideal promoted by the Egyptian government (39). Some have theorized that women's position in Islamic societies may limit the potential for uptake of family planning, as religion and culture may constrict freedom of movement and enforce traditional gender ideals about the importance of motherhood (18). As religion and culture may similarly impact women's empowerment, a greater understanding of the Egyptian context is key to understanding whether contraceptive use and fertility control could have any effect on women's empowerment.

The most recent data from the Egypt DHS (EDHS) shows an increase in the total fertility rate from 3.1 births per woman in 2005 to 3.5 births per woman in 2014 (40). According to the EDHS, 57% of married women are currently using a modern method of contraception; intra-uterine devices (IUDs) (30%) and oral contraceptives (16%) are the most commonly used methods (40). Only 45% of married women in rural Upper Egypt are currently using a modern method of contraception, with a higher proportion of women from Upper Egypt relying on injectable contraception compared to women living in the urban governorates (40). The overall proportion of women using a modern method has been relatively unchanged since 2005, though the proportion of women that are using an IUD has declined (40).

The World Economic Forum (2005) report on 58 countries, "Measuring the Gender Gap," ranked Egypt 49th or below for all the dimensions studied (economic participation, economic opportunity, political participation, educational attainment, and health and well being) (15). The report concluded that deeply held conservative attitudes on the role and status of women made integration of women into decision-making bodies difficult, limiting the potential for transformative change (15).

In order to use individual measures of women's empowerment, such as decision-making and freedom of movement, it is important to understand how these items are viewed in this particular context. Previous research has suggested that systems of gender segregation and norms have defined clear domains of power for women; thus women may have complete autonomy over certain household decisions that reflect gendered division of labor rather than increased agency and empowerment (18). Research from Govindasamy and Malhotra (1996) have indicated that women in Egypt prioritize joint

decision-making rather than individual decision-making (18). This is corroborated by a nationally representative study of Egyptian adolescents; the majority of boys and girls in the study prioritized joint decision-making when asked about their perceptions of ideal gender relations within a future marriage (41). Clear gendered domains of influence emerged, with both girls and boys highlighting day-to-day household decisions and certain childcare decisions as within a woman's sphere of influence, while men were seen as responsible for financial matters (41).

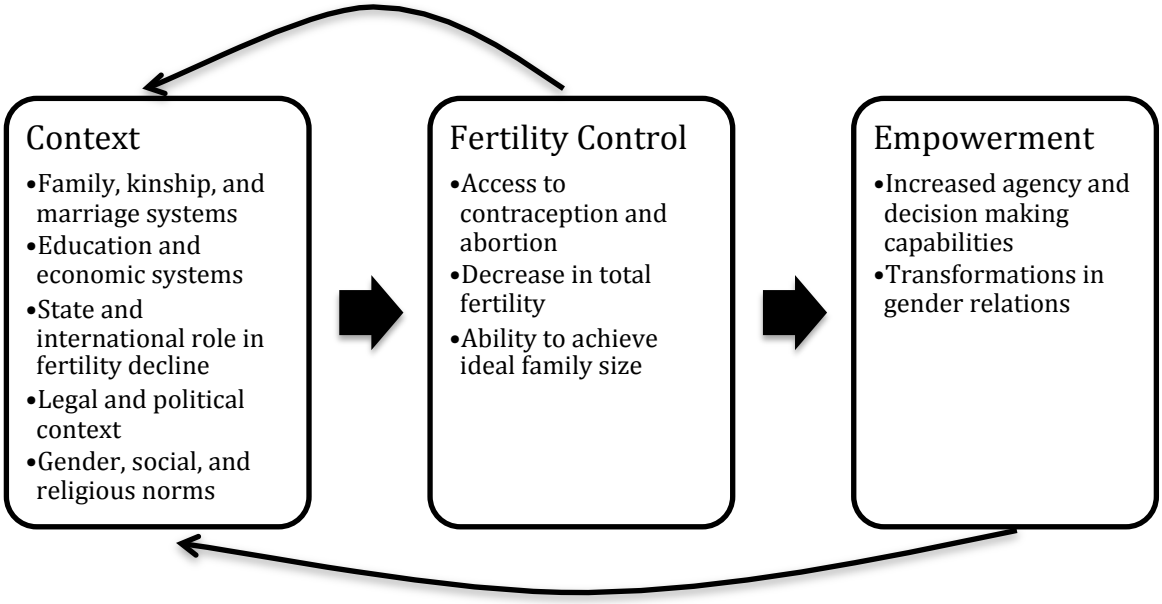
Research Gaps

Overall, the research exploring the relationship between women's empowerment, fertility decline, and contraceptive use has yielded mixed results. Furthermore, almost all of the studies to date have been cross-sectional and unable to address the temporality of this relationship. Most research has explored women's empowerment as a driver of fertility decline and contraceptive use, though there are plausible pathways for how contraceptive use and fertility control could impact women's empowerment in other dimensions. The lack of research to support the impact of fertility decline on women's empowerment within the private sphere highlights the need for longitudinal studies that can explore this hypothesized relationship at the individual level. In addition, greater exploration of specific domains of women's empowerment and its association with fertility would greatly improve understanding of this relationship in the Egyptian context.

Conceptual Framework

Based on previous research as well as Malhotra's (2012) call for further research in this field (3), this thesis will use the following conceptual framework to address the relationship between fertility control, contraceptive use, and women's empowerment. I hypothesize that there is a plausible bi-directional relationship between fertility control and empowerment: while women need some level of basic agency to be able to control their fertility, increased fertility control and use of modern methods of contraception can enhance their empowerment in other domains. Furthermore, this framework suggests that lower fertility has the potential to transform gender systems at a societal scale. Women's empowerment and ability to control their fertility operates within a larger context, which determines the opportunities available to women and enabling resources at a macro scale.

Figure 1.1 Conceptual Framework of the Effect of Fertility Decline on Women's Empowerment (Adapted from Malhotra, 2012) (3)



Chapter 2: Manuscript

The Effect of Fertility and Unmet Need on Women's Empowerment in Minya, Egypt

Introduction

The global decline in fertility and increase in fertility control has been well documented; however, the question of whether increased control over one's fertility has the ability to transform gender norms and increase women's empowerment has not been sufficiently tested in developing countries (3). Further exploration of this relationship is fraught with challenges given the bi-directional nature of the relationship between contraceptive use and lower fertility with empowerment. For example, while greater empowerment and increased gender equality may increase women's access to contraception and enable them to control their fertility, it is simultaneously possible that increased reproductive control can enable women to become empowered in other dimensions (4). This research seeks to explore whether the ability to control one's fertility leads to increased women's empowerment, utilizing longitudinal data from a cohort of women in rural Minya, Egypt.

Women's Empowerment

Women's empowerment has been defined a variety of ways in the literature; Malhotra and Schuler (2005) characterize the majority of these definitions as encompassing the themes of options, power, choice, and control (7). Kabeer's (1999) definition of empowerment is often the most utilized; Kabeer conceptualizes empowerment as "the expansion in women's ability to make strategic life choices in a context where this ability was previously denied to them " (8). This definition emphasizes empowerment as a process, rather than an endpoint. In the context of fertility and

empowerment, a strategic life choice is the decision of whether and when to have children (6). According to Kabeer (1999), the mechanisms through which individuals are able to make that strategic life choice are dependent on their *resources*, *agency*, and *achievements* (8). *Resources* are the context in which agency is exercised, as the distribution and control over resources affects an individual's ability to make and act on their choices (6). Enabling resources may be *human*, such as educational attainment (9), *economic*, such as earnings or owned property (6), or *social*, such as social interaction outside of marriage and women's position in the community (10). *Agency* refers to an individual's ability to make and act on their own life choices; this agency can be constrained by institutions, culture, and ideology (6). Agency has been conceptualized as women's influence in family decisions, their movement in public spaces, and their expression of views favoring equitable roles and rights for women vis-à-vis men (8, 11, 12). Thus, improvements in women's resources that seek to enhance agency involve the direct challenge of existing structures of power; similarly, agency that seeks to decrease proximal inequalities (such as the agency to control's one fertility) may also initiate the process of overall societal change (6). Finally, *achievements* comprise the extent to which individuals can realize their full potential, whether through political participation, improved health outcomes, or economic participation (6). As most other definitions of empowerment adhere to or fit within this framework, this research will utilize Kabeer's theory of empowerment, particularly to inform the proposed conceptual framework.

Dimensions of Women's Empowerment

Very few studies use validated measures of empowerment (14), making change in empowerment and cross country comparisons difficult to assess. Some organizations have operationalized women's empowerment using aggregate indicators. For example, the World Economic Forum's (2005) report on women's empowerment utilized the following dimensions: economic participation, economic opportunity, political empowerment, educational attainment, and health and well-being (15). The third millennium development goal (promote gender equality and empower women) emphasizes three main goals: closing the gender gap in education at all levels, increasing women's share of wage employment in the non-agricultural sector, and increasing the proportion of seats held by women in national parliaments (6). These measures almost focus exclusively on factors that could be considered enabling resources for empowerment (such as education and employment opportunities) and achievements (nutrition, access to health), with a lesser focus on measuring agency. Furthermore, these measures are best utilized to assess women's empowerment at a country or state level, rather than at the individual level.

Though much of the literature uses education or literacy as a proxy for empowerment, many have pointed out the fallacy of this practice as it conflates women's status with empowerment (17, 18). Correlates of woman's status such as educational attainment, labor force participation, or age at first marriage should be considered prerequisites for the process of empowerment rather than an indication of empowerment itself (8). As a result, these indicators may be poor metrics if we wish to understand

empowerment as a process, or if we wish to understand determinants of empowerment at the individual level.

Malhotra and Schuler's (2005) review of empowerment measures suggests six key dimensions of empowerment at the individual level: economic, socio-cultural, familial/interpersonal, psychological, legal, and political (7). Since 2009, the Demographic and Health Surveys (DHS) have included items that seek to quantify various dimensions of empowerment, primarily within the context of the household (19). Domains addressed in the DHS include: economic empowerment, household decision-making, ability to refuse sex, contraceptive decision-making, and justification of wife beating (19). However, measures around decision-making in different spheres were initially created for use in Southeast Asia, and may not be appropriate measures of empowerment in other settings (42).

Kishor and Subaiya (2008) analyzed selected empowerment indicators from the household decision-making, ability to refuse sex, and justification of wife beating domains from DHS data from 23 developing countries in Sub-Saharan Africa, North Africa/West Asia, Asia, and Latin America/the Caribbean (21). In their analysis, they found that women's level of participation in decision-making varied across items; thus, participation in one type of decision-making was not always related to participation in another decision (21). They concluded that if decision-making is used as an indicator of empowerment, context should determine which decisions are important to analyze (21).

Yount and colleagues (2015) conducted an exploratory and confirmatory factor analysis of multiple items related to women's agency, utilizing data from 6,214 married women ages 16–49 who participated in the 2006 Egypt Labor Market Panel Survey, in

order to validate commonly used measures of empowerment in the Egyptian context (22). Their results highlight the multidimensionality of empowerment and conclude that women's agency in Egypt can be measured across the following three dimensions: financial and household decision-making, freedom of movement, and attitudes on gender based violence (22). These validated measures have been utilized in more recent research to explore the relationship between age at first marriage and women's empowerment (43).

Prior research on the same sample of women used in the current research utilized four variables to assess agency: whether the woman was the sole decision-maker for decisions about healthcare for herself, major household purchases, purchases for daily household needs, and visits to her family or relatives (12); another study on the same population utilized a three factor model that represented dimensions of women's agency across economic decision-making, freedom of movement, and the espousal of views that challenge prevailing gender norms (11). A larger study on women from Minya, Egypt measured women's family power via a three-level variable of whether women made the following decisions *alone*, *jointly with another person*, or *was not involved in the decision-making*: visits to friends or family members, budget of the household, a child's education, plans for a child's marriage, and type of provider for a sick child (44). This research seeks to build upon the previous research on women's agency in Egypt, utilizing items from measures that have been validated in previous studies when possible.

Relationship between Fertility and Empowerment

Multiple pathways may explain how declines in fertility can impact women's empowerment; for example, some have theorized that the declining value of children may reduce the societal and interpersonal motivation to subjugate women (23). As fertility declines, the importance of marriage and motherhood in women's lives is diminished and the rationale to subjugate women decreases, potentially expanding women's ability to make strategic life choices beyond their decision of whether or not to have children (3, 14). Another theory posits that the separation of sex from procreation allows women greater power, enabling them to achieve a power balance with men (3, 24).

While it is likely that all of these pathways are plausible, this paper draws primarily from the theory that contraception allows women to pursue non-reproductive goals. This pathway suggests that improvements in women's empowerment are possible through better health: as fertility declines, maternal mortality and morbidity also declines, resulting in increases in women's life expectancy. Increased life expectancy as well as decreased time spent raising children gives women more time to engage in activities that may enrich their lives (14). Women have more time to pursue careers (3) and participate in social or political change (14). This pathway is likely to be true when declines in fertility are accompanied by economic and social changes that expand women's access to education and employment opportunities (25). Furthermore, contraceptive use can be considered to be an inherently empowering process, as it allows women to take control of their own lives (3). If women feel that they are able to control the timing and frequency of childbearing, they may feel empowered to control other aspects of their lives (25).

Empirical Evidence

Fertility and Empowerment

Most research on the association between empowerment and fertility explores how empowerment has led to declines in fertility (3). A recent review of 60 studies examined the relationships between women's empowerment and several fertility-related topics, though studies that focused on family planning and contraception alone were excluded (26). While most studies found some positive associations between women's empowerment and lower fertility, longer birth intervals, and lower rates of unintended pregnancy, all but one studied empowerment as an exposure variable, rather than an outcome of fertility control (26). Almost half of the studies reviewed found a combination of significant and non-significant findings, highlighting that the relationship between empowerment and fertility is not always consistent across measures of empowerment (26). Furthermore, most studies were cross-sectional, and were thus unable to address temporality (26). Most studies in this review used household decision-making and women's mobility/freedom of movement (usually an index of the number of places a woman can travel to alone or without permission) as operationalized measures of women's empowerment (26). Lee-Rife (2010) utilized a life-course approach to study the effect of reproductive events on empowerment, and found no significant associations between reproductive events (unwanted or mistimed pregnancy, stillbirths, miscarriages, and abortions) and women's mobility and financial discretion (27).

The same review mentioned above also detailed results from seven studies that explored the relationship between empowerment and a woman's desire for more children; most studies found a significant association between at least some measures of women's

empowerment and a desire for less children (26). Another study using DHS data from Guinea, Mali, Namibia, and Zambia found that women's empowerment was not often associated with achieving desired family size (20). The inconsistency in these findings highlights the need for a better understanding of how each empowerment measure operates in particular study settings.

Other studies have explored how fertility declines have coincided with or led to macro-level increases in the female labor force participation rate, though the directionality of this relationship is unclear (14). At the individual and household level, there is overall heterogeneity in the findings; studies using DHS data have found that childbearing appears to have little effect on employment (14, 29). In addition, Pande et al (2012) argues that increased female labor force participation may actual disempower women, as they bear the double burden of child rearing and engaging in economic activities (30). To our knowledge, there have been no studies that have explicitly assessed whether fertility is a predictor of empowerment at the individual level.

Contraception and Empowerment

All identified quantitative studies on this topic have explored empowerment as a predictor of contraceptive use; however, all studies have been cross-sectional and the temporality of the association is not well established. Several studies have shown that empowerment in various domains is associated with contraceptive use (16, 18, 31), though results have been mixed across empowerment measures.

Shuler and colleagues' (1994) study on empowerment, credit programs, and contraceptive use in rural Bangladesh found an increase in the utilization of family planning services among women who participated in micro-credit programs, even though these programs did not explicitly provide family planning services (32). Shuler et al (1994) hypothesized that the microcredit programs increased women's ability to overcome obstacles to obtaining contraception (32). Increased access to contraception may also influence their ability to participate more fully in the micro credit programs, by allowing women to control the timing of their births, potentially reducing time spent childbearing and childrearing and increasing the amount of time and energy they can dedicate to participation in such programs.

Ahmed et al (2010) utilized DHS data from 33 countries to explore the relationship between empowerment and use of modern contraception (33). Overall, women in the bottom 20% of wealth, who did not complete primary education, and who scored a zero out of five on the decision-making scales were less likely to use modern contraception compared to those in the top 20% of wealth, who had completed primary education, and had decision-making power in all five scale items (33). However, all data were cross-sectional, so directionality could not be ascertained; while it is unlikely that use of modern contraception preceded wealth or educational attainment, the direction of the relationship between decision-making and contraception is unclear. DHS data from other African countries have yielded mixed results: a study in Ethiopia found that not justifying wife beating and participating in decision-making were associated with use of modern contraception (34), while only participation in decision-making was associated with contraceptive use in Eritrea (35).

Qualitative and aggregate level data have sought to explore the empowering effects of contraceptive use. Focus groups with women in Mali and Zimbabwe attempted to understand the impact family planning has had on women's lives; women reported that contraception was a tool that enabled them to achieve specific goals, such as continuing education or seeking employment (37). Gollub (2000) explored how the female condom can be used as a tool of female empowerment; Gollub hypothesized that the female condom may increase the negotiation of sexual practices between men and women, paving the way for greater equality in other aspects beyond sex (38). In addition, learning how to use female condom can increase a woman's perception of empowerment and control over one's body, as well as recognize her entitlement to good health (38). Data from the United States has sought to explain how the availability of the Pill and abortion gave women the ability to time their pregnancies, allowing them to better plan their careers (3).

Conceptual Framework

Based on previous research as well as Malhotra's (2012) call for further research in this field (3), this research relies on the conceptual framework described in Figure 2.1 to address the relationship between fertility control, contraceptive use, and women's empowerment. I hypothesize that there is a plausible bi-directional relationship between fertility control and empowerment: while women need some level of basic agency to be able to control their fertility, increased fertility control and use of modern methods of contraception can enhance their empowerment in other domains. Furthermore, this framework suggests that lower fertility has the potential to transform gender systems at a

societal scale. Women's empowerment and ability to control fertility operates within a larger context, which determines the opportunities available to women and enabling resources at a macro scale.

Gaps in Research

Overall, the research exploring the relationship between women's empowerment, fertility decline, and contraceptive use has yielded mixed results. Furthermore, almost all of the studies to date have been cross-sectional and thus unable to address temporality. Most research has explored women's empowerment as a driver of fertility decline and contraceptive use, though their plausible pathways exist to explain how contraceptive use and fertility control could impact women's empowerment in other dimensions. The lack of research to support the association between fertility decline and women's empowerment within the private sphere highlights the need for longitudinal studies that can explore this hypothesized relationship at the individual level. In addition, greater exploration of specific domains of women's empowerment and its association with fertility would greatly improve understanding of this relationship in the Egyptian context.

Hypotheses

Based on the foregoing discussion, the following relationships are expected:

Hypothesis 1

Women with higher fertility, women who have more children than their ideal family size, and women with an unmet need for contraception will have lower agency in their influence on family decisions, their movement in public spaces, and their expression

of views favoring equitable roles and rights for women vis-à-vis men, compared to women with lower children, women who do not have more children than their ideal family size, and women who do not have an unmet need for contraception, respectively.

Hypothesis 2

Women who have used a modern method of contraception will have greater agency in their influence on family decisions, their movement in public spaces, and their expression of views favoring equitable roles and rights for women vis-à-vis men, compared to women who have never use a modern method of contraception.

Methods

The Egyptian Context

Egypt was the first Arab nation to implement a policy on population growth (18). Despite initial declines in fertility, Egypt has struggled to reduce fertility to replacement level (39). The most recent data from the Egypt DHS (EDHS) shows an increase in the total fertility rate from 3.1 births per woman in 2005 to 3.5 births per woman in 2014 (40). According to the EDHS, 57% of married women are currently using a modern method of contraception; intra-uterine devices (IUDs) (30%) and oral contraceptives (16%) are the most commonly used methods (40). Only 45% of women in rural Upper Egypt are using a modern method of contraception, with a higher proportion relying on injectable contraception than in the urban governorates (40). The overall proportion of women using a modern method has been relatively unchanged since 2005 (40).

Studies exploring the relationship between women's empowerment and various measures of fertility control in Egypt have yielded mixed results. Govindaswamy and

Malhotra (1996) found that women with higher freedom of movement had higher odds of using a method of contraception (18). A study exploring factors related to ideal family size in Egypt found that women who reported low participation in decision-making had lower odds of accepting the two child ideal family size promoted by the Egyptian government; however, women with restricted mobility were more likely to accept the two child ideal (39). Women who held discriminatory gender values were less likely to accept this ideal (39). We were unable to find any recent studies that explicitly addressed whether fertility, contraceptive use, or unmet need was a predictor of women's empowerment in Egypt, highlighting the need for research in this area.

Study Setting

Minya, Egypt is a primarily agrarian governorate 200 kilometers south of Cairo in Upper Egypt that is home to approximately 4.6 million people. Minya ranks second-from-last among all governorates on its human development index, and has relatively high unemployment and underemployment (45). Women in rural Upper Egypt tend to have more children and are less likely to use a method of contraception that women in Lower Egypt (40). Around 80% of women are Muslim, while the remainder of women are Christian (46).

Sample

Data for this secondary analysis are drawn from 608 ever-married women from rural Minya, Egypt, who participated in the 2005 Egypt Demographic and Health Survey (EDHS) and a follow-up study in 2012 (47). The Emory University Institutional Review Board approved the protocol for the 2012 follow-up study. Women were included in the

study if they had complete information on all of the main exposures, baseline empowerment in 2005, and complete information on at least one domain of women's agency in 2005. As most women did not answer all questions related to women's agency across different domains, sample sizes varied across regression models. The sample size for the analysis assessing agency in the childcare decision-making domain was 510 women. The sample size for the analysis assessing agency in the economic decision-making domain was 574 women. The sample size for the analysis assessing agency in the attitudes about intimate partner violence against women domain was 572 women. The sample size for the analysis assessing agency in the attitudes about gender roles domain was 561 women. The sample size for the analysis assessing agency in the freedom of movement domain was 570 women. A total of 575 women were included in at least one of the regression models.

Variables

Fertility and Contraception Exposures

Four measures of fertility control were considered as exposures: total fertility, having more children than their ideal family size, having an unmet need for contraception, and ever use of a modern method of contraception. All exposures were measured in 2005. Total fertility is the total number of children ever born alive to a woman prior to the interview date, as determined by the birth history calendar (48), and is considered in the models as a continuous measure (range: 0 – 13). Women were considered to have had more children than their ideal family size if their total number of living children in 2005 was greater than their reported ideal family size in 2005 (range: 0

– 20, non-numeric responses allowed). Women who reported "As God Wills" (n = 23) were determined to have met their ideal family size regardless of their total fertility, while the respondent who provided a non-numeric response (n = 1) was considered to have had more children than her ideal family size if her total number of living children was greater than the median ideal family size of 3 children. Women were categorized as having an unmet need for contraception based on the 2012 revised DHS definition of unmet need, which takes into account fecundity, wantedness of current or previous pregnancy, desire for future children, and current contraceptive use (49). Women were considered to have ever used modern contraception if they reported that they had ever used oral contraceptives (n = 251), intrauterine devices (n = 241), injectable contraception (n = 216), male condoms (n = 15), female sterilization (n = 6), implants (n = 10), or diaphragms, foam or jelly (n = 3).

Agency Outcomes

Five dichotomous agency outcomes were created to indicate whether women were agentic across the following five domains: childcare decision-making, economic decision-making, attitudes about intimate partner violence against women, attitudes about gender roles, and freedom of movement. For items related to decision-making, women were considered to be agentic if they had any say in a particular decision; any say was chosen as an indication of agency over exclusive say as previous research has indicated that women in Egypt prioritize joint decision over individual decision-making (18, 41). All agency outcomes were assessed in 2012 at follow-up. Sum scales of agency measures within each of the five domains were created to indicate the number of items where a

woman reported agency in each domain. These scales did not meet the assumptions of linear regression, so scales were dichotomized to indicate whether a woman had complete agency in a particular domain, as defined below.

Women's influence in family decisions was conceptualized by variables assessing agency in the childcare domain and agency in the economic domain. Response options to the question "who has a say in the following decisions?" were: *woman alone, husband alone, woman and husband jointly, woman and someone else*, or *someone else*. Women were determined to have agency in the childcare domain if they had any say (versus no say) in all four of the following decisions: how to discipline a child, what to do if a child falls sick, having another child, and decisions about the child's schooling. Women were determined to have agency in the economic decision-making domain if they reported having any say (versus no say) in all of the following decisions: healthcare for herself, making major household purchases, making purchases for daily household needs, whether she should work to earn money, purchasing fruits and vegetables, purchasing clothes for herself, purchasing medicine for herself, purchasing toiletries for herself, and making large household purchases.

Women's expression of views favoring equitable roles and rights for women vis-à-vis men was operationalized using two measures: attitudes about intimate partner violence (IPV) against women, and attitudes about gender roles within the family context. Women were categorized as having agency in their attitudes about IPV against women if they reported that a husband was *not justified* (versus *justified* or *doesn't know/depends*) in beating his wife under all of the following scenarios: she goes out without telling him, she neglects the children, she argues with him, she refuses sex, and she burns the food.

Women had agency in terms of their expressed attitudes about gender roles if they said they *agree* (versus *disagree* or *doesn't know/depends*) with all equitable views on gender roles and said they *disagree* (versus *agree* or *doesn't know/depends*) with all inequitable views on gender roles. Equitable views on gender roles are: wife should work if she wants, husband should help the wife with chores if the wife works outside the home, wife can express her opinion even if she disagree with her husband; inequitable views on gender roles are: important family decisions should only be made by men, wife should tolerate being beaten, better to school sons rather than daughters.

Women were considered to have agency in the freedom of movement domain if they were allowed to visit the following places alone (versus not allowed to visit alone or never allowed to visit): the market, the health center, her friends' homes, and religious places.

Covariates

Covariates were considered based on a review of the literature on fertility, empowerment, and contraceptive use, as well as through consideration of our conceptual model. The following variables were considered as potential confounders: age, age at first marriage, ever completed secondary school, household wealth index score, spousal schooling difference, spousal age difference, father ever attended school, and husband's ideal number of children. As enabling resources may influence a woman's personal agency (8) and may have an effect on fertility and contraceptive use through a different pathway, covariates assessing premarital human (e.g. educational attainment) and social (e.g. age at first marriage) resources were considered as potential confounders.

Previous studies on fertility and empowerment have controlled for age, education, and socioeconomic status, as overall, women who are older, have more resources, and are literate tend to have greater agency (18, 26, 31). Spousal age and schooling difference were considered as these are indications of an existing power differential in the relationship which may affect a woman's decision-making abilities (27), while previous literature has suggested that age at first marriage is associated with both fertility behavior and empowerment (50).

Given the hypothesized relationship between baseline empowerment, fertility control, and consequent later empowerment, we included baseline empowerment in all models. Baseline empowerment was assessed using two sum scales measuring decision-making (wife has a say in in regard to one's own health care, making major household purchases, making household purchases for daily needs, and visiting family or relatives) and justification of wife beating (husband is not justified in beating his wife if she goes out without telling him, neglects the children, argues with him, refuses to have sex with him, or burns the food).

Husband's ideal family size relative to the wife's was considered as a confounder as previous literature has suggested that it may affect a woman's contraceptive use and fertility, as well as potentially playing a role in her decision-making capabilities (20). Husband's ideal family size relative to wife's was included as a three level categorical variable in the model: husband wants the same or fewer, husband wants more or wife doesn't know husband's preference, and missing.

Statistical Analyses

All statistical analyses were conducted using Stata 14 (51). The relationship between measures of fertility control and subsequent agency were assessed using unconditional multivariate logistic regression. The *svy* and *subpopn* commands in Stata were used to account for the complex survey designs of the EDHS and follow-up study, including cluster sampling and differential probability of selection into the survey. For each of the five outcome agency measures, four unadjusted logistic regression models were run considering total fertility, having more children than ideal, having an unmet need for contraception, and ever use of a modern method of contraception separately. All four fertility and contraceptive related exposures were included simultaneously in adjusted models, along with covariates measuring premarital enabling human resources (woman ever attended secondary school, spousal schooling gap, age at first marriage), husband's influence (husband's ideal number of children relative to woman's), basic demographic characteristics (woman's age at baseline, household wealth factor score), and baseline empowerment (number of decisions in which woman has any say, and number of reasons where wife beating is not justified). Though initially considered as possible confounders, spousal age difference and father ever attended school were dropped from consideration, as their exclusion did not substantially change the model results but improved model fit. It is likely that educational attainment better captured premarital resources and spousal schooling difference better captured any spousal power dynamic compared to father's educational attainment and spousal age gap, respectively.

Results

Sample Characteristics

The majority of women had used a modern method of contraception at least once in their life by 2005 (68%), while 17% had an unmet need for contraception at baseline (Table 2.1). Nearly 39% of women had more children in 2005 than their reported ideal family size. Average total fertility was 3.89 live births; women's mean ideal family size was 3.28. Most women reported that their husband wanted the same number or fewer children than they wanted (67%). Only 22% of women had attended at least some secondary school; 29% of women reported that their husband had six or more years of schooling than them. The majority of women were married before age 18 (73%), and most women were in the 25-39 year age group in 2005 (50%). The vast majority of women were in the two lowest wealth quintiles (83%).

At baseline, women reported having a say in an average of 2.7 out of 4.0 decisions, and women believed that wife beating was not justified in an average of 1.9 out of 5.0 scenarios. At follow-up in 2012, 78% of women reported having a say in all decisions related to childcare, and 42% reported having a say in all economic decisions (Table 2.2). Only 35% of women reported that a husband was not justified in beating his wife under all scenarios, and 15% of women held equitable views on all gender norms. Over 62% were allowed to visit all listed places alone. There was some substantial variation between certain dimensions of empowerment, particularly in the economic decision-making, attitudes about IPV towards women, and attitudes about gender roles domains. For example, 58% of women reported having a say in purchasing large household items, compared to 88% of women who reported having a say in purchasing

fruits and vegetables. In the attitudes about IPV against women domain, 75% of women believed that a husband is not justified in beating his wife if she burns the food, compared to the 42% of women who believe that wife beating is not justified if she refuses sex. In the attitudes about gender roles domain, nearly 78% of women held the equitable gender view that it is not better to school sons rather than daughters, while only 33% disagreed that the important family decisions should be made by the husband alone.

Results from Logistic Regression

Childcare Decision-Making

In separate unadjusted models, all exposures of interest are associated with lower odds of having a say in all childcare decisions, though the effect size is minimal for total fertility and ever use of modern contraception; unmet need for contraception had the strongest measure of effect (Table 2.3). This effect remains after adjusting for selected covariates: women with an unmet need for contraception have a 0.60 (95% CI: 0.38, 0.95) times lower odds of having a say in all childcare decisions compared to women without an unmet need for contraception. Contrary to expectations, women who were first married after the age of 18 had lower odds of having a say in all childcare decisions compared to women who were married under the age of 16, though confidence intervals were wide (OR: 0.61, 95% CI: 0.35, 1.07).

Economic Decision-Making

In unadjusted and adjusted models, none of the exposures of interest were significantly associated with having a say in all economic decisions (Table 2.4). Though

not statistically significant, women who had ever used modern contraception had 1.22 (95% CI: 0.67, 2.21) higher odds of having a say in all economic decisions after adjusting for covariates. Women who were between the ages of 40 and 49 at baseline had an almost two-fold higher odds of having a say in all economic decisions compared to women who were between the ages of 16 and 24 at baseline (OR: 1.92, 95% CI: 1.01, 3.63).

Attitudes About Intimate Partner Violence Against Women

In unadjusted models, total fertility had no effect on whether women did not justify wife beating for any reason; having more children than ideal, having an unmet need for contraception, and ever using a modern method of contraception all had lower odds of not justifying wife beating, though confidence intervals were wide and results were not statistically significant (Table 2.5). The direction and magnitude of these effects remained unchanged after adjustment for covariates. Women who attended at least some secondary school had 1.87 (95% CI: 1.08, 3.26) higher odds of not justifying wife beating for any reason compared to women who attended only primary school or had no formal education. Furthermore, for every additional reason a woman reported that wife beating was not justified in 2005, women had a 1.13 (95% CI: 1.02, 1.24) times higher odds of not justifying wife beating for any reason in 2012.

Attitudes about Gender Roles

In unadjusted models, exposures had little or no effect on whether a woman held only equitable views on gender roles (Table 2.6). After adjusting for covariates, women who had ever used modern contraception had a 0.72 (95% CI: 0.37, 1.42) times lower

odds of holding only equitable views on gender roles, though confidence intervals were wide. For every additional decision that a woman reported having any say in 2005, women had a 1.22 (95% CI: 0.98, 1.51) times higher odds of holding only equitable views on gender roles.

Freedom of Movement

Before adjustment, having more children than ideal, having an unmet need for contraception, and ever use of modern contraception were all associated with higher odds of being able to travel alone to all places, though only ever use of modern contraception had a statistically significant effect (OR: 1.89, 95% CI: 1.12, 3.18) (Table 2.7). After adjusting for covariates, the magnitude and direction of this effect remained the same: women who reported ever using a modern method of contraception had a 1.88 (95% CI: 1.09, 3.25) times higher odds of being able to travel to all places alone in 2012, compared to women who had never used a modern method of contraception in 2005. Women whose husbands had six or more years of schooling more than they did had a 0.59 (95% CI: 0.26, 0.96) times lower odds of being able to travel to all places alone compared to women whose husband's had the same amount of schooling or less schooling than they did. Women who were between the ages of 40 and 49 at baseline had an 0.41 (95% CI: 0.22, 0.77) times lower odds of being able to travel to all places alone in 2012 compared to women who were between the ages of 16 and 24 at baseline.

Discussion

Overall, the results from this study have mixed results regarding the relationship between fertility, contraception, and women's agency. Total fertility had little or no effect in unadjusted or adjusted models, with most measures of effect close to null. In this sample, the number of live births a woman has does not appear to confer advantage or disadvantage to women in the domains measured. Having more children than ideal was associated with consistently lower odds of agency in the childcare decision-making, economic decision-making, attitudes about IPV towards women, and attitudes about gender roles domains, though these results were not statistically significant. Against expectation, women who had more children than ideal had higher, albeit non-significant, odds of being able to travel to all places alone.

Having an unmet need for contraception conferred lower odds of agency in the childcare decision-making and attitudes about IPV towards women domain, though only the effect on childcare decision-making was statistically significant. It is possible that this association is due to the inclusion of the item "Who has a say in whether to have another child" in the childcare decision-making agency outcome, as it is possible that women who do not want to become pregnant but are not using a method of contraception may not be using a method because they lack agency to determine contraceptive use in their relationship. However, when all decision-making items were considered as outcomes individually, unmet need was significantly associated with lower odds of both a woman having any say in whether to have another child (OR: .52, 95% CI: 0.28, 0.96) and a woman having any in decisions about children's schooling (OR: 0.54, 95% CI: 0.33, 0.88), indicating that the relationship between unmet need and overall childcare decision-

making is not due to the effect of one item alone (full results not shown). Thus, it is possible that lacking agency to enact one's fertility desires limits women's ability to make decisions around other aspects that affect their children's lives, such as schooling. This result is in line with the proposed pathway of contraceptive use as inherently empowering – lack of control over one domain (fertility) may translate to lack of control in other domains as well (childcare decision-making). Unmet need did not appear to have a strong effect on attitudes around gender norms or freedom of movement, suggesting that meeting women's demands for contraception may not alter their perceptions of gender roles or enhance their ability to travel to places alone.

Ever use of modern contraception was associated with higher odds of agency in the economic decision-making and freedom of movement domain, with women who have ever used a modern method of contraception at baseline having statistically significantly higher odds of being able to travel alone to all places at follow-up. This association is not necessarily driven by the relationship between ever use of modern contraception and woman's ability to travel to the health center alone, which may be a precondition to using contraception rather than an outcome. When the items in the freedom of movement domain were considered as outcomes individually, ever use of modern family planning was associated with higher odds of being able to travel to the health center alone (OR: 1.47, 95% CI: 0.85, 2.54) as well as to a religious place alone (OR: 1.92, 95% CI: 1.11, 3.32) (full results not shown). These results suggest that women who have been able to exert some level of control over their fertility are able to exert similar control over other aspects in their life, supporting the hypothesis that contraceptive use may be inherently empowering.

Against expectation, women who had ever used a modern method of contraception had lower odds of agency in the attitudes about IPV against women and attitudes about gender roles domain, though these effects were not statistically significant. Attitudes about IPV against women often has a similarly perplexing relationship with measures of fertility in the literature; Upadhyay and Karasek (2012) found that not justifying wife beating was associated with higher odds of having more children than their ideal family size in Namibia and Zambia (20). Their study also found that women who believed that all reasons for refusing sex was justified also had higher odds of having more children than ideal (20). One possible explanation for this result is that women may be reporting societal views on justification of wife beating, rather than their personal beliefs. As women who have used a modern method of contraception have higher odds of freedom of movement, they may have greater exposure to community beliefs and norms on the justification of IPV against women and internalize these norms.

The lack of association between total fertility and any of the measures of women's agency may be due to its inclusion in the model as a continuous variable. It is likely that women with seven children are not very different from women with eight children, thus any potential effect of high fertility on agency may be averaged out. It is possible that women with fertility greater than replacement level, or fertility greater than the mean ideal number of children may be less empowered than those with lower fertility; this should be explored in future research.

The lack of association between the domains assessing women's expression of views favoring equitable roles and rights for women vis-à-vis men and any of the fertility and contraception related exposures may be because these items represent entrenched

gender norms that individual fertility regulation cannot overcome. These measures represent the more transformative aspects of empowerment; they may be more affected by societal level changes on the acceptability of fertility control and expanded view of women's roles in society outside of their reproductive potential.

Women in this sample had low educational attainment, indicating low access to human enabling resources. Attending at least some secondary school was associated with higher odds of agency across all domains, indicating that increasing women's access to premarital enabling resources could potentially increase their decision-making capabilities within the context of a marriage, decrease the likelihood that they justify IPV against women, increase the espousal of equitable views on gender roles, and increase women's ability to travel freely. Spousal schooling difference, which may indicate an inequitable power dynamic within a marital relationship, was associated with greater odds of agency. Women whose husbands had more years of schooling than they did had had lower odds of agency, particularly in the freedom of movement domain, as compared to women whose husbands had the same amount of schooling or less.

Husband's desire for more children relative to the respondent did not have a strong or consistent effect across the various domains of women's agency. Household wealth had a positive, though non-significant, association with all domains of agency. Age had an inconsistent relationship with agency; women in the 40 to 49 year age group had higher odds of economic decision-making, but lower odds of freedom of movement.

Strengths and Limitations

The major strengths of this study are the longitudinal study design, control of baseline empowerment, use of multiple measures of fertility control, and use of multiple measures of women's agency, which enable comparison across various exposures and outcomes. Limitations include relying on a quantitative measure of a latent construct, incomplete measurement of consistent contraceptive use, small sample size, and potential lack of generalizability outside of the study context.

One of the main challenges when conducting research on empowerment is that constructs such as empowerment can be difficult to quantify (20); furthermore, this research lacks data on women's perceptions of her partner's or community's attitudes about certain norms, which may have a larger impact on her agency. Women's decision-making patterns in this study reflect the gendered division of labor articulated in previous studies in Egypt (18, 41); women in this sample tended to have a much greater involvement in decisions around childcare compared to decisions around household economics. Thus, increased decision-making in the childcare domain may not necessarily be indicative of greater empowerment. Furthermore, it is possible that women who meet societal expectations of high fertility may be afforded more decision-making power; this would not be adequately captured by the current measures of empowerment and fertility used in this study.

Results from this study may not be generalizable outside of the study context or outside of governorates in Egypt with a similar demographic profile; however, findings can be used to inform future research on the effects of fertility, contraceptive use, and unmet need on women's empowerment.

Implications for Research and Policy

This research is the first to critically evaluate whether fertility, achievement of ideal family size, unmet need for contraception, and use of contraception are possible predictors of women's empowerment; future research should seek to further evaluate the direction of this relationship. Research in other contexts has examined differences in sole versus joint decision-making (52); some studies have hypothesized that sole decision-making may indicate a lack of empowerment as women bear the entire burden of responsibility for traditionally gendered tasks (20). Future research should examine this difference to see if contraceptive use and fertility has a different impact on women's sole decision-making than on their joint decision-making. As fertility control may indicate some level of increased spousal communication and trust, it is possible that women who are able to control their fertility have greater joint decision-making.

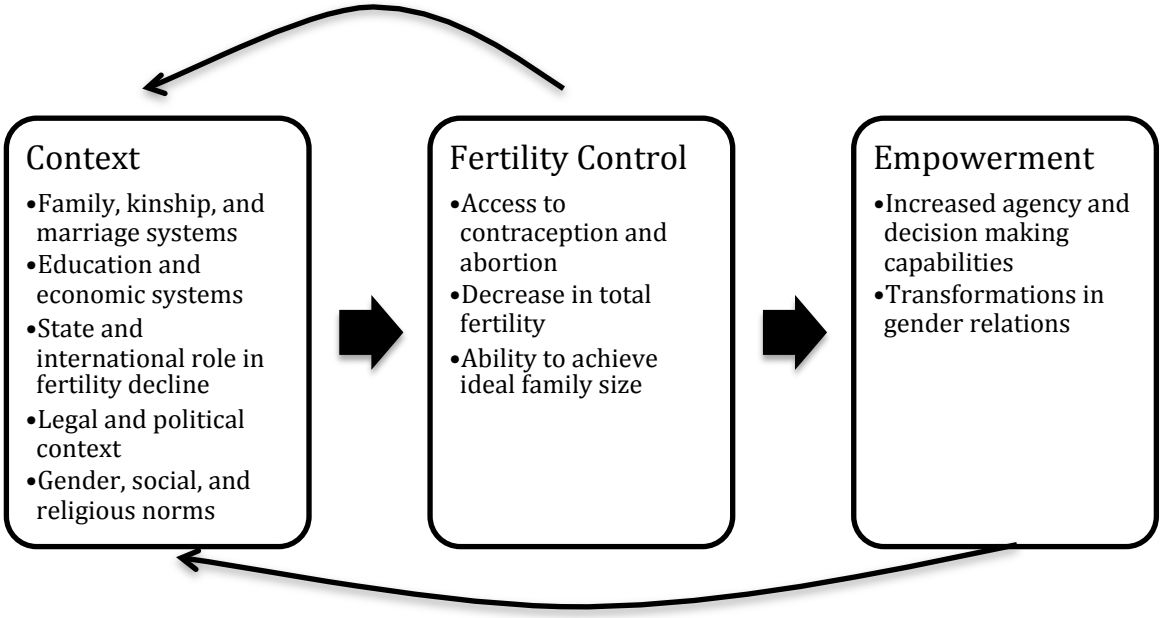
Meeting women's demands for family planning and increasing uptake of modern methods of contraception may positively increase women's empowerment, particularly their agency in the childcare decision-making and freedom of movement domains. Increasing women's access to human enabling resources, such as educational opportunities, is another potential means to increasing women's agency across multiple domains. Family planning efforts should seek to evaluate increased agency as a potential benefit of these programs. However, family planning use may not be enough to increase women's expression of views favoring equitable roles and rights for women vis-à-vis men; policy makers and empowerment programs should also focus on strategies to transform gender roles at the societal level in order to enhance women's agency in these domains.

Conclusion

In this context, total fertility may not play as large a role on women's empowerment as theorized. Having an unmet need for contraception was associated with lower agency in the childcare decision-making domain, while use of contraception was associated with greater freedom of movement. Higher education and equality in spousal education was associated with greater agency in multiple domains. Future research should further explore determinants of women's empowerment, particularly in the attitudes about intimate partner violence against women and the attitudes about gender roles domains.

Tables and Figures

Figure 2.1 Conceptual Framework of the Effect of Fertility Decline on Women's Empowerment[a]



a Figure adapted from Malhotra (2012) (3)

Table 2.1 Sample characteristics of married women in rural Minya, Egypt at baseline, 2005 (n = 575)[a]

Measure	Mean or %	SE
Primary Exposures of Interest		
Total fertility, mean	3.89	0.13
Had more living children than ideal family size, %	38.70	2.29
Has an unmet need for contraception, %	17.49	1.91
Ever used modern contraception, %	67.65	2.62
Premarital Human Resources		
Attended secondary school or higher, %	21.98	2.14
Spousal schooling gap,[b] %		
Husband same or less schooling	47.21	2.44
Husband 1 - 5 years more schooling	24.15	1.93
Husband 6+ years more schooling	28.64	2.36
Age at first marriage, %		
< 16 years old	26.63	2.23
16 - 18 years old	45.98	2.12
> 18 years old	27.40	2.14
Fertility Desires and Husband's Influence		
Woman's ideal number of children,[c] mean	3.28	0.08
Husband's ideal number of children relative to wife's, %		
Husband wants the same or fewer	66.87	2.28
Husband wants more or wife doesn't know his preference	32.04	2.31
Missing	1.08	0.37
Demographic Controls		
Age, %		
16-24	28.48	2.42
25-39	50.00	2.08
40-49	21.52	1.99
Household wealth factor score (range: -3.40, 2.57),[d] mean	-1.06	0.05
Household wealth quintile, %		
Lowest	62.38	3.35
Second	20.12	2.25
Middle	11.76	1.58
Fourth	5.42	1.25
Highest	0.31	0.22
Empowerment at Baseline		
No. of decisions in which woman has any say (range: 0,4), mean[e]	2.70	0.08
No. of reasons where wife beating is not justified (range: 0,5), mean[f]	1.93	0.09

a Sample characteristics reported on the 575 women with complete information on at least one agency outcome measure in 2012
b Nine observations median imputed due to missing data on participant's years of school (n = 1) or husband's years of schooling (n = 8)
c One observation median imputed because respondent gave a non-numeric response
d Score derived from a principal components analysis of household assets and amenities
e Final say alone or jointly with husband or someone else in regard to one's own health care, making major household purchases, making household purchases for daily needs, and visiting family or relatives
f Whether a husband is not justified in beating his wife if she goes out without telling him, neglects the children, argues with him, refuses to have sex with him, or burns the food

Table 2.2 Sample characteristics of married women in rural Minya, Egypt at follow-up, 2012

Measure	Mean or %	SE
Childcare Decision-Making (n = 510)		
Has a say in decisions about children's schooling, %	81.44	2.34
Has a say in decisions about what to do if a child falls sick, %	86.60	1.90
Has a say in decisions about how to discipline a child, %	93.99	1.15
Has a say in decisions about whether to have another child, %	86.08	1.62
Has a say in all childcare decisions, %	77.76	2.38
Mean no. of decisions a woman has any say in (range: 0 - 4), mean	3.48	0.06
Economic Decision-Making (n = 574)		
Has a say in healthcare for herself, %	80.71	2.01
Has a say in making major household purchases, %	70.25	2.57
Has a say in making purchases for daily household needs, %	87.33	1.53
Has a say in whether she should work to earn money, %	73.64	2.10
Has a say in purchasing fruits and vegetables	88.22	1.88
Has a say in purchasing clothes for herself	79.68	2.05
Has a say in purchasing medicine for herself	75.85	2.37
Has a say in purchasing toiletries for herself	78.79	2.00
Has a say in making large household purchases (TV, appliances)	57.73	2.61
Has a say in all economic decisions, %	41.71	2.93
Mean no. of decisions a woman has any say in (range: 0 - 9), mean	6.92	0.14
Attitudes About Intimate Partner Violence (IPV) Against Women (n = 572)		
Husband is not justified in beating wife if she goes out without telling him, %	43.39	2.18
Husband is not justified in beating wife if she neglects the children, %	53.65	2.50
Husband is not justified in beating wife if she argues with him, %	65.79	2.56
Husband is not justified in beating wife if she refuses sex, %	42.30	2.50
Husband is not justified in beating wife if she burns the food, %	75.27	2.22
Husband is never justified in beating wife, %	34.84	2.21
Mean no. of scenarios where IPV is not justified (range: 0 - 5), mean	2.80	0.11
Attitudes About Gender Roles (n = 561)		
Agrees that husband should help with chores if the wife works outside the home, %	74.05	2.13
Agrees that wife should work if she wants, %	77.22	2.18
Agrees that wife can express her opinion, even if she disagrees with her husband, %	71.52	2.42
Disagrees that important family decisions should only be made by men, %	32.59	2.11
Disagrees that wife should tolerate being beaten, %	51.90	2.67
Disagrees that it is better to school sons rather than daughters, %	77.85	1.90
Holds equitable view on gender roles for all scenarios, %	14.87	1.44
Mean no. of scenarios woman has an equitable view (range: 0 - 6), mean	3.85	0.08
Freedom of Movement (n = 570)		
Allowed to go to market alone, %	75.04	2.63
Allowed to go to health center alone, %	74.10	2.41
Allowed to go to friends' homes alone, %	76.76	2.21
Allowed to go to religious places alone, %	69.27	2.09
Woman is allowed to go to all listed places alone, %	62.25	2.61
Mean no. of places woman is allowed to go to alone (range: 0 - 4), mean	2.95	0.08

Table 2.3 Results from multivariable logistic regression assessing the unadjusted and adjusted odds (and 95% confidence intervals) of agency in the childcare decision-making domain in 2012 among married women in rural Minya, Egypt by total fertility, having more children than ideal, ever use of modern contraception, and having an unmet need for contraception in 2005, controlling for selected characteristics (n = 510)[a]

	Has a Say in All Childcare Decision-Making	
Measure	**Unadjusted**	**Adjusted**
Primary Exposures of Interest[b]		
Total fertility	0.93 (0.86, 1.01)†	0.95 (0.83, 1.10)
Had more children than ideal	0.70 (0.45, 1.08)	0.81 (0.45, 1.45)
Unmet need for contraception	0.61 (0.37, 0.99)*	0.60 (0.38, 0.95)*
Ever used modern contraception	0.94 (0.58, 1.51)	1.01 (0.58, 1.74)
Premarital Resources[b]		
Attended secondary school or higher		1.30 (0.58, 2.90)
Spousal schooling gap[c]		
Husband same or less schooling		(ref)
Husband 1 - 5 grades more schooling		0.88 (0.47, 1.66)
Husband 6+ grades more schooling		0.91 (0.52, 1.62)
Age at first marriage		
< 16 years old		(ref)
16 - 18 years old		0.88 (0.50, 1.55)
> 18 years old		0.61 (0.35, 1.07)†
Husband's Influence[b]		
Husband's ideal number of children relative to wife's		
Husband wants the same or fewer		(ref)
Husband wants more or wife doesn't know husband's preference		1.11 (0.67, 1.85)
Missing		1.75 (0.14, 21.88)
Demographic Controls[b]		
Age		
16-24		(ref)
25-39		0.97 (0.44, 2.15)
40-49		0.82 (0.28, 2.39)
Household wealth factor score[d]		1.15 (0.74, 1.79)
Baseline Empowerment[b]		
No. of decisions in which woman has any say[e]		1.13 (0.89, 1.42)
No. of reasons where wife beating is not justified[f]		0.97 (0.86, 1.10)

†p<.10, *p<.05, **p<.01

a Adjusted models control for all exposures of interest, woman's educational attainment, difference between husband's and woman's educational attainment, woman's age at first marriage, husband's ideal family size relative to woman's, woman's age, household wealth, and baseline measures of empowerment

b From the 2005 EDHS "baseline" survey in Minya

c Nine observations are median-imputed because of missing data on participant's years of school (n = 1) or husband's years of schooling (n = 8);

d Score derived from a principal components analysis of household assets and amenities

e Final say alone or jointly with husband or someone else in regard to one's own health care, making major household purchases, making household purchases for daily needs, and visiting family or relatives

f Whether a husband is not justified in beating his wife if she goes out without telling him, neglects the children, argues with him, refuses to have sex with him, or burns the food

Table 2.4 Results from multivariable logistic regression assessing the unadjusted and adjusted odds (and 95% confidence intervals) of agency in the economic decision-making domain in 2012 among married women in rural Minya, Egypt by total fertility, having more children than ideal, ever use of modern contraception, and having an unmet need for contraception in 2005, controlling for selected characteristics (n = 574)[a]

	Has a Say in All Economic Decision-Making	
Measure	**Unadjusted**	**Adjusted**
Primary Exposures of Interest[b]		
Total fertility	1.03 (0.97, 1.10)	0.99 (0.89, 1.11)
Had more children than ideal	0.98 (0.66, 1.46)	0.81 (0.48, 1.37)
Unmet need for contraception	0.91 (0.54, 1.54)	0.94 (0.54, 1.63)
Ever used modern contraception	1.31 (0.79, 2.17)	1.22 (0.67, 2.21)
Premarital Resources[b]		
Attended secondary school or higher		1.63 (0.91, 2.92)†
Spousal schooling gap[c]		
Husband same or less schooling		(ref)
Husband 1 - 5 grades more schooling		0.79 (0.50, 1.25)
Husband 6+ grades more schooling		0.83 (0.53, 1.32)
Age at first marriage		
< 16 years old		(ref)
16 - 18 years old		0.93 (0.62, 1.39)
> 18 years old		0.85 (0.51, 1.42)
Husband's Influence[b]		
Husband's ideal number of children relative to wife's		
Husband wants the same or fewer		(ref)
Husband wants more or wife doesn't know husband's preference		0.88 (0.58, 1.34)
Missing		0.53 (0.09, 3.23)
Demographic Controls[b]		
Age		
16-24		(ref)
25-39		1.41 (0.74, 2.67)
40-49		1.92 (1.01, 3.63)*
Household wealth factor score[d]		1.15 (0.87, 1.52)
Baseline Empowerment[b]		
No. of decisions in which woman has any say[e]		1.12 (0.97, 1.28)
No. of reasons where wife beating is not justified[f]		0.95 (0.87, 1.03)

†p<.10, *p<.05, **p<.01

a Adjusted models control for all exposures of interest, woman's educational attainment, difference between husband's and woman's educational attainment, woman's age at first marriage, husband's ideal family size relative to woman's, woman's age, household wealth, and baseline measures of empowerment

b From the 2005 EDHS "baseline" survey in Minya

c Nine observations are median-imputed because of missing data on participant's years of school (n = 1) or husband's years of schooling (n = 8)

d Score derived from a principal components analysis of household assets and amenities

e Final say alone or jointly with husband or someone else in regard to one's own health care, making major household purchases, making household purchases for daily needs, and visiting family or relatives

f Whether a husband is not justified in beating his wife if she goes out without telling him, neglects the children, argues with him, refuses to have sex with him, or burns the food

Table 2.5 Results from multivariable logistic regression assessing the unadjusted and adjusted odds (and 95% confidence intervals) of agency in the attitudes about intimate partner violence against women domain in 2012 among married women in rural Minya, Egypt by total fertility, having more children than ideal, ever use of modern contraception, and having an unmet need for contraception in 2005, controlling for selected characteristics (n = 572)[a]

	All Intimate Partner Violence Against Women is Not Justified	
Measure	**Unadjusted**	**Adjusted**
Primary Exposures of Interest[b]		
Total fertility	1.00 (0.92, 1.09)	1.08 (0.97, 1.21)
Had more children than ideal	0.86 (0.58, 1.29)	0.81 (0.54, 1.81)
Unmet need for contraception	0.77 (0.42, 1.42)	0.79 (0.42, 1.51)
Ever used modern contraception	0.83 (0.53, 1.24)	0.75 (0.43, 1.29)
Premarital Resources[b]		
Attended secondary school or higher		1.87 (1.08, 3.26)*
Spousal schooling gap[c]		
Husband same or less schooling		(ref)
Husband 1 - 5 grades more schooling		0.70 (0.43, 1.13)
Husband 6+ grades more schooling		0.85 (0.47, 1.56)
Age at first marriage		
< 16 years old		(ref)
16 - 18 years old		0.74 (0.47, 1.18)
> 18 years old		0.68 (0.40, 1.18)
Husband's Influence[b]		
Husband's ideal number of children relative to wife's		
Husband wants the same or fewer		(ref)
Husband wants more or wife doesn't know husband's preference		0.83 (0.55, 1.27)
Missing		0.75 (0.14, 4.02)
Demographic Controls[b]		
Age		
16-24		(ref)
25-39		1.15 (0.66, 2.02)
40-49		1.05 (0.47, 2.33)
Household wealth factor score[d]		1.37 (0.99, 1.90)†
Baseline Empowerment[b]		
No. of decisions in which woman has any say[e]		1.06 (0.90, 1.25)
No. of reasons where wife beating is not justified[f]		1.13 (1.02, 1.24)*

†p<.10, *p<.05, **p<.01

a Adjusted models control for all exposures of interest, woman's educational attainment, difference between husband's and woman's educational attainment, woman's age at first marriage, husband's ideal family size relative to woman's, woman's age, household wealth, and baseline measures of empowerment

b From the 2005 EDHS "baseline" survey in Minya

c Nine observations are median-imputed because of missing data on participant's years of school (n = 1) or husband's years of schooling (n = 8)

d Score derived from a principal components analysis of household assets and amenities

e Final say alone or jointly with husband or someone else in regard to one's own health care, making major household purchases, making household purchases for daily needs, and visiting family or relatives

f Whether a husband is not justified in beating his wife if she goes out without telling him, neglects the children, argues with him, refuses to have sex with him, or burns the food

Table 2.6 Results from multivariable logistic regression assessing the unadjusted and adjusted odds (and 95% confidence intervals) of agency in the attitudes about gender roles domain in 2012 among married women in rural Minya, Egypt by total fertility, having more children than ideal, ever use of modern contraception, and having an unmet need for contraception in 2005, controlling for selected characteristics (n = 561)[a]

	Holds Only Equitable Views on Gender Roles	
Measure	**Unadjusted**	**Adjusted**
Primary Exposures of Interest[b]		
Total fertility	0.98 (0.89, 1.08)	1.05 (0.90, 1.23)
Had more children than ideal	0.90 (0.55, 1.46)	0.85 (0.47, 1.51)
Unmet need for contraception	0.97 (0.52, 1.79)	1.01 (0.57, 1.80)
Ever used modern contraception	0.92 (0.52, 1.61)	0.72 (0.37, 1.42)
Premarital Resources[b]		
Attended secondary school or higher		1.50 (0.71, 3.16)
Spousal schooling gap[c]		
Husband same or less schooling		(ref)
Husband 1 - 5 grades more schooling		0.73 (0.38, 1.40)
Husband 6+ grades more schooling		1.01 (0.50, 2.05)
Age at first marriage		
< 16 years old		(ref)
16 - 18 years old		1.20 (0.63, 2.28)
> 18 years old		1.08 (0.55, 2.11)
Husband's Influence[b]		
Husband's ideal number of children relative to wife's		
Husband wants the same or fewer		(ref)
Husband wants more or wife doesn't know husband's preference		0.88 (0.52, 1.49)
Missing		2.49 (0.48, 12.95)
Demographic Controls[b]		
Age		
16-24		(ref)
25-39		1.76 (0.75, 4.14)
40-49		0.89 (0.32, 2.46)
Household wealth factor score[d]		1.36 (0.90, 2.05)
Baseline Empowerment[b]		
No. of decisions in which woman has any say[e]		1.22 (0.98, 1.51)†
No. of reasons where wife beating is not justified[f]		1.10 (0.98, 1.23)

†p<.10, *p<.05, **p<.01

a Adjusted models control for all exposures of interest, woman's educational attainment, difference between husband's and woman's educational attainment, woman's age at first marriage, husband's ideal family size relative to woman's, woman's age, household wealth, and baseline measures of empowerment

b From the 2005 EDHS "baseline" survey in Minya

c Nine observations are median imputed because of missing data on participant's years of school (n = 1) or husband's years of schooling (n = 8); these observations are excluded in this model because they perfectly predict the outcome

d Score derived from a principal components analysis of household assets and amenities

e Final say alone or jointly with husband or someone else in regard to one's own health care, making major household purchases, making household purchases for daily needs, and visiting family or relatives

f Whether a husband is not justified in beating his wife if she goes out without telling him, neglects the children, argues with him, refuses to have sex with him, or burns the food

Table 2.7 Results from multivariable logistic regression assessing the unadjusted and adjusted odds (and 95% confidence intervals) of agency in the freedom of movement domain in 2012 among married women in rural Minya, Egypt by total fertility, having more children than ideal, ever use of modern contraception, and having an unmet need for contraception in 2005, controlling for selected characteristics (n = 570)[a]

	Has Freedom of Movement to All Places	
Measure	**Unadjusted**	**Adjusted**
Primary Exposures of Interest[b]		
Total fertility	1.04 (0.96, 1.12)	1.05 (0.96, 1.14)
Had more children than ideal	1.36 (0.93, 2.01)	1.29 (0.89, 1.86)
Unmet need for contraception	1.22 (0.76, 1.97)	1.01 (0.59, 1.73)
Ever used modern contraception	1.89 (1.12, 3.18)*	1.88 (1.09, 3.25)*
Premarital Resources[b]		
Attended secondary school or higher		1.19 (0.65, 2.18)
Spousal schooling gap[c]		
Husband same or less schooling		(ref)
Husband 1 - 5 grades more schooling		0.62 (0.38, 1.02)†
Husband 6+ grades more schooling		0.59 (0.26, 0.96)*
Age at first marriage		
< 16 years old		(ref)
16 - 18 years old		1.10 (0.62, 1.96)
> 18 years old		1.08 (0.65, 1.80)
Husband's Influence[b]		
Husband's ideal number of children relative to wife's		
Husband wants the same or fewer		(ref)
Husband wants more or wife doesn't know husband's preference		1.18 (0.80, 1.74)
Missing		0.39 (0.07, 2.14)
Demographic Controls[b]		
Age		
16-24		(ref)
25-39		0.78 (0.50, 1.20)
40-49		0.41 (0.22, 0.77)**
Household wealth factor score[d]		1.05 (0.79, 1.40)
Baseline Empowerment[b]		
No. of decisions in which woman has any say[e]		1.04 (0.89, 1.22)
No. of reasons where wife beating is not justified[f]		0.94 (0.85, 1.05)

†p<.10, *p<.05, **p<.01

a Adjusted models control for all exposures of interest, woman's educational attainment, difference between husband's and woman's educational attainment, woman's age at first marriage, husband's ideal family size relative to woman's, woman's age, household wealth, and baseline measures of empowerment

b From the 2005 EDHS "baseline" survey in Minya

c Nine observations are median-imputed because of missing data on participant's years of school (n = 1) or husband's years of schooling (n = 8);

d Score derived from a principal components analysis of household assets and amenities

e Final say alone or jointly with husband or someone else in regard to one's own health care, making major household purchases, making household purchases for daily needs, and visiting family or relatives

f Whether a husband is not justified in beating his wife if she goes out without telling him, neglects the children, argues with him, refuses to have sex with him, or burns the food

Chapter 3: Research Implications

Discussion

Overall, the results from this study have mixed results regarding the relationship between fertility, contraception, and women's empowerment. Total fertility had little or no effect in unadjusted or adjusted models, with most measures of effect close to null. In this sample, the number of live births a woman has does not appear to confer advantage or disadvantage in the domains measured. Having more children than ideal was associated with consistently lower odds of agency in the childcare decision-making, economic decision-making, attitudes about intimate partner violence (IPV) against women, and attitudes about gender roles domains, though these results were not statistically significant. Against expectation, women who had more children than ideal had higher, albeit non-significant, odds of being able to travel to all places alone.

Having an unmet need for contraception conferred lower odds of agency in the childcare decision-making, and attitudes about IPV against women domain, though only the effect on childcare decision-making was statistically significant. It is possible that this association is due to the inclusion of the item "Who has a say in whether to have another child" in the childcare decision-making agency outcome, as it is possible that women who do not want to become pregnant but are not using a method of contraception may not be using a method because they lack agency to determine contraceptive use in their relationship. However, when all items were considered as outcomes individually, unmet need was significant associated with lower odds of both a woman has any say in whether to have another child (OR: .52, 95% CI: 0.28, 0.96) and whether a woman has any in decisions about children's schooling (OR: 0.54, 95% CI: 0.33, 0.88), indicating that the relationship between unmet need and overall childcare decision-making is not due to the

effect of one item alone (full results not shown). Thus, it is possible that not having the agency to enact one's fertility desires limits women's ability to make decisions around other aspects that affect their children's lives, such as schooling. This result is in line with the proposed pathway of contraceptive use as inherently empowering – lack of control over one domain (fertility) may translate to lack of control in other domains as well (childcare decision-making). Unmet need did not appear to have a strong effect on attitudes around gender norms or freedom of movement, suggesting that meeting women's demands for contraception may not alter their perceptions of gender roles or enhance their ability to travel to places alone.

Ever use of modern contraception was associated with higher odds of agency in the economic decision-making and freedom of movement domain, with women who have ever used a modern method of contraception at baseline having statistically significant higher odds of being able to travel alone to all places at follow-up. This association is not necessarily driven by the relationship between ever use of modern contraception and woman's ability to travel to the health center alone, which may be a precondition to using contraception rather than an outcome. When the items in the freedom of movement domain were considered as outcomes individually, ever use of modern family planning was associated with higher odds of being able to travel to the health center alone (OR: 1.47, 95% CI: 0.85, 2.54) as well as to a religious place alone (OR: 1.92, 95% CI: 1.11, 3.32) (full results not shown). These results suggest that women who have been able to exert some level of control over their fertility are able to exert similar control over other aspects in their life, supporting the hypothesis that contraceptive use may be inherently empowering.

Against expectation, women who had ever used a modern method of contraception had lower odds of agency in the attitudes about IPV against women and attitudes about gender roles domain, though these effects were not statistically significant. Attitudes about IPV against women often has had a similarly perplexing relationship with measures of fertility in the literature; Upadhyay and Karasek (2012) found that not justifying wife beating was associated with higher odds of having more children than their ideal family size in Namibia and Zambia (20). Their study also found that women who believed that all reasons for refusing sex was justified also had higher odds of having more children than ideal (20). One possible explanation for this result is that women may be reporting societal views on justification of wife beating, rather than their personal beliefs. As women who have used a modern method of contraception have higher odds of freedom of movement, they may have greater exposure to community beliefs and norms on the justification of gender based violence and internalize these norms.

The lack of association between total fertility and any of the measures of agency may be due to its inclusion in the model as a continuous variable. It is likely that women with seven children are not very different from women with eight children, thus a potential effect of high fertility on empowerment may be averaged out. It is possible that women with fertility greater than replacement level, or fertility greater than the mean ideal number of children may be less empowered than those with lower fertility; this should be explored in future research.

The lack of association between the domains related to women's expression of views favoring equitable roles and rights for women vis-à-vis men and any of the fertility and contraception related exposures might be because these items represent entrenched gender norms that individual fertility regulation cannot overcome. These measures represent the more transformative aspects of empowerment; they may be more affected by societal level changes on the acceptability of fertility control and expanded view of women's roles in society outside of their reproductive capacity.

Attending at least some secondary school was associated with higher odds of agency across all domains, indicating that increasing women's access to education opportunities could potentially increase their decision-making capabilities within the context of a marriage, decrease the likelihood that they justify intimate partner violence against women, increase the espousal of equitable views on gender roles within the context of the family, and increase women's ability to travel freely. Spousal schooling difference, which may indicate an inequitable power dynamic within a marital relationship, was associated with greater odds of agency. Women whose husband's had more years of schooling than they did had had lower odds of agency, particularly in the freedom of movement domain, as compared to women whose husbands had the same amount of schooling or less.

Husband's desire for more children relative to the respondent did not have a strong or consistent effect across the various domains of women's agency. Household wealth had a positive, though non-significant, association with all domains of agency. Age had an inconsistent relationship with agency; women in the 40 to 49 year age group had higher odds of economic decision-making, but lower odds of freedom of movement.

Women may gain control of more resources as they age, but have lower freedom of movement because their husbands adhere to older gender norms.

Strengths and Limitations

The major strengths of this study are the longitudinal study design, control of baseline empowerment, and use of multiple measures of fertility control as well as measures of agency, which enables comparison across various exposures and outcomes. Limitations include relying on a quantitative measure of a latent construct, incomplete measurement of consistent contraceptive use, small sample size, and potential lack of generalizability outside of the study context.

Many researchers have noted the difficulty of measuring empowerment, particularly as it is multidimensional, operates at various levels, and is conceptualized as a process (16). By utilizing different measures of empowerment, this research allows for greater exploration of the different dimensions of women's empowerment. Previous studies have notes that women can be empowered in one domain but not in another (8, 27); this research also indicates varying degrees of empowerment across different dimensions.

As this study relies on longitudinal data, one of its strengths is its explicit focus on attempting to establish a temporal relationship between fertility, contraceptive use, unmet need for contraception, and women's empowerment. It is possible that the measures of baseline empowerment included in the model did not accurately control for baseline empowerment; thus empowerment reported in 2012 may merely be a reflection of empowerment prior to the exposures of interest.

One of the main challenges when conducting research on empowerment is that constructs can be difficult to quantify (20); furthermore, this research lacks data on women's perceptions of her partner's or community's attitudes about certain norms, which may impose greater constraints on her choices. Women's decision-making patterns in this study reflect the gendered division of labor articulated in previous studies in Egypt (18, 41); women in this sample tended to have a much greater involvement in decisions around childcare compared to decisions around household economics. Thus, increased decision-making in the childcare domain may not necessarily be indicative of greater empowerment. Furthermore, it is possible that women who meet societal expectations of high fertility may be afforded more decision-making power; this would not be adequately captured by the current measures of empowerment and fertility used in this study.

Ever use of modern contraception did not take into account length or consistency of use; women may have had a variety of reasons for discontinuing a method, such as partner interference, lack of availability, and ineffectiveness of method, all of which might potentially impact her empowerment. This study was limited by its small sample size, thus, we were unable to further subset the data to examine the effect of current contraceptive use on empowerment among women of certain ages or by future fertility preference.

Results from this study may not be generalizable outside of the study context or outside of governorates in Egypt with a similar demographic profile; however, findings can be used to inform future research on the effects of fertility, contraceptive use, and unmet need on women's empowerment.

Implications for Future Research and Policy

Research in other contexts has examined differences in sole versus joint decision-making (52); some studies have hypothesized that sole decision-making may indicate a lack of empowerment as women bear the entire burden of responsibility for traditionally gendered tasks (20). Future research should examine this difference to see if contraceptive use and fertility has a different impact on women's sole decision-making than on their joint decision-making. As fertility control may indicate some level of increased spousal communication and trust, it is possible that women who are able to control their fertility have greater joint decision-making.

Future research should also seek to develop a more comprehensive measure of contraceptive use that takes into account intention of use, consistency of use, and effectiveness of method. This, in conjunction with an examination of women's ideal fertility, may allow us to compare women who are able to meet their fertility goals with those who are not. It may be of interest to exclusively focus on women who have completed their childbearing, or those who have reported that they don't want any more children.

Another interesting avenue for future research would be a more thorough examination of the specific components of some the outcome measurements used; economic decision-making, attitudes on gender norms, and attitudes on gender based violence had substantial variation in the individual responses that warrant further exploration.

Meeting women's demands for family planning and increasing uptake of modern methods of contraception may positively increase women's empowerment, particularly

their agency in the childcare decision-making and freedom of movement domains. Increasing women's access to education opportunities is another potential means to increasing women's agency across multiple domains. Family planning programs should seek to evaluate increased agency as a potential benefit of these programs. However, family planning use may not be enough to increase women's expression of views favoring equitable roles and rights for women vis-à-vis men; policy makers and empowerment programs should focus on strategies to transform gender roles at the societal level in order to enhance women's agency in these domains.

Conclusion

In this context, total fertility may not play as large a role on women's agency as theorized. However, meeting women's demands for family planning and increasing uptake of modern methods of contraception may positively impact women's empowerment in the home, particularly in the childcare decision-making and freedom of movement domains. Higher education and equality in spousal education was associated with greater agency. Future research should further explore determinants of women's empowerment, particularly regarding women's expression of views favoring equitable roles and rights for women vis-à-vis men.

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