

FERTILITY BEHAVIOR AND PSYCHOLOGICAL STRESS: THE MEDIATING INFLUENCE OF GENDER NORM BELIEFS AMONG EGYPTIAN WOMEN

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The influence of gender norms on women's family planning experiences is a finding that cuts across numerous studies included in Family Health International's multi-country Women's Studies Project. This paper explores findings from one of these studies on the mediating influence of beliefs about gender norms on the relationship between fertility behavior and psychological well-being. Using cross-sectional survey data from 4,908 Egyptian women, hierarchical multiple regression models were tested with depression and anxiety as the dependent variables. Independent variables included three demographic variables, two measures of beliefs about gender norms developed from survey items using exploratory factor analytic techniques, and two fertility behavior variables—use of family planning and number of children. Gender norm beliefs predicted both anxiety and depression. The statistical analyses demonstrated a separate effect of family planning use on anxiety, independent of gender norm beliefs, but the effect of family planning behaviors on depression disappeared when gender norm beliefs were included in the regression model, which indicates a mediating effect of gender norm beliefs. Although cross-sectional data do not allow for the determination of causality among the three types of variables, a conceptual framework is offered for the possible causal mechanisms for the identified relationships.

The influence of gender norms on women's family planning experiences is a finding that cuts across numerous field-driven studies that were conducted as part of Family Health International's Women's Studies Project (WSP; Barnett & Stein, 1998). Project studies began in 1993 and were conducted in nine developing countries. All studies were designed to determine the impact of family planning on women's lives. The relationships that emerged were not all direct nor were they all positive. The ability to control one's fertility is often a mixed blessing, mitigated by contextual factors such as gender norms. Traditional gender norms may limit a woman's ability to use family planning if she perceives herself as being bound to cultural expectations or the will of her husband. Or, they may reduce her motivation to limit her family size if she does not have the opportunity to step outside her role as wife and mother into the world of work or community service. Therefore, it is possible that the potential psychological benefits of using family planning may be reduced by inequitable gender norms that result in fear of abuse or desertion by an angry husband and/or stigmatization by one's community.

As part of the WSP, a household survey was conducted in Egypt to determine the impact of family planning on several aspects of the lives of Egyptian women (Saleh & Heisel, 1998), including psychological stress. Results from a preliminary analysis of these data (Severy et al. 1999) demonstrated a relationship between family planning use and women's psychological stress measured as anxiety and depression. This paper presents an enhanced analysis of those data focusing on the potential mediating role of gender norms in the relationship between family planning use and psychological stress. It is proposed that the association between family planning use and fertility control and Egyptian women's experience of psychological stress may be mediated by egalitarian beliefs about gender norms.

Fertility and Psychological Stress

The World Health Organization defines reproductive health as "complete physical, mental, and social well-being," although there has been relatively little attention given to the psychological aspects of reproductive health in general or to family planning use in particular. Dixon-Mueller (1989) has offered a framework for examining psychological stress manifested by anxiety, depression, and hostility as it relates to fertility control and contraceptive

use. The first two, anxiety and depression, are of primary interest to the analysis presented here.

This framework is based on the idea that psychological stress related to contraceptive use results from role strain or role stress. She defines role strain as "the extent to which a woman feels unable to cope with the demands of a particular role with the resources at her disposal" (Dixon-Mueller, 1989, p.143). She describes possible mechanisms through which psychological stress may occur in the seven social roles defined by Oppong and Abu (1995) that affect and are affected by reproductive behaviors. These are all heavily influenced by gender and include maternal, occupational, conjugal, domestic, kin, community, and individual roles. She states that reproductive behaviors that intensify rather than reduce role strain or role conflict are likely to be perceived as stressful. She believes that some psychological stress caused by these events can be mediated by adaptive mechanisms such as social support, information, economic resources, and structural changes.

The Cultural Landscape of Egypt

Gender is socially constructed and gender norms are determined in large part by culture. Most Egyptians are Moslem, and the culture of Egypt as it relates to women and to family planning programs is heavily influenced by Islam (Jacobson, 1994). Egypt has seen a resurgence of Islamic fundamentalism in the past decade, as have many other countries. In Egypt this is understood by many as a reaction against the government because of economic difficulties created by structural readjustment. Outward signs of this resurgence include an increase in the number of women who wear a *hijab*, or veil; many women in Cairo and almost all women outside of Cairo are now veiled in public. There are noticeable geographic differences in the levels of fundamentalism. Upper Egypt (south) is more rural, and people there are more traditional and considered to be more fundamentalist in their Islamic beliefs. Lower Egypt (north) is more urban and more modern.

Gender Norms in Egypt

There is much disagreement about the status of women within Islam. Some believe that the emergence of Islam led to an improvement in women's status, and that the Koran is open to egalitarian interpretations. Others focus on aspects of the text that have led to inequitable practices regarding marriage, inheritance, and court testimony; some writers suggest that the Koran views women as inherently inferior and believe that Islam is a major obstacle to achieving gender equality. This disagreement may reflect confusion between the principles of Islam and traditions that have evolved within the culture (Jacobson, 1994).

Traditional gender norms in Egypt favor male authority and greater allocation of resources (e.g., education,

food, medicine, and health care) to males than to females (Moreland, Naguib, & El-Zanaty, 1996). Family life is defined by different but equal roles for women and men. The traditional role for women is to be at home with the children. Women are expected to defer to men in most decision-making. As in most societies, however, these gender norms are changing and the degree to which women in Egypt currently agree with them varies widely according to education, urban residence, and age (Jacobson, 1994). Women with more exposure to modern culture, media, and education may demonstrate more egalitarian beliefs.

Women's autonomy in Egypt has been studied as one indicator of gender equity in recent years. Researchers have found that women's autonomy is multi-dimensional with women demonstrating different levels of autonomy in different domains of their lives (Govindasamy & Malhotra, 1996; Nawar, Lloyd, & Ibrahim, 1994). Researchers found that the most autonomous women were young, living in urban areas, educated, contributing to the economic welfare of the family, and living in more affluent conditions, although even these women with relatively high levels of autonomy were still much more dependent on their spouses for making family decisions than Western women (Nawar et al., 1994).

The Status of Women in Egypt

Data from the 1995 Egypt Demographic and Health Survey¹ (EDHS; El-Zanaty, Hussein, Shawky, Way, & Kishor, 1996) provide relatively recent national-level information about women's lives. These data show that women have limited control over many aspects of their lives, beginning with marriage. Over 75% of Egyptian women do not select their spouses themselves. Women are often much younger and less educated than their husbands.

Violence within marriage is not rare; one in three women report having been beaten at least once (El-Zanaty et al., 1996). Most ever-married women in the EDHS agreed that sometimes wife-beating is justified. Female circumcision is nearly universal, 97% of women of reproductive age have been circumcised. Eighty-seven percent of survey respondents had a daughter who had been circumcised, and 82% believe that the practice should be continued. Further, 70% believe that husbands prefer wives who are circumcised and that it is an important religious practice. There have been public awareness campaigns to discourage the practice in recent years, and there is some indication that women are changing their attitudes about it (El-Gebali et al., 1999; Seif El Dawla, 1999).

Women have limited financial autonomy. Less than 20% work for cash and two-thirds of these women give all the money to their families. Although gender differences in educational attainment have been narrowing, men continue to have greater opportunities than women. School

attendance is greater for boys than for girls in the primary grades and this gap widens with age.

Fertility and Contraceptive Use in Egypt

The EDHS (El-Zanaty et al., 1996) shows declines in fertility among Egyptian women from over 5 births per woman in the early 1980s to 3.6 births per woman in 1995. There are differences among women from different geographic areas of the country that parallel the traditional/modern continuum associated with these areas. Women in rural Upper Egypt still had an average of 5.2 births per woman compared to 2.7 births in urban Lower Egypt. One factor that contributes to the overall fertility decline is age at marriage, with higher age at marriage associated with lower fertility. Age at marriage is increasing in Egypt, although among the 25- to 29-year-old cohort (whose overall median age at marriage is 20.2 years), this varies considerably by geographic location. The youngest mean age at marriage was found in rural Upper Egypt (17.3 years) and the oldest was in the urban governorates (22.6 years).

Childbearing in Egypt occurs almost always within marriage and begins soon after marriage. Because one-half the population is married by age 20, this means many girls give birth while teenagers. Births also are closely spaced to one another in Egypt, with 25% of nonfirst births occurring within 2 years of the previous one. Women experience a relatively brief period of postpartum amenorrhea (mean = 5 months). This is thought to be related to breastfeeding patterns and early introduction of supplemental foods.

Egypt has had a very active family planning program for several decades; there are national policies with explicit goals of reducing the birth rate (Toubia, Bahyledin, Hijab, & Abel Latif, 1994; Jacobson, 1994). EDHS data indicate that almost everyone in Egypt knows about family planning (El-Zanaty et al., 1996). Highly visible information campaigns have saturated the media over the past several decades. Family planning has broad support among couples; 90% of women say they approve, and 83% say that they believe their husbands approve of family planning. Seventy percent of women have used a method at some time, and 48% were using a method at the time of the EDHS. The most commonly used method was the IUD (30%), followed by the pill (10%). Use of contraception, like fertility, varies by geographic location, with the greatest percentages of women using contraception in urban Lower Egypt and the lowest in rural and Upper Egypt.

The EDHS found that 30% of women who began a method discontinued use of that method within 12 months, primarily due to side effects. Discontinuation rates were highest among users of hormonal contraception (e.g., the pill and depo-prevera). Although family planning seems to be highly visible and accessible within both the public and private sectors (and to receive widespread sup-

port generally), women report having an average of one more child than they believe is the ideal number. According to EDHS results, one in six women are considered to have an "unmet need" for family planning. These are women who said they were not using a family planning method, but also said that they wanted to wait 2 or more years before their next birth or said they wanted no more children.

Fertility, Women's Autonomy, and Decision-Making in Egypt

Despite women's limited autonomy in Egypt, fertility control is one area in which they have more say. Eighty percent of the EDHS respondents reported that decisions about future childbearing or family planning use are made jointly with their husbands or sometimes by themselves (El-Zanaty et al., 1996). This is consistent with an analysis by Govindasamy and Malhotra (1996), who argued that women enjoy more power within domains that are culturally sanctioned, such as the domestic domain. This gives them more authority over reproductive decisions. They noted, however, that gender equality is manifested through interaction and negotiation with their husbands in these issues rather than the more Western notion of autonomous or independent decision-making. This means that women view egalitarian decision-making as a joint process rather than a decision being made by the husband or wife alone. These researchers note that there are variations in the amount of joint decision-making that is allowed. For example, as women are able to make greater financial contributions to the family, their opinions are weighed more heavily in this negotiation. Women who have an egalitarian orientation to decision-making are more likely to want fewer children, and to want to control their fertility, than those who are dependent on their husbands.

Role Stress and Egyptian Culture

A number of Dixon-Mueller's (1989) insights concerning role stress and contraceptive use have relevance for Egyptian women. With regard to a woman's conjugal role, Dixon-Mueller noted that much of the effect of family planning on women's stress is dependent on who has the right and the responsibility to use contraception within the marriage. A woman who does not want to get pregnant will feel anxious about sex if her husband does not allow her to use family planning. This will lead to reduced sexual enjoyment and exacerbate tensions within a marriage. A woman who wants to postpone a first birth will find her conjugal role threatened in many families in Egypt in which in-laws are likely to look for a new wife for their son when his wife does not conceive early in the marriage. Divorce is relatively easy for men in Egypt, but not for women, and polygamy, although infrequent, is legal and

commonly used as a threat (Atiya, 1982; Jacobson, 1994; Toubia et al., 1994).

Strain associated with a woman's maternal role of caring for her children will likely be reduced by a woman's use of family planning so that she can decrease her domestic workload by having fewer children. Fewer children can give her more time with each child and should reduce her overall workload. It may or may not free her up to become more economically productive or to pursue individual goals if there are any opportunities available to her within her culture. In Egypt, as in other countries, such opportunities are likely to vary considerably by class and educational level.

With regard to the kinship role, the family's expectation is that a woman gives birth soon after marriage. Also related to this role is the perceived need for sons as a means of security in old age. Son preference is an important factor in fertility in Egypt. Women often are motivated to have a greater number of children than they desire so that they can have one or more sons. Although more children put a strain on other roles, without sons there is the potential strain with kin who would resent having to care for her themselves.

Within the individual role, Dixon-Mueller suggests that the use of contraception methods can reduce or create stress in several ways. On the positive side, the woman may feel less stress and have greater self-esteem, and sense of well-being related to her feelings of greater control over her reproductive life; these feelings may even spill over into other parts of her life.

On the cost side, she may experience stress related to fears of physical side effects, as well as the side effects themselves. And, the EDHS data show that many women do experience these side effects (El-Zanaty et al., 1996). A woman also may feel anxious or worried about whether she is using a method correctly or consistently. Stress may be involved in making sure that she takes a pill every day or that she is able to persuade her partner to use a condom every time. She may feel anxiety or guilt about using contraception if it is non-normative, or she believes that it is sinful. Family planning enjoys widespread support in Egypt, but there is resistance to it among the more fundamentalist Moslems. Even when it is accepted in certain situations (e.g., after desired fertility is achieved) it may not be accepted in others (e.g., delaying a first birth).

A final cost is the stress involved in obtaining the method itself, given the poor quality of services often available to women in family planning clinics. Kafafi, Waszak, Abou-Taleb, and Pfannenschmidt (1998) found that although service quality is improving in Egypt, there are many women who still experience poor treatment and for whom the psychological stress involved in using services is more salient than the risk of an unwanted pregnancy. Examples of poor treatment include long waiting times, rude treatment by doctors, lack of female doctors (especially impor-

tant in more traditional rural areas), and lack of privacy.

Women's roles as individuals may also be affected by fertility reduction itself. Whether this is a positive or negative effect is related to the structural and cultural opportunities available to women in a particular society. Although individual role strain may be reduced with fewer children by freeing up her time for other pursuits, it also may be reduced by having more children when having more children creates a more positive perception of a woman because of her nurturing role. Dixon-Mueller (1989) wrote, "Women may consequently experience considerable anxiety about their worth as persons if their reproductive behavior deviates significantly from the social norms of their group" (p. 156).

In Egypt this social norm is in flux, and we expect some lag between women's aspirations and what they consider to be socially acceptable. The tension created by this lag is where we can expect to see women experiencing the greatest psychological stress. The question then becomes, is it women's beliefs in more egalitarian gender roles, or the contraceptive behaviors themselves, that create or reduce stress?

Research Questions

Briefly stated, the preliminary findings from the WSP Egypt survey were: (a) fewer children and use of family planning predicted greater anxiety; and (b) more children predicted greater depression. In this paper, we explore how women's beliefs about traditional gender norms may mediate these relationships between family planning and psychological stress. Our research questions include:

1. How do egalitarian beliefs about men's and women's gender norms correlate with family planning use and fertility reduction?
2. How do egalitarian beliefs about men's and women's gender norms correlate with depression and anxiety?
3. Does controlling for these beliefs weaken the relationship between fertility behaviors and psychological stress?

METHOD

Participants

Data were collected from 4,908 women of childbearing age in six governorates in Egypt in a random sample household survey. The six governorates include Assuit, Beni Suef, Cairo, urban Giza, Dakahlia, and Menoufiya. These represent metropolitan and rural areas as well as Upper and Lower Egypt. The sampling frame had been created in 1995 for another study carried out by the Social Research Center at the American University in Cairo. It was based on the geographical distribution of the population originally derived from the 1986 National Census of

4

Egypt and updated for use in the 1992 Egyptian Demographic and Health Survey. The frame was constructed from a complete list of all local areas, shaikas in urban areas, and villages in rural areas. A sample of approximately four such areas was selected in each governorate, and 13 areas were selected for urban Giza and Cairo. Households were then selected from these areas in this multistage random sample for each governorate. The samples drawn were random and representative for each governorate.

The average age of survey respondents was 34.3 years (range 15–30), and the mean number of children for each respondent was 3.7 (range 0–13). Nearly 47% were using contraception at the time of the interview; 30% of the total were using an IUD, and 8.9% were using the pill. Slightly over 43% reported being literate, and 41.1% were living in an urban area. Although the sample was not designed to be nationally representative, these statistics are similar to those derived from the 1995 EDHS, which is nationally representative.

Measures of Dependent Variables

Four inventories designed to measure psychological well-being were chosen by the Egyptian research team for inclusion in the survey instrument.

1. The Coopersmith Self-Esteem Inventory (Coopersmith, 1975) assesses self-esteem and comprises 25 items, which required the respondent to mark either “like me” or “unlike me” for each item. This scale was designed to measure positive self-regard unidimensionally, but some authors have noted its lack of a stable factor structure (Blasovich & Tomaka, 1991).
2. The Affect Balance Scale (Bradburn & Noll, 1969) measures well-being more generally. It taps both positive and negative emotions as independent dimensions. Half of the 10 items reflect positive emotions, and half reflect negative emotions. The responses to these items are dichotomous, requiring a “yes” or “no” answer to whether “during the past few weeks, did you ever feel: . . .” The affect balance reflects the difference between negative and positive emotions. The positive and negative items in this scale are generally uncorrelated with each other. Although this scale demonstrates adequate short-term reliability, low test-retest scores over long periods of time indicate that it measures “state” rather than “trait” characteristics.
3. Radloff’s (1977) Center for Epidemiologic Studies—Depressed Mood Scale (CES-D), was used to measure depression. The CES-D consists of 20 items, with a three-category-width response continuum that corresponds to “the number which best describes how often you felt or behaved his way—DURING THE PAST WEEK.” The possible

responses were 1 = most or all, 2 = some, or 3 = very little or none. The CES-D was specifically constructed to assess current frequency of depressive symptoms, with emphasis on depressed affect or mood. It was intended for use in cross-sectional surveys with general populations rather than as a “clinical intake” measure for clinically depressed respondents.

4. Taylor’s Manifest Anxiety Scale (Taylor, 1953) is a 45-item anxiety measure, which requires a dichotomous “true” or “false” response to each item. This measure is thought to display an unstable factor structure (Shaw & Wright, 1967).

These scales had not been used or validated in an Egyptian population prior to inclusion in this study. Items were translated into Arabic and pretested with Egyptian women. The women participating in the pretest were all from Cairo but were thought to represent the range of women in the study in terms of education and socioeconomic status. Some items from the original scales were revised, and a few items dropped altogether based on the pretest responses. A total of 100 items were included in the final survey. Severy et al. (1999) analyzed the structure of item relationships through exploratory factor analytic techniques to ensure that culturally relevant constructs were being measured. We used a principal components extraction and a promax rotation for eigenvalues greater than 1.0. Three factors related to psychological well-being were derived from these data through psychometric scaling procedures. These factors measure depression, anxiety, and self-esteem. Analyses presented in this paper focus on the two factors measuring psychological stress as dependent variables, anxiety and depression. Our measure of depression includes key items from three of the four scales (CES-D, Coopersmith, and Taylor), whereas our measure of anxiety includes items from the Taylor inventory.

Measures of Independent Variables

Fertility control behaviors. Fertility control behaviors were defined as (a) current use of family planning and (b) number of living children. Given its central importance in the larger survey study, a series of questions were asked about women’s reproductive history. Women were asked a series of questions about their past births and whether they used a family planning method between each of the pregnancies. They were also asked, “Do you use a method of family planning now?” The dichotomous answer to this question was used as the measure of current family planning use. Given the cross-cultural nature of this study, and the relationships we were planning to examine, we believed current use would be most relevant to current psychological outcomes. We did not limit this use to any specific categorization of use, but were more concerned with the respondent’s own perception of her use of a

5

method to control her fertility. Other questions about specific method use gave researchers the ability to confirm the respondent's understanding of this question.

Gender norms. Scales related to beliefs about gender norms were developed from survey items using exploratory factor analytic techniques (principal components extraction with promax rotation). The survey items included in this analysis were those touching on the appropriateness of various behaviors as they related to being female and male. These survey items were written by Egyptian researchers and were reflective of their understanding of typical traditional norms in Egypt. A number of domains were included in the survey questions such as education, employment, and household decision-making.

Two general dimensions of gender norms emerged in these scales. The first was a concern with promoting equity for girls and women, and the second was the belief in the maintenance of the rights and privileges of men. Although several scales emerged for each of these dimensions, only one scale from each dimension was included in these analyses as an indicator for each of these dimensions. Final scale selection was based on reliability calculations (Cronbach, 1951) and face validity of the items for the specific dimension. The "equity for girls" scale comprises four items and focuses on daughters' rights to work ($\alpha = .67$). The "rights and privileges of males" scale includes 10 items and focuses on allocation of more resources for sons than daughters, and the need to acquiesce to male authority ($\alpha = .70$). The items in these scales are presented in Appendix A.

Responses for each item were dichotomous. Items in the "female" scale were reverse-scored, so that for each scale, "1" would be a traditional response and "2" would be an egalitarian response. The scores for these scales were computed as the mean of individual items, thus ranging from 1 to 2. They are expressed as a continuum from traditional beliefs at the lower end of the scale to egalitarian beliefs at the upper end. That is, higher scores on each scale indicate more egalitarian beliefs. (A more egalitarian perspective on the male scale means less agreement with men having more rights and privileges than women.)

RESULTS

First, scores and bivariate relationships involving gender norm beliefs are presented. Second, multivariate predictions of anxiety and depression are described.

Gender Norm Beliefs

The mean score for egalitarian beliefs concerning women's gender norms is 1.67, and the mean score for egalitarian beliefs concerning men's gender norms is 1.45. Both of these means are close to the midpoints of their respective continua. The two scales are uncorrelated, $r = -.001$; $p = .944$.

Women who lived in an urban area and were literate had more egalitarian beliefs related to men's gender norms (higher scores) than their counterparts (urban vs. rural, $F[1,4896] = 520.723$, $p < .001$, and literate vs. not literate, $F[1,4905] = 917.122$, $p < .001$). No association was found between these variables and beliefs in women's gender norms. With regard to use of family planning versus nonuse, stronger egalitarian beliefs regarding men's gender norms were associated with higher family planning use, $F(1,4901) = 176.5$, $p < .0001$, but again, this was not true for beliefs about women's gender norms.

Egalitarian beliefs with regard to men's gender norms were negatively related to age, $r = -.04$, $df = 4907$, $p < .01$, and number of living children, $r = -.213$, $df = 4630$, $p < .001$. Older women and women with more children were less likely to adopt egalitarian roles and more likely to support the idea of increased rights and privileges for males in comparison to females. These associations were not found with respect to beliefs about women's gender norms.

Both gender norm belief measures were significantly related to the anxiety and depression scales. Egalitarian beliefs about women's and men's gender norms were negatively related to depression, $r = -.098$, $df = 4842$, $p < .001$ and $r = -.160$, $df = 4906$, $p < .001$, respectively. The opposite relationship exists for female norms and anxiety ($r = .092$, $df = 4842$, $p < .001$) and male norms and anxiety ($r = .084$, $df = 4906$, $p < .001$). That is, women who have more egalitarian beliefs had lower levels of depression and higher levels of anxiety.

Multivariate Predictions of Psychological Stress

A series of hierarchical regression models were tested to determine the mediating effects of gender norm beliefs on the relationship between fertility behavior and women's psychological well-being, controlling for sociodemographic variables (as described by Baron & Kenny, 1986). Two models each were tested for anxiety and depression. In each model, sociodemographic variables (age, literacy, and urban residence) were entered in the first step. In Model 1, two measures of family planning behavior were added in the second step. In Model 2, measures for beliefs concerning men's and women's gender norms were added in the second step. While controlling for these, two measures of fertility behavior—use of family planning and number of living children—were added in the third step of Model 2. A reduction in the effect of family planning variables on depression and anxiety from Model 1, due to the inclusion of measures of beliefs about gender norms in Model 2, was interpreted as a mediating effect of beliefs about gender norms.

Anxiety. Tables 1 and 2 present the statistics relevant to the analyses for anxiety. In Model 1, literacy and urban residence were found to predict greater anxiety in the first step. These effects remained in the second step. In addi-

Table 1
Summary of Hierarchical Regression Analysis for Variables Predicting Women's Anxiety (Anxiety Model 1)

Variable	B	SE B	β
Step 1			
Age	-.001	.002	-.012
Literacy	.099	.030	.049°
Urban Residence	.284	.031	.140°
Step 2			
Age	.003	.002	.032
Literacy	.066	.031	.033°
Urban Residence	.244	.033	.120°
Using family planning	.091	.029	.046°
Number of living children	-.028	.007	-.075°

Note. $R^2 = .026$ for Step 1; $\Delta R^2 = .030$ for Step 2 ($p = .000$).
° $p < .05$

Table 2
Summary of Hierarchical Regression Analysis for Variables Predicting Women's Anxiety, Testing Mediating Effects of Beliefs about Gender Norms (Anxiety Model 2)

Variable	B	SE B	β
Step 1			
Age	-.001	.002	-.012
Literacy	.099	.030	.049°
Urban Residence	.284	.031	.140°
Step 2			
Age	-.001	.002	-.012
Literacy	.007	.032	.039°
Urban Residence	.269	.031	.132°
Gender norm beliefs: for females	.274	.044	.087°
Gender norm beliefs: for males	.112	.064	.027
Step 3			
Age	.003	.002	.022
Literacy	.058	.032	.029
Urban Residence	.239	.032	.118°
Gender norm beliefs: for females	.273	.044	.087°
Gender norm beliefs: for males	.06	.065	.016
Using family planning	.082	.029	.041°
Number of living children	-.034	.009	-.064°

Note. $R^2 = .026$ for Step 1; $\Delta R^2 = .008$ for Step 2 ($p = .000$); $\Delta R^2 = .004$ for Step 3 ($p = .000$).
° $p < .05$

tion, the use of family planning and fewer numbers of children predicted greater anxiety. In Model 2, in the second step, literacy and urban residence again were predictors of anxiety. In addition, a positive relationship between egalitarian beliefs concerning women's gender norms and anxiety joined the explanatory model, but there was not a significant association with men's gender norms. In the third and last step of Model 2, the use of family planning and fewer number of children again both predicted greater anxiety. Model 2 results therefore demonstrated no weakening of the effect of family planning behaviors on

anxiety and no support for the mediating effect of beliefs concerning gender norms on anxiety.

Depression. Tables 3 and 4 present the results for depression. In both models, older age, illiteracy, and living in an urban area were all predictive of higher levels of depression in the first regression steps. In the second step of Model 1, we find no relationship between family planning and depression, but a positive relationship between number of children and depression. In Step 2 of Model 2, both gender norm belief scales also predicted

1

Table 3
Summary of Hierarchical Regression Analysis for Variables Predicting Women's Depression (Depression Model 1)

<i>Variable</i>	B	SE B	β
Step 1			
Age	.005	.002	.042°
Literacy	-.330	.030	-.163°
Urban Residence	.253	.030	.125°
Step 2			
Age	.022	.002	.020
Literacy	-.315	.031	-.156°
Urban Residence	.272	.031	.134°
Using family planning	-.029	.029	-.015
Number of living children	.021	.009	.042°

Note. $R^2 = .036$ for Step 1; $\Delta R^2 = .001$ for Step 2 ($p = .035$).
° $p < .05$

Table 4
Summary of Hierarchical Regression Analysis for Variables Predicting Women's Depression Testing Mediating Effects of Beliefs about Gender Norms (Depression Model 2)

<i>Variable</i>	B	SE B	β
Step 1			
Age	.005	.002	.042°
Literacy	-.330	.030	-.163°
Urban Residence	.253	.030	.125°
Step 2			
Age	.004	.002	.039°
Literacy	-.215	.032	-.106°
Urban Residence	.330	.031	.162°
Gender norm beliefs: for females	-.308	.043	-.098°
Gender norm beliefs: for males	-.681	.063	-.166°
Step 3			
Age	.003	.002	.028
Literacy	-.211	.032	-.105°
Urban Residence	.335	.031	.165°
Gender norm beliefs: for females	-.308	.043	-.098°
Gender norm beliefs: for males	-.675	.064	-.165°
Using family planning	.009	.029	.005
Number of living children	.011	.009	.021

Note. $R^2 = .190$ for Step 1; $\Delta R^2 = .031$ for Step 2 ($p = .000$); $\Delta R^2 = .000$ for Step 3 ($p = .419$).
° $p < .05$

depression—less egalitarian beliefs regarding male and female norms predicted greater depression. In Step 3, however, there was no additional effect of fertility behavior on depression. Neither the use of family planning nor the number of living children was related to depression—after controlling for beliefs about gender norms. The positive relationship between the number of children and depression that was seen in Model 1 disappears, which supports a mediating effect for beliefs about men's and women's gender norms on depression.

DISCUSSION

The conceptual framework implicit in this analysis was based on the general framework of the Women's Studies Project (Hardee, Visness, Ulin, & Pfannenschmidt, 1999; Hong & Seltzer, 1994), which was concerned with women's well-being rather than use of family planning as the end point. Background variables followed by beliefs about gender norms were entered into the model as context for the relationship between family planning and psychological well-being. Given the cross-sectional nature of

the survey, it is impossible to make claims about causality. However, we can consider the possible mechanisms for the observed associations. Our analysis of the survey data on gender norms was exploratory. Items had been included in the initial survey without a well-constructed conceptual framework for their analysis, which was necessarily post hoc. Now we offer an inductively constructed framework based on these data (see Figure 1), which should be tested in subsequent studies. Additional thoughts about the implications of this work will be presented as well.

Conceptual Framework

Three questions that drive the conceptual framework are considered.

How can gender role beliefs affect family planning use? Higher levels of egalitarian beliefs about men’s gender norms are observed among women who use a method of family planning. The causality of this relationship is probably bi-directional (as diagrammed in Figure 1). It is assumed that women who have more egalitarian beliefs feel more empowered themselves—and able to act on a desire to limit their families. Behavior often precedes attitudes (Myers, 1999; Schlenker, Dlugolecki, & Doherty, 1994), and the use of family planning may promote a woman’s perception of herself as empowered, resulting in more egalitarian beliefs in general.

Additionally, as presented in Figure 1, egalitarian beliefs and contraceptive behaviors may also be part of or covary with larger conceptual constructs. Women’s desires to limit their families may be concomitant with their more egalitarian beliefs about gender norms, both springing from the more encompassing construct of modernity or comfort with the modern world. A rather large literature

on individual modernity confirms these covariations in background and attitudinal variables leading to a “modern” behavior such as family planning (Inkeles, 1977).

It is interesting, but not entirely clear, why the measure of male norms but not the one related to female norms is related to family planning use and fertility. The items on the scale for female norms focus on daughters, whereas the other scale compares rights and responsibilities of husbands and sons to those of themselves and their daughters. Several studies in Egypt have noted that aspirations for daughters are often more liberal than behaviors in their own lives (Nawar et al., 1994). It may be that the male scales tap more of one’s own behavior and provide a more accurate relationship to fertility behaviors.

How do egalitarian gender norm beliefs affect anxiety and depression? The survey data indicate that egalitarian beliefs about women’s gender norms are associated with higher levels of anxiety and that both men’s and women’s gender norms are associated with lower levels of depression. Undoubtedly, feelings of equal entitlement affect one’s sense of self that would lead to lower levels of depression. However, being female reduces this sense of entitlement and is itself a strong predictor of depression. Studies from around the world have found that depression is experienced by twice as many women as men (Weismann & Olsson, 1995).

Consistent with this are results from years of research on gender role orientation—the extent to which women and men identify themselves with characteristics that are feminine or masculine—that demonstrate a relationship between strong feminine traits and higher levels of depression (Bassoff & Glass, 1982; Whitley, 1984). Gender role orientation is slightly different from beliefs about gender norms, but it is expected that there is overlap between

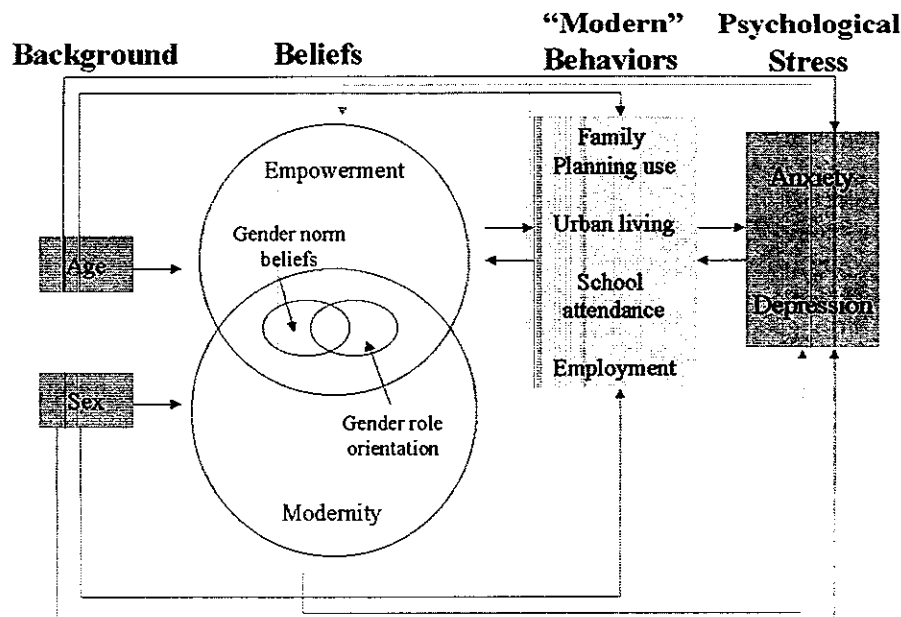


Fig. 1. Interaction of high and low self-sacrifice with high and low work role quality on anxiety.

egalitarian beliefs by women and higher levels of identification with masculinity or androgyny. Both of these constructs are subsets of beliefs related to empowerment and modernity.

Although empowerment is healthy for one's ego, it also may be scary. To start, it can cause stress in a woman's conjugal role as she and her husband sort out their new roles. It also causes strain within individual roles as it propels women to move into spheres formerly inhabited only by men, for which they have little socialization in how things work once they get there. For this relationship we found that the measure of belief about women's gender norms, and not male norms, predicted anxiety. Somehow, it is the beliefs that daughters (with little reference to sons) should be in the workforce that is related to increased anxiety, and this is independent of being literate, being in an urban area, and using family planning. One explanation is that there is some anxiety felt for daughters in this work world or some feelings of empathy for daughters who blaze new trails. It is also possible women project their own desires for equality onto aspirations for daughters or that these aspirations tap into a self-schema, and it is women's own desires that are related to greater levels of anxiety.

Egalitarian beliefs are also but one indicator of a broader move toward modernity and away from the security of tradition. Other predictors of anxiety found in this study were living in an urban area and literacy. These are also behavioral indicators of modernity (Inkeles, 1977; Figure 1) and would be expected to have an association with anxiety similar to that of egalitarian beliefs for this reason.

Over 30 years ago research by Inkeles and Smith (1970) found neither a positive nor a negative relationship between psychic adjustment and exposure to modern life in the form of factory work, urban living, or mass media. This research, however, was conducted with male participants and there was no consideration of gender role transitions. It is interesting that our data show that living in an urban area is positively associated with egalitarian beliefs, yet it predicts both depression and anxiety. Literacy is associated with less depression but more anxiety, consistent with a relationship with empowerment and modernity. The results related to urban residency are consistent with it being an indicator of modernity, but not empowerment. The stress caused by urban living may outweigh the empowering aspects of the benefits of modernization. Empowerment rather than modernity seems to be the key to improving the lives of women.

How does family planning affect psychological stress? Our earlier analysis showed a greater level of depression associated with having more children. This association disappeared once gender norm beliefs were included in the model; no association is found between depression and family planning use itself in either model. Although it was reasonable that having fewer children might result in reduced depression, as Dixon-Mueller suggests, because of the strains entailed in childrearing, it appears that the earlier effect was related to a more encompassing concept

explaining both gender norm beliefs and family size. This could be a modernity effect, but it seems more likely that it is an effect of empowerment. This can be tested empirically by using measures that can tease apart these concepts.

With regard to anxiety, however, our results indicate that both beliefs in egalitarian gender norms and current use of family planning promote higher levels of anxiety, independent of each other and of other effects of modernity or empowerment. An explanation for this finding also requires a more complex and sensitive measure of family planning to examine both the specific methods and type of services used. Is anxiety a result of poor quality services? Are women nervous about side effects? Or is a woman's anxiety related to role strain caused by her self-perceptions of non-normative behavior? Data from several studies in Egypt indicate that all of these explanations are possible (El-Zanaty et al., 1996; Kafafi et al., 1998).

Figure 1 summarizes the relationships discussed above. In addition, we have hypothesized a possible bi-directional causation between psychological stress and modern behaviors and beliefs. It is likely that the physiological component of anxiety and depression may have some independent effect upon a woman's beliefs and behaviors; although not testable using these data, it is important to consider ways of taking this into account in future research testing this model.

Implications

After speculating on a conceptual framework for further empirical testing, the question becomes how to use what has been learned from this analysis for program development. The answer depends on one's programmatic aims. The aim implicit in the WSP's research agenda is to improve the well-being of women. Another aim might be to increase family planning use.

What empowers women also creates greater anxiety because of the gender inequities that now exist in their lives. It would be hard to argue that programs that empower women should be stopped because they are associated with anxiety, especially because they also may reduce depression. Programs that are designed to assist women in a way that changes their traditional roles might be improved by acknowledging the conflicts created by these changes and providing as much social support in the program as possible. This is as likely to be true for women's literacy programs as for family planning programs. Involving the men in their lives, and the larger community as well, is an important step in this process. There are still inequities between men and women that occur at the policy and program level in all sectors. Eliminating these inequities is critical to the process of empowering women and trying to reduce the concomitant anxiety. An example of this kind of family planning program can be found in the Navrongo experiment in northern Ghana where measures have been taken to minimize adverse social consequences related to

observed strain in gender relations resulting from changes in contraceptive practices (Bawah, Akveongo, Simmons, & Phillips, 1999).

With regard to the second aim, the key is in accomplishing the first aim. Family planning programs that improve the well-being of women will attract more family planning users. These programs must examine how their services may be creating client anxiety. Although the situation is changing, many programs still offer poor quality services. Some women will cope with the stress caused by lack of attention to their psychological needs; others cannot. It is likely that much of the "unmet need" for contraception is found among women whose immediate needs for client-centered care weigh more heavily in their decision-making than do long term fertility goals (Kafafi et al., 1998). It has been shown that women who feel more empowered with regard to decision-making are more likely to want to limit their family size through family planning (Govindasamy & Malhotra, 1996).

Finally, it is our position that this initiative offers insights to the discussion of the need for indigenous psychologies (Adair & Diaz-Loving, 1999). Namely, the process of carefully adapting instruments from the "Western" culture for successful use in Egypt has generated meaningful information about women's lives in Egypt. We agree with Poortinga (1999) who wrote that "those who argue for a culturalist interpretation of behaviour have the obligation not only to show how much behaviour differs per cultural population but also how much it is the same. Indigenous psychologies can only be viable in the long run to the extent that both cultural variation and cross-cultural invariance are made part of the research agenda" (p. 430). We agree with those who believe that there is considerable—but not complete—universality in the explanations of human behavior. In the present case, culturally adapted assessment procedures have well described the way in which beliefs about gender norms mediate the fertility behavior's impact on women's sense of well-being.

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NOTES

1. The EDHS is a nationally representative population-based sample survey of women of reproductive age.

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Appendix A

Gender Norm Attitude Scale Items

A1. Male gender norm items

Items	% Agree	% Disagree	% Don't know
1. It is important that sons have more education than daughters.	30	69	1
2. Daughters should be sent to school only if they are not needed to help at home.	20	78	2
3. The most important reason that sons should be more educated than daughters is so that they can better look after their parents when they are older.	50	48	2
4. If there is a limited amount of money to pay for tutoring, it should be spent on sons first.	30	69	1
5. A woman should take good care of her own children and not worry about other people's affairs.	83	17	
6. Women should leave politics to the men.	80	20	
7. A woman has to have a husband or sons or some other male kinsman to protect her.	82	15	3
8. The only thing a woman can really rely on in her old age is her sons.	59	40	1
9. A good woman never questions her husband's opinions, even if she is not sure she agrees with them.	56	44	
10. When it is a question of children's health, it is best to do whatever the father wants.	67	31	2

A2. Female gender norm items (reverse-scored for scale)

Items	% Agree	% Disagree	% Don't know
1. Daughters should be able to work outside the home after they have children if they want to.	55	20	25
2. Daughters should have just the same chance to work outside the homes as sons.	67	28	5
3. Daughters should be told that an important reason not to have too many children is so they can work outside the home and earn money.	44	52	4
4. I would like my daughter to be able to work outside the home so she can support herself if necessary.	75	22	3