Getting the Full Picture of Family Planning Knowledge in the Philippines: Using Multilevel Modeling to Capture Individual, Partner, and Couple-Level Effects

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Abstract (150 words)
Multilevel modeling is commonly used to assess the influence of community-level variables on demographic and health outcomes, yet these methods have rarely been applied at the couple-level. We conduct multilevel modeling of data from 238 couples who participated in the 2005 Cebu Longitudinal Health and Nutrition Survey in the Philippines to assess the individual-, partner-, and couple-level influences on men's and women's family planning knowledge. Preliminary findings indicate that 17% of the total variance in family planning knowledge across participants was between couples. Individual-level (e.g., female gender and higher educational attainment) and couple-level variables (e.g., relationship duration, partnership status, and greater church participation by female partner) were significantly associated with greater knowledge of family planning methods, as compared to other couples. Subsequent analyses will assess additional individual and couple-level covariates and cross-level interactions. Preliminary results indicate that knowledge of family planning methods are influenced by individual, partner, and relationship characteristics.

Background

In a speech plagiarized from a variety of online sources, Filipino legislator Tito Sotto told the Senate that his wife's use of birth-control pills led to the death of his son a year after she took them (Syjuco, 2012). This type of misinformation about family planning methods is a part of political and religious opponents' attempts to shutdown family planning usage and reproductive health legislation in the Philippines. In the absence of consistent public knowledge of family planning, it is important to understand how Filipinos gain knowledge about family planning.

Family planning knowledge is particularly relevant to individuals within relationships. However, studying family planning knowledge in couples is complex because individuals' family planning knowledge may be related to their own individual characteristics, characteristics of their partners, and characteristics of their relationship. In the present research, we demonstrate how multilevel modeling analyses can be used to simultaneously model the individual-, partner-, and couple-level influences on family planning knowledge of men and women within relationships (e.g., Bryk & Raudenbush, 1992; Kashy & Kenny, 1999). Multilevel modeling analyses applied to dyadic data account for the fact that the responses of individuals within couples are likely to be similar to each other, adjusting the error structure accordingly.

Data and Participants

Participants were a part of the Cebu Longitudinal Health and Nutrition Survey (CLHNS), an ongoing cohort study of Filipino women who gave birth between May 1st, 1983 and April 30th, 1984. The 772 participants analyzed in the present research were the children of the original cohort of women and those children's romantic partners. The data analyzed was from the 2005 CLHNS survey. Participants' ages ranged from 15 – 42 years (M = 21.98, SD = 2.78). Forty-two percent of participants completed high school; 10% completed the 6th grade; and 10% completed

some post-secondary education. Like the majority of the Filipinos, 97% of the sample was Catholic. On average, participants reported attending church about once a month.

Variables

Family Planning Knowledge: Participants reported on the methods of family planning with which they were familiar. The family planning outcome variable was created by summing the number of family planning methods spontaneously mentioned from a list of 14 different methods of family planning: birth-control pills, IUD, injection (Depo-Provera), implant (Norplant), diaphragm, foam or jelly (Sampoon), condoms, ligation, vasectomy, rhythm method (calendar), rhythm method (temperature, symptoms), withdrawal, breastfeeding, and abstinence. Counts ranged from 0 – 9 methods. On average, participants spontaneously mentioned 3.82 methods (*SD* = 1.73). Of the total variance in family planning knowledge across participants, 17% was between couples.

Predictors: We examined the association between family planning knowledge and a set of individual characteristics (sex, age, frequency of church attendance, education level, working status), a set of partner characteristics (partner age, partner frequency of church attendance, and partner education level, partner working status), and a set of couple characteristics (couple age difference, couple church attendance difference, couple educational level difference, couple working status difference, duration of relationship, marital status, number of pregnancies in the relationship, and urban or rural residence). All difference variables were calculated by subtracting the female's characteristic from the male's characteristic. We also tested the interaction of each predictor with participant sex.

Results

Female participants knew of significantly more family planning methods (*EstM* = 4.21, *SE* = .09) than did male participants (*EstM* = 3.42, *SE* = .09), γ = -.78 (*SE* = .11), Z = -7.38, $p <$ .0001. There were no significant interactions of any other predictors with participant sex. We maintained sex as a covariate in all subsequent models.

We first ran a model predicting family planning knowledge from all individual predictors and sex. Only sex, γ = -.74 (*SE* = .13), Z = -5.69, $p <$ .0001, and educational level, γ = .13 (*SE* = .02), Z = 6.50, $p <$ .0001, were uniquely significant over and above other individual characteristics. More educated individuals knew more family planning methods than those who were less educated.

In the next model, we maintained the significant individual characteristics (sex and educational level) and added all of the partner characteristics. None of the partner characteristics were significant, controlling for individual characteristics, all *p*s > .07. Sex and educational level were still significant, even controlling for partner characteristics, all *p*s < .0001.

Finally, we maintained the significant individual characteristics (sex and educational level) and added all of the couple characteristics to the model. Sex and educational level were still significant, over and above the couple characteristics, all *p*s < .0001. In addition, there was a significant association with difference in church attendance, γ = -.23 (*SE* = .08), Z = -2.86, p = .004, duration of relationship, γ = .01 (*SE* = .00), Z = 2.10, p = .035, marital status, γ = .55 (*SE* = .13), Z = 4.13, $p <$ .0001, and number of pregnancies in the relationship, γ = .25 (*SE* = .09), Z = 2.88, p = .004, over and above other couple characteristics and individual sex and educational level.

Individuals in couples in which the male partner went to church as often as the female partner knew fewer family planning methods than individuals in couples in which the female partner went to church more often than the male partner. Additionally, individuals in couples who had been together for longer, who were legally married, and who had experienced a greater number of pregnancies in the relationship knew more family planning methods than those who were in couples who had been together for less time, who were cohabiting or not legally married, and who had fewer pregnancies in the relationship, over and above individual sex and educational level.

Discussion

The present research demonstrates an elegant analytic method to test an intuitive notion: that individual's knowledge of family planning methods are influenced by their own characteristics, their partner's characteristics, and characteristics of their romantic relationship. As family planning often takes place within couples, research on family planning and reproductive outcomes should take into account the full picture of the individual's relationship context.

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