Family Formation & Women's Empowerment over the Life Course in India

A Structural Equations Model

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Abstract

Women's empowerment influences numerous demographic behaviors: abortion, contraceptive use, and fertility. In turn, reproductive behavior and family formation influence empowerment. In South Asia, the disempowerment of young, recently-married women is contrasted with the relative empowerment of mothers-in-laws. Yet, most quantitative studies describe empowerment as a fixed attribute, ignoring variations across the lifecourse.

This analysis uses retrospective survey data from a representative sample of 2,444 married women in Madhya Pradesh, India, a conservative state with poor demographic outcomes. The dataset captures reproductive events, household circumstances, and empowerment (mobility, spending decisionmaking, violence) for each of 11,309 pregnancy intervals in respondents' lives from marriage until the time of survey.

The paper examines how static/dynamic women's empowerment is over the lifecourse. It compares the influence of initial empowerment resources and socio-demographic determinants (education, spousal age gap, age at marriage, religion, caste) with time-varying determinants (pressures for childbearing, family size, sex composition of children) of women's empowerment at the outset of marriage and at the time their family formation is complete in a structural model. I find that initial empowerment resources enhance initial empowerment, and that women's final empowerment is determined by their family formation and initial empowerment, but not initial empowerment resources.

Acknowledgements

Background and Rationale

Women's status, empowerment, and gender equality have long captured the imagination of demographers interested in explaining whether and why fertility does or does not decline. For example, Mason argues that early attention to women's status began in the 1960's and 1970's with a few selected authors[1] and made its way into mainstream theories of demographers such as Caldwell and Cain by the 1980's (Cain 1982; Caldwell 1982; Mason 1986). More recently, research demonstrates that women's empowerment, variously defined, influences a range of demographic processes and reproductive outcomes (Dyson and Moore 1983; Mason 1986; Jejeebhoy 1995; Presser and Sen 2000; Jejeebhoy and Sathar 2001; MacQuarrie, Edmeades et al. 2007; Pande and Astone 2007; Edmeades, MacQuarrie et al. 2008; MacQuarrie 2008). More empowered women tend to have increased use of contraception, smaller families and larger spacing between children (Jejeebhoy 1995; Malhotra, Vanneman et al. 1995; Schuler, Hasemi et al. 1997; Kishor 2000; Mason and Smith 2000; Edmeades, Pande et al. 2008), although some studies have shown weak or no effects (Morgan, Stash et al. 2002; Mumtaz and Salway 2005). It also affects women's ability to implement intentions to attempt abortion (MacQuarrie, Edmeades et al. 2007) and weakens the strength of son preference and results in longer time to conception (Pande and Astone 2007; MacQuarrie 2008).

Recent literature points to an emerging consensus about women's empowerment and what distinguishes it from the related concepts of power, women's status, autonomy, or gender equality. The common elements in this consensus are that 1) empowerment is a process from a state of disempowerment to greater empowerment and 2) women's agency is central to the process of empowerment (Presser and Sen 2000; Kabeer 2001; Malhotra, Schuler et al. 2002; Narayan 2005).

However, conceptualizing empowerment as a process requires that we differentiate what Kishor terms the indirect evidence of empowerment (including the sources of and setting for empowerment) from the direct evidence of

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[1] See, for example, Blake, J. (1965). "Demographic Science and the Redirection of Population Policy." <u>Journal of Chronic Diseases</u> **18**: 1181-1200.; Ridley, J. C. (1968). "Demographic Change and the Roles and Status of Women." <u>Annals of the American Academy of Political and Social Science</u> **375**: 15-25.; or Germain, A. (1975). "Status and Roles of Women as Factors in Fertility Behavior: A Policy Analysis." <u>Studies in Family Planning</u> **6**: 192-2000.

empowerment (Presser and Sen 2000). Jejeebhoy (2000, 1999) makes a similar point. Amartya Sen also notes that empowerment requires a combination of resources and agency to produce empowerment. Kabeer points to agency as the direct evidence of empowerment (Kabeer 2001). Malhotra et al develop a framework in which empowerment resources contribute to agency (direct evidence of empowerment), which leads to empowerment achievements, with the possibility that achievements may be incorporated into resources used for the next cycle of the empowerment process (Malhotra, Schuler et al. 2002).

Women's empowerment comes to bear in multiple spheres of life (familial/household, economic, legal, political) and women may be relatively empowered in one sphere while simultaneously not so in others (Malhotra and Schuler 2005; Kishor 2000; Malhotra and Mather 1997). In much literature, and implicit in many models, the household is asserted to be a critical sphere in which empowerment exerts influence on demographic processes and outcomes (Mason 1986).

Empowerment is not static, but varies by location, time, and stage of life cycle (Dyson and Moore 1983; Mason 1986; Gage 2000; Malhotra, Schuler et al. 2002). For example, in South Asia, the relative disempowerment of young, recently-married women is contrasted with the relative empowerment of mothers-in-laws in cross-sectional analyses (Mason 1986; Kabeer 2001). Selected studies indicate empowerment varies by age, marital and employment status (Standing 1991; Das Gupta 1996; Gage 2000; Hindin 2002). Some researchers have theorized that women's empowerment is responsive to demographic events, with empowerment increasing over the life course as women bear children, and, in many countries, male children in particular, an idea generally—but not universally—supported by the limited research on the issue.

That empowerment is a process makes its measurement particularly difficult using cross-sectional data (Malhotra, Schuler et al. 2002; Williams 2005). This is especially the case as researchers have frequently conflated empowerment (agency) with its resources or achievements (Kabeer 2001; Malhotra, Schuler et al. 2002). Most quantitative studies continue to describe empowerment as a fixed attribute, ignoring variations across the life cycle (Malhotra, Schuler et al. 2002). Few studies, in fact, explicitly examine whether and in what pattern

women's empowerment varies across the life course. Most empirical research supporting on women's empowerment generally, and on demographic processes and empowerment, specifically, has been cross-sectional. While cross-sectional comparisons generally support the notion of life course variations in empowerment, e.g. by demonstrating that older women, or women with more children or sons enjoy higher levels of empowerment in the household or community (Das Gupta 1995; Malhotra, Vanneman et al. 1995; Kishor 2000), they cannot shed light on when and how empowerment changes. Panel or retrospective data with robust measures of direct evidence of women's empowerment are particularly well suited to investigating empowerment and how it shifts over the life course. This paper aims to fill this gap by examining levels of women's empowerment, and its determinants, across the life course in Madhya Pradesh, India using a structural equations model.

Methodology

Study Setting

The setting for this study is Madhya Pradesh, a poor, largely rural state in central India with conservative social norms and poor demographic outcomes. With a population of 60 million people, Madhya Pradesh is characterized by high fertility rates, limited infrastructure, and a history of underdevelopment (Office of the Registrar General 2001; IIPS and ORC Macro 2001). The state reports a fertility rate of 3.3, compared to 2.9 nationally as well as a low contraceptive prevalence rate (4.7 percent of married women) (IIPS and ORC Macro 2001).

Data

In this paper, I use retrospective data from a probability sample of 2,448 married women (aged 15-39 with at least one child) in Madhya Pradesh, India. Respondents were selected through stratified cluster sampling, with one district randomly selected from six geographic regions. Ten primary sampling units (PSU) were selected in each district through probability proportional to size sampling, with purposeful oversampling of urban areas to ensure sufficient cases for the analysis of rural-urban differences. The sample was restricted to one eligible woman per

household within each PSU, with a random selection of the eligible woman from households with more than one eligible woman. The response rate was 97%.

The survey was explicitly designed to measure women's empowerment, intra-household relationships, contraceptive, pregnancy, and abortion experiences; and other characteristics over the entire reproductive life course. The survey instrument incorporated a "narrative" technique commonly used in qualitative approaches into the quantitative survey design with structured questions and pre-coded response categories (Malhotra, Nyblade et al. 2002; Nyblade, MacQuarrie et al. 2002). The same series of questions is repeated for each pregnancy interval that a woman has experienced. The resulting dataset captures each event—and corresponding level of empowerment—in the reproductive lives of respondents from the time of marriage until time of survey, encompassing 9,127 pregnancies with a known outcome and 11,617 pregnancy intervals[2]. This data facilitates the creation of interval-specific measures of agency with which to assess changes in empowerment over time.

For the purposes of this paper, analysis was restricted to 921 women who have completed their reproductive careers and are either themselves sterilized or their husbands are sterilized. Nine observations were then dropped for missing data on variables used in the analysis, leaving a sample of n=912.

Conceptual Model

The analysis is guided by a conceptual framework that illustrates how I anticipate empowerment to evolve over the life course (Fig 1). This framework is consistent with the literature describing women's empowerment as an iterative *process* in which empowerment resources contribute to direct evidence of empowerment (agency) which, in turn, leads to empowerment achievements (Kishor 2000; Presser and Sen 2000; Kabeer 2001; Malhotra, Schuler et al. 2002; Malhotra and Schuler 2005). These achievements may be used as resources in a subsequent cycle of empowerment. On the left hand side of the framework are women's characteristics at the initial interval: empowerment resources (marriage circumstances, educational resources, socio-economic status, and urban

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[2] An interval is the period of time between pregnancies, that is, the period of time from the point of marriage or from the conclusion of the last pregnancy to the onset of the next pregnancy.

residence) and selected socio-demographic control variables that contribute to initial empowerment. These characteristics are largely fixed by the time of marriage and do not vary over the rest of the life course[3].

Figure 1: A Conceptual Framework for Women's Empowerment over the Life Course
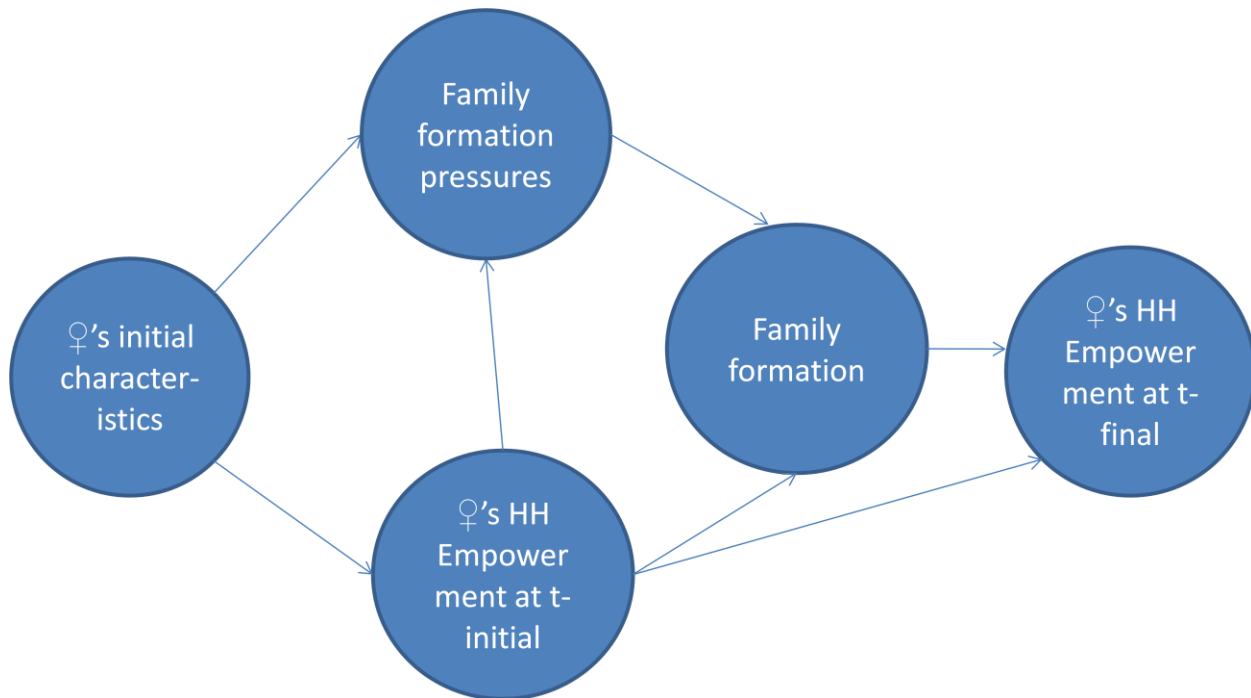
Women's initial empowerment affects family formation pressures following marriage, the strength of which may depend, in part, on the presence of co-residing in-laws (also affected by women's initial characteristics), with more empowered women being more capable of resisting pressures to bear children. Women's initial empowerment and family formation pressures each lead to the size and composition of the families women form. More empowered women and women with fewer pressures more are likely to achieve a smaller family and desired family composition while less empowered women will more likely have a more normative family formation.

Because life course theory suggests that individuals' outcomes are influenced by their accumulated experiences and resources, women's later empowerment is, in turn, influenced both by their earlier empowerment and by intermediary events like the size or composition of the families they form. Other demographic events could substitute or accompany family formation at this location in the model. These variables/factors could include

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[3] Socio-economic is an exception as it is time-varying.

number of pregnancies, number of children ever born, pace of fertility (e.g. average spacing between pregnancies, time to birth of a first child, number of pregnancies to the first son), number or proportion of mistimed pregnancies, number or proportion of pregnancies terminated in abortion, or number or proportion of intervals when contraceptive inaction did not match desires to delay/space childbearing. In this model, family formation acts both as an empowerment achievement, when related to women's initial empowerment, and as a new resource for women's later empowerment.

Analytical Approach

In this paper, I first describe how static or dynamic women's empowerment is over the life course by examining frequency distributions and cross-tabulations at different points of the life course. Next, I examine the factors influencing women's empowerment over the life course at two specific points in time: the onset of marriage (t_1) and the last interval when women have achieved completed families (t_2 or t_{final}) through a structural equations model. I have formed the following hypotheses:

Hypothesis 1: Women's empowerment is not static, but increases as the life course progresses[4].

Hypothesis 2: Women's empowerment is influenced both by their initial empowerment resources and background characteristics (fixed-time variables) and by changing factors and demographic events (time-varying covariates) that only develop as the life course progresses.

Hypothesis 3: Initial empowerment resources and fixed characteristics exert significant influence on women's empowerment in the earliest stage of women's life courses. As women progress through their life courses, this influence weakens and women's empowerment is determined to a greater extent by their changing circumstances (family formation pressures and outcomes, and earlier empowerment).

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[4] This subsequent hypothesis is not examined in this analysis: Women's empowerment does not increase monotonically across intervals, rather there will be a curvilinear pattern with possible plateaus and spikes in women's individual life trajectories. The first boost in women's empowerment is expected to coincide with the birth of a (first) son.

The structural model seeks the best fit given the variance-covariance structure of the variables in the model and is a system of equations of the general form (Bollen 1989):

$$\eta = \beta\eta + \Gamma\xi + \zeta$$

where η are endogenously caused variables and ξ are exogenous factors, β are causal parameters between endogenous variables or factors, γ are causal parameters between exogenous and endogenous factors, and ζ is the error variance around η.

The analysis consists of a confirmatory factor analysis (CFA) to specify the measurement of the latent factors in the conceptual framework depicted above and subsequently a structural model incorporating the relationships among the factors suggested by the measurement model. The measurement model depicting this factor and its indicators, and those of the other factors in the model, is shown in Figure 2. The model, as described here and as analyzed later, is recursive and so is identified.

The CFA (1) allows the researcher to determine how well the observed indicators for a factor capture the underlying latent construct; indicates where errors may be correlated within item of a given factor or across factors; and (3) estimates covariance and correlation parameters (akin to bivariate regression coefficients) that may suggest potential causal pathways. The structural model seeks to explain the observed covariance-variance matrix and indicates which causal pathways are significant and of what magnitude.

An especial focus of this paper is to compare the influence of initial characteristics and resources (determinants of initial empowerment) with that of evolving circumstances on women's empowerment at the time of they have completed their families. Therefore, I test two models. The first has no direct effect of these initial factors; they only affect later empowerment indirectly through their influence on initial empowerment and other intervening variables. The second model specifies a direct effect on women's empowerment at the completion of their reproductive careers. Data were manipulated (including variable recodes) in Stata SE 10 and the analysis executed in EQS 6.1 for Windows.

Figure 2. Measurement of Factors and Covariances in a Model of Women's Empowerment
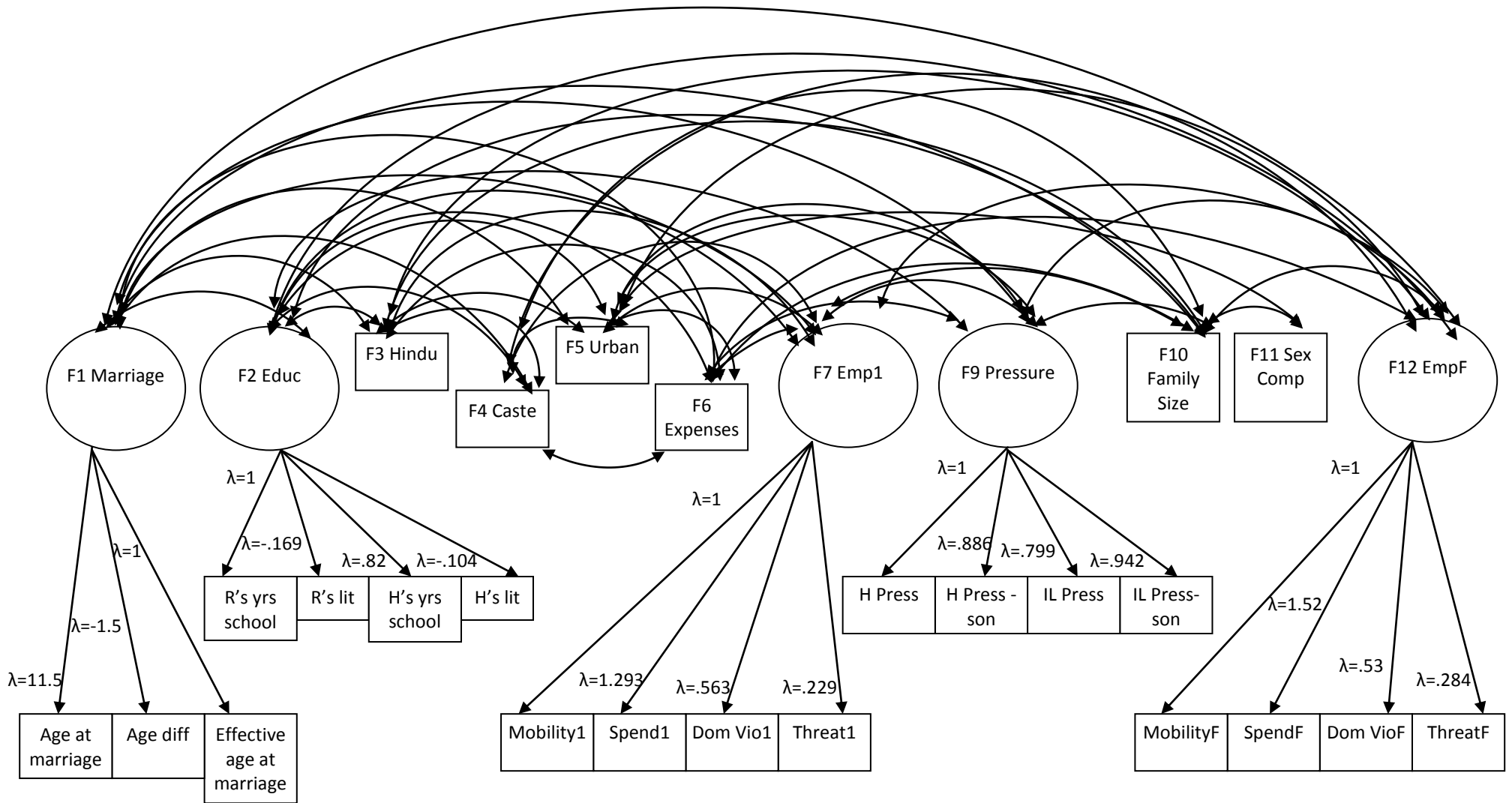
*For all square factors, λ=1, e=0. All factors had significant covariances amongst each other, except: .

Measures

<u>Final Dependent Measure</u>

Women's empowerment: Because the household is asserted to be a critical sphere in which empowerment exerts influence on demographic processes and outcomes (Mason 1986), I examine intra-household aspects of agency. I use multiple measures of agency in one latent factor because a single indicator is likely to be insufficient to capture empowerment's multi-dimensional nature (Malhotra, Schuler et al. 2002; Williams 2005). This latent factor includes measures of physical mobility, spending decision-making, experience of domestic violence, and threat of abandonment.

All of the measures of agency are interval-specific, measured in identical fashion at two points: start of the interval immediately upon marriage (F7=Emp1) and at the interval following her/her husband's sterilization (F12=EmpF). Physical mobility is an ordinal indicator in response to a question on the degree of restrictions the respondent faced on moving about in and outside of the community and ranges from "unrestricted mobility" (1) to "many restrictions" (4). Spending decision-making is measured similarly, with responses ranging from "as she pleased" (1) to "sometimes with permission" (2), "usually with permission" (3), and "only with permission" (4) to the question, "Were you able to spend money as you pleased or did you have to seek permission?" The domestic violence indicator is a three-response variable ranging from "never" to "often" in response to a question on the frequency with which the respondent's husband was physically violent with her. Finally, I use a dichotomous variable for whether the respondent's husband threatened to abandon her or kick her out of the home. Each of these have a negative valance in relation to the concept of empowerment, complicating interpretation slightly (e.g. "restrictions on empowerment" vs "empowerment").

Other Endogenous Measures

Normative family formation (F10=Family) is captured through three separate, concrete indicators from the interval in which women completed their families. These are (1) a continuous variable for the total number of surviving sons (v79=Famsize), (2) an ordinal measure capturing achieved sex compositions of children in rank order of preference (v90=sex), and (3) a continuous variable of the number of surviving sons (v97=sons). The rank order of preferred sex composition was determined by prior analysis using the same dataset that convincingly show certain specific sex compositions are preferred over others and that these influence women's desires for another child (strongly) and (less strongly) reproductive behaviors like temporary contraceptive use, abortion, and sterilization (Edmeades, Pande et al. 2008). The rank order is as follows:

1. 2 boys, 1 girl
2. 2+ boys, no girl
3. 1 boy, 1 girl
4. 1 boy, 2 girls
5. other combination
6. 1 boy
7. 1 girl
8. 2 girls
9. no children

Family formation pressures (F9=Pressure) is measured by four likert-type variables capturing the respondents' perception of pressure for another child or son. The four are: (1) pressure from husband for a(nother) child (v41), (2) pressure from husband for a(nother) son (v43), (3) pressure from in-laws for a(nother) child (v42), and (4) pressure from in-laws for a(nother) son (v44). The ordinal structure ranged from 0-no pressure to 1-some pressure and to 2-lots of pressure for each of these. A dichotomous variable indicating whether or not the respondent co-resided with her in-laws was considered alternately as a component of this factor and as a separate indicator but was not retained in the final analysis.

Exogenous Measures

Two latent factors capture two different aspects of ***women's empowerment resources*** at the outset of her marriage. ***Marriage circumstances*** (F1=Marriage) is composed of a continuous variable for women's age at marriage (v12), a continuous variable of the spousal age difference (v22), and a continuous variable for women's consummate age of marriage (v13). Spousal age difference is not the absolute value of the difference, rather negative values are possible and indicate where women are older than their husbands. Consummate age of marriage proved to be highly skewed and so the variable used here is the square root of the consummate age of marriage. This factor captures the concept of maturity and age equity at the time of marriage, and is believed to be positively associated with empowerment.

Educational resources (F2=Educ) includes continuous variables for the respondent's and her husband's completed years of schooling and ordinal variables for respondent's and her husband's degree of literacy. Reading ability is measured as "easily", "with difficulty," and "cannot read." These indicators load negatively with respect to the factor.

Control variables include separate dichotomous indicators for urban residence (vs rural), Hindu religion (vs Muslim, Jain, Buddhist, Christian, Sikh, Jewish, other), and general caste (vs "other backward caste," scheduled caste, scheduled tribe). An interval-specific measure of difficulty meeting household expenses on a four-point ordinal scale from "easy" to "difficult" captured this aspect of socio-economic status at the time of the first interval[5]. For each of these, the parameter between the indicator and the factor is set to $\lambda=1.0$ and the error is assumed to be 0, indicating that the concrete indicator is a perfect measure of the factor.

Because of the ordinal or dichotomous structure of many measures and the likelihood of skew even after variable transformations, robust statistics were calculated for all models presented in the paper.

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[5] Time-varying variables to include: stage of family formation (number of pregnancies, number of surviving children, pace of fertility, sex composition of children), household residential patterns (residence in a nuclear or extended family household), work-for-pay status, changes in socioeconomic status, and, of course, age.

Results

Using data for the current interval (time of interview) indicate that, overall, levels of women's empowerment are generally low. Only two percent of women could buy contraceptives without permission of someone else in the household. A third could travel to a health center in their community without permission or an escort. More than 90% were married before the age of 18.

When intervals were used as the unit of analysis, the data indicated that in only about a quarter of all intervals did women report that they faced no restrictions on their physical mobility in their immediate community. Women worked outside of the home about a third of all intervals, but even when they did, they seldom controlled their earnings. Women experienced domestic violence in about 40% of all intervals.

Variations in Women's Empowerment over the Life Course

The following tables show cross-tabs of each of the empowerment indicators at the first interval (rows) and at the last interval (columns). They show a general pattern of some women moving out of the more restricted categories into a less restricted category by the time they have completed childbearing. Only occasionally do women move into a more restrictive category as their life course progresses. It appears that there are greater shifts in the physical mobility and spending decision-making variables over time as compared to the experience of domestic violence (which nonetheless sees change over time). These data indicate that empowerment does shift in a positive direction over the life course.

Table 1: Physical Mobility at interval 1 and interval final

```
  restrictions on |
      going out - |        restrictions on going out - interval
         interval | no restri  less rest  restricti  lot of re        . |     Total
------------------+--------------------------------------------------------+----------
   no restrictions |      178          1          0          0          1 |       180
 less restrictions |      168        165          0          0          0 |       333
      restrictions |       87        103         34          1          1 |       226
lot of restrictions |      25         67         34         56          0 |       182
------------------+--------------------------------------------------------+----------
            Total |      458        336         68         57          2 |       921
```

Table 2: Spending decision-making at interval 1 and interval final

```
          -interval | spends wi  usually s  sometimes  spends w/ |     Total
--------------------+----------------------------------------------+----------
spends without permis |      195          1          1          0 |       197
usually seeks permiss |       80        127          3          1 |       211
sometimes spends with |       37         82         71          3 |       193
spends w/ permission |        55         95         77         93 |       320
--------------------+----------------------------------------------+----------
              Total |      367        305        152         97 |       921
```

Table 3: Domestic violence at interval 1 and interval final

```
was husband beating - |        was husband beating - interval
           interval |     never  sometimes  regularly             . |     Total
--------------------+----------------------------------------------+----------
              never |       513        140          4          2 |       659
          sometimes |       110        108          7          0 |       225
          regularly |         9         14         14          0 |        37
--------------------+----------------------------------------------+----------
              Total |       632        262         25          2 |       921
```

Table 4: Threat of abandonment at interval 1 and interval final

```
       was husband |   was husband threatening -
      threatening - |            interval
          interval |        no        yes          . |     Total
-------------------+----------------------------------+----------
                no |       761         60          2 |       823
               yes |        36         62          0 |        98
-------------------+----------------------------------+----------
             Total |       797        122          2 |       921
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Results of the Measurement Model (CFA)

The model measured in the CFA is depicted in the following figure 2 on which covariances among the

factors, between the indicators and their factor, and correlated errors are indicated (Fig 2). Robust

statistics were calculated to account for the multivariate non-normality resulting from the ordinal structure

and remaining skew of some model variables.

The standardized residual matrix (S-Σ) showed surprisingly little difference between the model observed and the model implied. The average standardized residual was .0303 and there were no standard residuals, that is, deviations of correlations/deviations of covariances (r_{ij}-σ_{ij}/S_iS_j) greater than .144.

The reasonably good fit was confirmed by multiple measures of fit falling within acceptable ranges. The χ^2 was 588.84 for 213 degrees of freedom used (large, but to be expected). The Normed Fit Index was .936, the Comparative Fit Index was .958, and the root mean-square error of approximation, the measure perhaps least sensitive to the size of N, was below .05 at.046. The χ^2 was significantly improved from an earlier model (χ^2 =620.38 at 214 df) that did not specify correlated error between. This change was suggested by the Lagrange Multiplier test and found to be consistent with the framework (conceptually plausible).

The measurement equations are shown below. All the indicators loaded on their respective factors significantly and in the expected direction. Also of comfort is that the first interval and last interval indicators loaded on their respective empowerment factors in a very similar pattern. For instance, a one unit increase in the initial empowerment factor is associated with a 1.293 increase in spending decision-making at interval 1, while a unit increase in the final empowerment factor is associated with a 1.522 increase in spending decision-making in the last interval. Examination of the correlations among factors (not shown) revealed that at no time were sufficiently high to suggest that two factors were in fact one factor. For example, marriage circumstances and educational resources are two separate empowerment resource factors correlated at .683 (the highest correlation among factors).

```
H207 =V12 = 11.521*F1 + 1.000 E12
AGEDIFF =V22 = -1.486*F1 + 1.000 E22
H208SQRT=V13 = 1.000 F1 + 1.000 E99

H202 =V10 = 1.000 F2 + 1.000 E10
H203 =V11 = -.169*F2 + 1.000 E11
H303 =V14 = -.104*F2 + 1.000 E14
RH302 =V33 = .820*F2 + 1.000 E33
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14

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HINDU  =V19 = 1.000 F3 + 1.000 E19

CASTE  =V20 = 1.000 F4 + 1.000 E20

URBAN  =V36 = 1.000 F5 + 1.000 E36

RV107  =V35 = 1.000 F6 + 1.000 E35

TVMOB  =V5 = 1.000 F7 + 1.000 E5
SPEND  =V32 = 1.293*F7 + 1.000 E32
V105   =V3 = .563*F7 + 1.000 E3
V106   =V4 = .229*F7 + 1.000 E4

HPRESS =V41 = 1.000 F9 + 1.000 E41
HPRESSON=V43 = .886*F9 + 1.000 E43
ILPRESS =V42 = .799*F9 + 1.000 E42
ILPRESSO=V44 = .942*F9 + 1.000 E44

FSURVTOT=V79 = 1.000 F10 + 1.000 E79
FSEXCOMP=V96 = 1.000 F11 + 1.000 E96

FTVMOB =V56 = 1.000 F12 + 1.000 E56
FSPEND =V83 = 1.522*F12 + 1.000 E83
FV105  =V54 = .530*F12 + 1.000 E54
FV106  =V55 = .284*F12 + 1.000 E55
```

Marriage circumstances and educational resources are positively associated. Each of the control variables were significantly associated with both empowerment resources. Women's initial empowerment is positively associated (reversing the negative valance) with empowerment resources and some control variables, and also family formation pressures and family formation outcomes. Family size and sex composition or sons were positively associated with both initial and final empowerment, as anticipated in the conceptual model. Several of the covariances among factors that were non-significant were omitted from the structural model. These were largely (but not wholly) consistent with the conceptual model developed at the outset of this analysis. The model fit better (equivalently) when either sex composition or number of surviving sons, but not both, were in the model.

Results from the Structural Model

The first structural model specified causal relationships among the factors as suggested by the conceptual model depicted earlier in Figure 1. The structural equations for this model follow:

$F7 = -\gamma F1 - \gamma F2 + \gamma F3 + \gamma F4 + \gamma F5 - \gamma F6 + d7;$
$F9 = -\gamma F1 - \gamma F2 + \gamma F3 + \gamma F4 + \gamma F5 - \gamma F6 + \gamma F7 + d9;$

F10 = βF7+βF9+ d10;
F11 = βF7+βF9+ d11;
F12 = βF7+βF10+βF11+d12;

Not only did this model prove to be an exceedingly poor fit of the data, several of the expected causal

pathways were determined to be non-significant. This required rethinking the model somewhat and

specifying a new structural model more in keeping with the results of the CFA measurement model.

The most substantial change relates to the relationship of the family formation pressures factor to the

exogenous variables and to the family formation indicators (family size and sex composition). Women's

empowerment in the first interval is significantly associated with childbearing pressures, with less

empowered women perceiving greater pressures from husband and in-laws. Interestingly, however, the

results indicated that childbearing pressures neither were a result of initial empowerment resources nor

contributed to family formation in terms of either number or sex composition of surviving children.

Another unexpected finding was the lack of any significant relationships between sex composition of

children and the other factors in the conceptual model (particularly initial empowerment and final

empowerment, and number of surviving children).

The revised model is shown below (Fig 3) and its structural equations are as follows.

F7 = -γF1-γF2+γF3+γF4+γF5-γF6+ d7;
F9 = -γF1+γF5+γF7+ d9;
F10 = γF3+γF4+γF5+βF7+ d10;
F12 = βF7+βF10+d12;

Figure 3. Structural Model of Women's Empowerment over the Life Course (no direct effect)
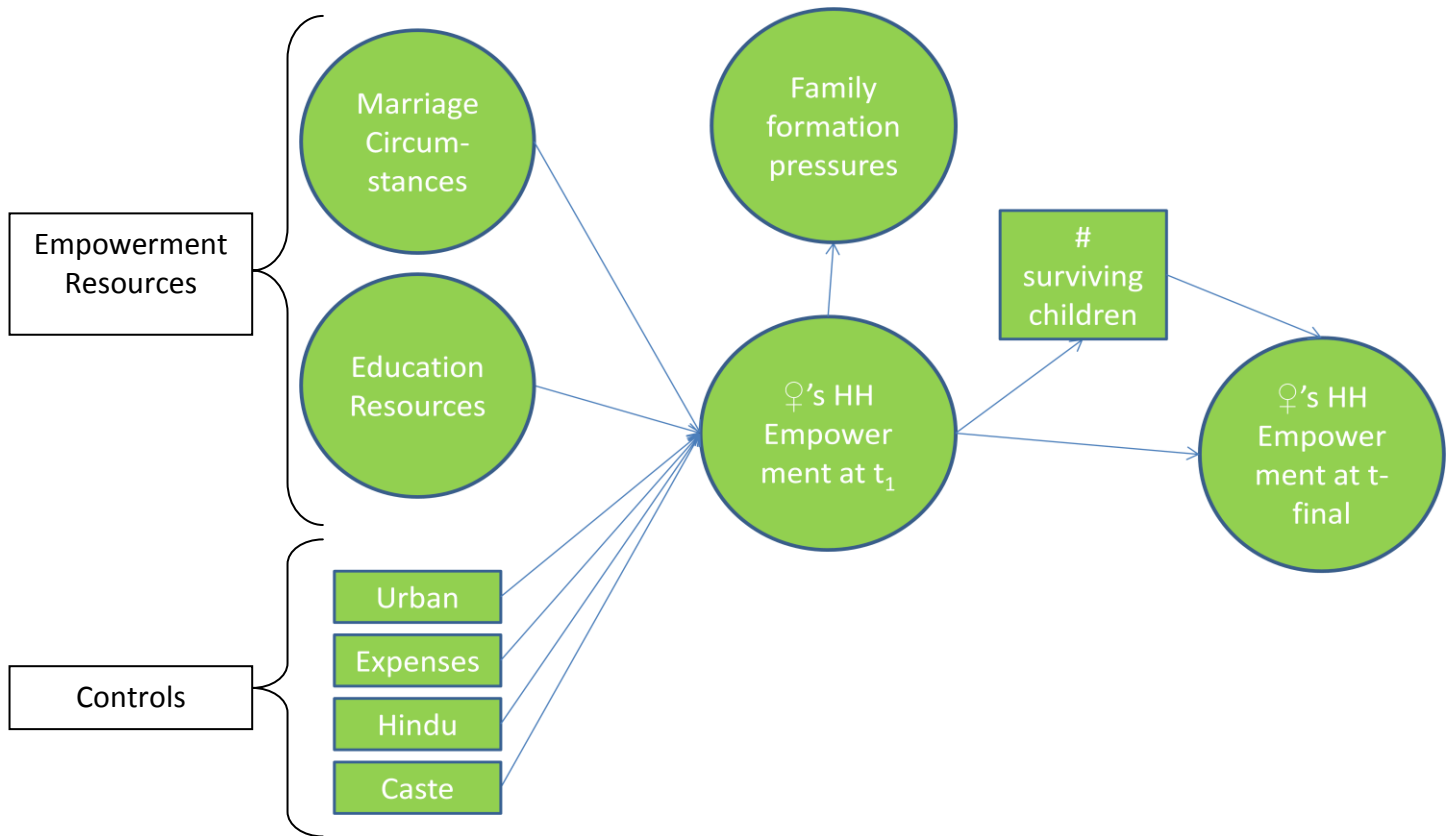
It retains many features of the original conceptual model. Namely, initial empowerment resources (and some controls) lead to women's initial empowerment; initial empowerment influences childbearing pressures, family size, and later empowerment; and later empowerment is affected by both initial empowerment and completed family size. Stated otherwise, initial empowerment has both a direct effect and indirect effect (through family size) on final empowerment. Additionally, several control variables directly influence family size, independent of initial empowerment.

Fit measures indicate this model fits the data reasonably well. The difference between the model observed and model implied, as described by the standardized residual matrix, is not large, though perhaps could be smaller. There is an average standardized residual of .0424. The χ^2 is 713.43 with 216 degrees of freedom used. The relevant fit measures are above .9 (Normed Fit Index=.919, Non-normed Fit Index=.924, Comparative Fit Index=.942) and the Root Mean-Square of Approximation is exactly

.050, the cut-off. An earlier model with no controls influencing family size was a poorer fit. Including

being Hindu, being of general caste, and living in urban areas significantly decreased the χ^2 by 40.85, a

significant improvement in the model.

The results of the model show the following equations:

1. Initial empowerment (F7)= -.437F1 - .031F2 + .007F3 + .049F4 - .168F5 +.113 F6 (F3 Hindu and

   F4 General Caste are not significant).

2. Pressure (F9)=160F7 - .063F1 - .065F5 (F1 marriage circumstances is not significant)

3. Family size (F10)=.428F7 - .684F3 -.179F4-.438F5

4. Final empowerment (F12)= .756F7-.077F10

Do Initial Empowerment Resources Have a Direct Effect on Later Empowerment?

The presence of a direct effect of initial empowerment and control variables on women's later

empowerment was tested with equations thus:

$$F7 = -\gamma F1 - \gamma F2 + \gamma F3 + \gamma F4 + \gamma F5 - \gamma F6 + d7;$$
$$F9 = -\gamma F1 + \gamma F5 + \gamma F7 + d9;$$
$$F10 = \gamma F3 + \gamma F4 + \gamma F5 + \beta F7 + d10;$$
$$F12 = -\gamma F1 - \gamma F2 + \gamma F3 + \gamma F4 + \gamma F5 - \gamma F6 + \beta F7 + \beta F10 + d12;$$

The indirect effects and direct effects models are nested models so we can compare the χ^2 statistic. The

difference in χ^2 is not a significant improvement in the model—it fact it is a significantly poorer fit—and

the results of the equations clearly indicated that parameter estimates for the path coefficients are NOT

significant. Therefore, we can conclude that initial empowerment resources do not have a direct effect on

women's later empowerment, rather their influence is mediated by the intervening factors of initial

empowerment and family size.

Conclusions and Discussion

The analysis presented here demonstrates that women's empowerment does vary over the life course, generally with women shifting to higher levels of empowerment, as measured by physical mobility, spending decision-making, experience of domestic violence and threat of abandonment. Women's initial empowerment is influenced by their initial empowerment resources (and selected socio-demographic controls). Women's empowerment when they have completed childbearing is influenced by earlier levels of empowerment and by their family formation (family size). Women's initial empowerment resources do not significantly affect their later empowerment, but seemingly influence later empowerment only through earlier empowerment.

This study has several limitations that deserve mention. First, several likert-type measures used to reflect several factors have four ordinal categories rather than the preferred five. This is the case with measures of respondents' and spouses' educational attainment, ability to meet household expenses, and physical mobility and spending decision-making.

Second, this analysis made use of fewer demographic events beyond family formation (size and composition) than desired. While alternate and additional measures are available, for example, measures describing the pace of childbearing (time to first birth and spacing between pregnancies), the trade-off is an exceptionally complex model and potential identification problems or other code conditions.

Third, some measures have a modicum of skew even after transformation reduced it substantially. Robust standard errors were calculated to determine significant relationships in the presence of skew. Finally, caution must be exercised as "difficulty meeting household expenses" can NOT be interpreted as a measure of socioeconomic status more generally, as it is not accompanied by additional variables that may better reflect this factor.

This study contributes to a broader literature that seeks to explain the relationship of women's empowerment to fertility and differences in empowerment between age groups or parity groups. It examines first and last pregnancy interval in an attempt to apply a life course perspective. The analysis shows change, and changing effects on women's empowerment at two very distinct time points: the start and end point of women's family formation. However, by using these endpoints, it does not elucidate the way empowerment changes with each successive interval in between first and last. A worthwhile expansion of the model would be to include these multiple intervals: Emp_1, Emp_2, Emp_3…Emp_k and not only the first and last intervals. Additionally, time could be incorporated in a more structured manner using a latent growth model to examine changes of women's initial empowerment resources on the slope of women's empowerment at any given interval.

Two other worthy extensions of this analysis would be to consider a broader set of demographic events that may impact women's empowerment and to explore how women's empowerment in the household interacts with other dimensions of women's empowerment, e.g. women's reproductive agency (ability to use contraception as she likes, avoid unintended pregnancy, or seek abortion); women's economic agency (e.g. participation in the labor force, retention and control over earnings, etc); and community visibility and voice.

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