Extended Abstract for IUSSP Submission
Measurement models of women's autonomy using the 1998/1999 India DHS

John Sandberg

Women's autonomy in less developed areas has been conceptualized as having a number of distinct dimensions including freedom of movement and association, power over economic decision making, and freedom from domestic abuse. Higher levels of autonomy have been hypothesized (and at times been seen empirically) to lower fertility, increase contraceptive adoption and use, and decrease infant and child mortality. From a demographic perspective then, the measurement of women's autonomy has been an important element in explaining (and potentially facilitating) fertility transitions. On a more fundamental level however, women's autonomy is a matter of basic human rights, and its measurement and impact on women's lives deserves empirical attention for that reason alone, regardless of any demographic impact it may have (Mason 2001).

Although the theoretical literature is quite nuanced, the empirical research literature to date however has by and large employed rather unsophisticated models of autonomy constructed from survey measures (largely using additive indexes) specified *a priori* along the dimensions described above. Perhaps at least in part for this reason, this work has yielded mixed results with regards to the impact of women's autonomy measured on the individual level on demographic outcomes. Using data from the 1998/1999 India DHS this research addresses this problem by empirically testing whether this typographical scheme is adequate, and whether the measures used as indicators of each dimension of autonomy are equally important in indicating the underlying concept (as is also often assumed).

Theory: Women's empowerment and autonomy has been hypothesized to play an important part in fertility declines even from the earliest formulations of demographic transition theory (Notestein 1953). It has only been in the last 20 years, however, that concentrated attention has been paid to the status of women relative to men and in society more generally and its relation to fertility. Early work in this period indicated that women's status within families and communities as structured by kinship systems (Dyson and Moore 1983) or patriarchal control over resources (Cain 1982; Caldwell 1976) could be of specific importance in determining fertility. In a seminal piece in the field, Mason emphasized the necessity of a broader multi-dimensional theoretical approach to understanding women's status that accounts for gender inequality through prestige, power and access to resources but also simultaneously the social context under which this inequality is played out (1986). Mason outlines specifically how status may influence fertility through its proximate determinants by structuring the supply of children, the demand for children and fertility regulation and decision making. Empirical work under this framework testing the influence of the status of women has at times found influences on fertility outcomes related to individual levels of autonomy, but these are often inconsistent and weak. The primary influence of autonomy on fertility has been related to the community context of gender inequality (Mason and Smith 1999; Dharmalingam and Morgan 1996; Morgan and Niraula 1995).

Problematic: The principle concern of this paper is the accurate measurement of women's autonomy on the individual level as commonly gathered through demographic survey instruments. This stems from the fact that despite a recognized need to understand both individual variance in the experience of autonomy and the context in which gender inequality is situated in relation to fertility, in the empirical research literature autonomy has been operationalized (measured) on the individual level in a potentially less than optimal manner. This raises the possibility that the results of analyses of the effects on individual level autonomy on demographic outcomes such as fertility are to some degree potentially flawed. More importantly, inadequate measurement may obscure our understanding of empirically tractable aspects of individual level autonomy more generally.

Commonly in the demographic literature, autonomy is conceptualized using separate constructs for dimensions of autonomy such as freedom of movement and association, power over economic decision making, freedom from domestic abuse. Each of these constructs is then measured empirically through either discrete survey questions, or simple additive indexes composed of such measures (Mason and Smith 1999; Jejeebhoy and Sathar 2001; Dharmalingam and Morgan 1996; Morgan et. al 2002). For example, it is conventional to measure autonomy in economic decision making by adding the number of responses indicating autonomy to questions such as "Who decides about purchase of major good for household?", "Who decides about working outside the home?" "Who of these people has greatest say about purchase of major good?" Freedom of movement is also often measured using such an indexes, adding negative responses to questions concerning whether women have to ask their husbands for permission to go to the market, to the health center, or to a neighbor, friend or relative's home. Sometimes dimensions of autonomy are also measured with single survey items. Spousal abuse has been simply operationalized with the answer to the question 'does your spouse beat you?" (Mason and Smith 1999).

There are two principle problems with such measurement strategies. The first of these is simply that there is no large-scale empirical evidence as to what degree the theoretical dimensions of autonomy represented by freedom of movement, economic decision making and the freedom from spousal abuse are empirically valid or distinct from each other. There has been no research, for example, indicating the degree to which, freedom of women to go to the market and freedom of women to visit their families represents the same thing- a general dimension of autonomy labeled freedom of movement - or whether they might occupy distinct dimensions of autonomy which may have separate, differential impacts on demographic outcomes. Neither has their been any empirical evidence for another example, that some aspects of freedom of movement and freedom from spousal abuse actually occupy distinct dimensions of autonomy having separate effects on demographic outcomes.

The second problem is that we have no information concerning the relative impact of different manifest variables (survey questions) in revealing the underlying, or latent constructs that compose the dimensions of autonomy. Returning to a previous example, looking at the measurement of a concept such as freedom of movement, when we use an additive index of a number of survey questions we make an untested assumption that each carries equal weight in indicating the underlying concept. Freedom to come and go to the market however, might be a stronger (or weaker) indicator of the latent construct of freedom of movement than the freedom to go to, say, ones parent's house.

Hypotheses:: The first analysis in the paper tests standard operationalizations of the dimensions of autonomy as represented in the demographic research literature (with specific attention to those employed by Mason and Smith 1999) for empirical validity compared to other potential operationalizations. Secondly where these operational constructs are found to be inadequate, measurement models of the dimensionality and scale of autonomy that exhibit a better fit to existing empirical data are identified. The first hypothesis tested here is :

H1: Women's autonomy as measured through conventional demographic survey instruments is not composed of distinct, separate dimensions empirically related to freedom of movement and association, power over economic decision making, and freedom from domestic abuse.

Possible scenarios that constitute evidence in support of this hypothesis include a situation where is women's autonomy is a one-dimensional construct entailing elements of all of these, where two of these three dimensions may be actually considered the same, or where a dimensional arrangement is revealed in the data other than that of the conventional typology described above. A more restrictive subsidiary hypothesis to this, corresponding to the second measurement critique discussed above follows:

2

H1a: Variables indicating the various dimensions of the latent construct of women's autonomy will not have an equal relationship with those latent constructs.

Simply put, this hypothesis tests the assumption that an additive index of variables indicating a particular latent dimension of autonomy will adequately measure that dimension. Evidence in support of the hypothesis above will be found if the contribution of each measure or manifest variable to a particular dimension of the latent construct of women's autonomy is not equal.

Methodology: Data To test these hypotheses, as noted above, I use survey data collected concerning potential elements of autonomy from the 1998/1999 India Demographic and Health Survey (DHS). The India DHS is a nationally representative sample of 90,303 women aged 15-49. In addition to economic and demographic characteristics traditionally collected in the DHS, this survey collected a wide variety of data concerning women's autonomy and the status of women. This data includes detailed information from questions concerning women's decision making power over household economics, fertility, and childcare, childrearing, freedom of movement (outside the home and to such places as the market, community center, to visit friends or to a religious site) and fear and experience of spousal abuse. All of these elements will be used to construct latent measures of autonomy and to test hypotheses above.

Latent Class Modeling The exploration of dimensions of the latent construct(s) of autonomy that are manifest in survey data can be done empirically in a number of ways. Since the key variables representing autonomy are categorical however, techniques such as standard factor analytic models which assume interval scaling are not appropriate (Maddala 1983). For this research, latent class analyses, a variety of loglinear latent structure modeling, will be used. These models assume that categorical manifest variables are generated by an underlying discrete latent, or unobserved variable, and are described in depth in a number of sources (Hagenaars 1990, 1993; Heinen, 1996). These models allow for the testing of different dimensional typologies of latent constructs indicated by the same manifest variables (in this case survey measures) for fit to observed data, and for the scoring of the influence of each manifest variable as revealed through the latent construct(s). Thus, these are appropriate models for testing the dimensionality and relative influence of manifest variables related to women's autonomy as described in hypotheses above.