Evaluating the Measurement Reliabilities of Developmental Idealism Measures

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October 2, 2011

Abstract

This paper investigates the measurement properties of empirical measures of developmental idealism. Developmental idealism is a set of beliefs and values stating that modern societies and families are better than traditional ones, that modern families facilitate modern societies, and that modern societies foster modern families. Previous research has demonstrated that developmental idealism is widespread internationally, but provides little evidence about whether beliefs concerning developmental idealism can be measured reliably at the individual level. We estimate levels of reliability of such measures using multiple conceptualizations of the factor structure underlying the empirical observations. We estimate measurement reliabilities using survey data collected in 2007 and 2008 from Argentina, China, and Egypt. The data indicate that when we have family items that are measuring very similar underlying constructs, the measurement reliabilities are very high. These results provide evidence that the constructs of developmental idealism can be measured with a high degree of reliability.

Evaluating the Measurement Reliabilities of Developmental Idealism Measures

Introduction

In this paper we investigate the measurement properties of a battery of empirical measures of developmental idealism. We examine the extent to which beliefs concerning developmental idealism, which we define below, can be measured reliably at the individual level. We estimate levels of reliability of such measures using multiple conceptualizations of the factor structure underlying the empirical observations. We estimate measurement reliabilities using data from settings in three widely disparate countries: Argentina, China, and Egypt.

Our research is motivated by a large and impressive literature describing the international spread and increasing influence of a world culture (Krucken and Drori 2009; Meyer et al 1997; Thomas et al 1987). This world culture endorses individualism, freedom, equality, education, certain family forms, development, and human rights. It has helped to generate many societal changes around the world, including increases in education and the homogenization of school curriculums (Baker and Letendre 2005; Benavot et al 1991; Chabbott 2003; Frank and Meyer 2007). It has been an important force spreading support for human rights (Cole 2005; Elliott 2007; Koo and Ramirez 2009; Meyer et al 2010; Tsutsui and Wotipka 2004; Wotipka and Tsutsui 2008), encouraging family planning and population control (Barrett and Frank 1999; Thornton 2001, 2005), spreading support for gender equality (Berkovitch 1999), eliminating female circumcision (Boyle 2002), changing laws concerning sexual behavior (Frank et al forthcoming), and changing marriage and gender relations (Thornton 2001, 2005). Although the world culture literature has not systematically documented the influence of world culture on individuals, it has documented world culture's effects on laws, governmental policies and programs, nongovernmental organizations, and school programs and textbooks.

Ethnographic research has shown that the ideas of modernization and development, important elements of world culture, have been spread widely to individuals and been incorporated into the cultures of people living in many places. Such documentation has been done in various places in Subsaharan Africa, New Guinea, the Middle East, China, Nepal, and India (Caldwell et al 1988; Amin 1989; Dahl and Rabo 1992; Deeb 2006; Ferguson

1999; Liechty 2003; Osella and Osella 2006; Pigg 1992; Blaut 1993; Wang 1999; Ahearn 2001; Abu-Lughod 1998; Yount et al 2010).

A new body of research using survey methods has shown that certain elements of world culture described as developmental idealism have permeated to the lives of ordinary people in everyday life in many places. This survey evidence indicates that ordinary people in many places around the world understand the basic ideas of development or modernization, understand developmental hierarchies, and do so similarly to the conceptualizations of the United Nations (Binstock and Thornton 2007; Melegh et al 2010; Thornton et al 2008, 2010a, 2011). Many ordinary people in everyday life also believe that development is a cause and consequence of many other aspects of life, including freedom, equality, family attributes, and demographic characteristics (Binstock and Thornton 2007; Mitchell 2009; Thornton et al 2008, forthcoming). This literature argues that the worldwide dissemination of these beliefs is an important force for many social changes. It also suggests that variability in such beliefs at the individual level has important implications for individual and family decisionmaking and behavior.

A small literature is also emerging to document that measures of developmental idealism have reliability and validity. Survey respondents are able to answer questions straightforwardly and distinguish between questions worded in different directions (Thornton et al 2010b). Latent class analysis reveals that people in Nepal can be divided reliably into three groups—strong, medium, and weak--according to their beliefs about development and its relationships to family attributes (Mitchell 2009). Another paper (Yang and Thornton 2011) using data from Taiwanese students demonstrates that variability in views about country development can be measured reliably, in fact, with reliability levels very similar to a wide range of frequently -utilized measures of other ideational attributes.

However, the available research has not yet systematically investigated the reliabilities of developmental idealism measures from general populations in diverse settings. We do not know the extent to which developmental idealism can be reliably measured at the individual level. That is, we do not know if there are meaningful differences among individuals or if such individual differences can be measured reliably. And, if they can be measured

reliably, what are their reliability levels? Filling this gap in our knowledge is important because without reliable measures at the individual level, we cannot investigate how developmental idealism correlates with other individual factors, influences them, or is influenced by them.

This paper is designed to fill this gap by using confirmatory factor analysis to investigate the measurement properties of a set of developmental idealism measures ascertained in Argentina in 2008, China in 2007, and Egypt in 2008. Representative samples of Argentinians, Chinese, and Egyptians were asked in survey interviews whether they believed that certain family attributes were associated with development. We investigate the levels of measurement reliability in these survey items. Our estimates of measurement reliability are ascertained using multiple conceptualizations of the measurement model.

Our paper proceeds with a discussion of developmental idealism and its theoretical importance. We then discuss our research settings in Argentina, China, and Egypt. Then, we discuss, our data, the different measurement models used, and our analytical methods. We then discuss our results and end with a conclusion.

Developmental Idealism

We begin our discussion with the developmental paradigm which forms the foundation for developmental idealism. The developmental paradigm can be traced back to ancient Greece and Rome, followed through centuries of Christian theology, through the Enlightenment, and through much social thought of the 19th and 20th centuries. This developmental paradigm posits a common trajectory of development, picturing all societies progressing through the same developmental stages (Harris 1968; Mandelbaum 1971; Nisbet 1975/1969). The rapidity of development was believed to vary, resulting in different societies being at different stages of development at the same time. Societies believed to be low in development were labeled undeveloped or traditional, and societies thought to be developed were labeled modern or advanced. It was generally believed that the societies of northwest Europe

and its migrant diasporas were the most modern, and the rest of the world's countries were distributed at various inferior levels (Thornton 2001, 2005; Carniero 1973; Harris 1968).

Northwest Europe in the 18th and 19th centuries had many attributes that varied from those in most other settings. These scholars labeled many of the attributes of northwest Europe as modern or developed, and the opposite attributes elsewhere as traditional or undeveloped. Industrial and urban societies with extensive education, technology, health, and wealth were called modern or developed, while societies at the other end of the continuum were labeled traditional or underdeveloped. The following aspects of family life associated with many societies outside northwest Europe were labeled traditional: little individualism, extensive family solidarity, high parental control over adolescent children, marriages arranged by parents, young ages at marriage, polygamy, extensive gender inequality, unplanned and high fertility, and large extended households. The following dimensions associated with northwest Europe were labeled modern or advanced: great individualism, little family solidarity, low control of parents over adolescent children, marriages arranged by couples through courtship, older ages at marriage, monogamy, gender equality, planned and low fertility, and smaller and more nuclear (or stem) households. Scholars of the era also believed that societal changes along the continuum from undeveloped to modern would produce familial modernity and that the movement away from traditional families to modern ones would foster the formation of modern societies. These approaches and conclusions have been very influential in much social thought for centuries (Thornton 2005).

The ideas and conclusions from this modernization and development framework are the foundation for a set of new cultural models or schemas that Thornton has labeled developmental idealism, which provides policy makers and people in everyday life new goals to strive for and new methods to use in achieving those goals (Thornton 2001, 2005). Most importantly, developmental idealism provides values and beliefs that suggest that modern societies and modern families, as defined above, are good and should be sought after. It also states that modern families and modern societies are causally connected in reciprocal relationships. This gives policy makers and ordinary people

guidance about how to achieve societal development and about the family changes that will occur as a result of societal development.

It is important to note that over the 20th century in northwest Europe and its diasporas, low divorce gave way to high divorce, and relatively low levels of nonmarital sex, nonmarital cohabitation, and nonmarital childbearing gave way to relatively high levels of each of these behaviors. Consequently, low levels of divorce and low levels of premarital sex, cohabitation, and childbearing became associated with traditionality, and high levels of divorce, and high rates of premarital sex, cohabitation, and childbearing became associated with development and modernity. Despite the fact that most family items defined as modern were also judged to be good, high levels of divorce, nonmarital sex, nonmarital cohabitation, and nonmarital childbearing have received widespread condemnation and opposition.

Many elements of the developmental paradigm and developmental idealism have been heavily criticized during recent decades in many sectors of academia (Mandelbaum 1971; Césaire 1972; Nisbet 1969; Tilly 1984; Wallerstein 1991; Böröcz 2000; Chakrabarty 2000). The criticisms include the fact that the developmental paradigm is teleological and that the assumptions of directional and uniform change cannot be sustained. Despite these academic criticisms, many ideas associated with development and developmental idealism continue to be exceptionally powerful in academia, within governments and non-governmental organizations, including the United Nations, the World Bank, and the International Monetary Fund (Drori and Krücken 2009; Latham 2000; Meyer et al. 1997; Nisbet 1980). In addition, as noted earlier, both quantitative and qualitative studies have documented the existence and influence of developmental ideas among lay people in many settings, including Argentina, China, Subsaharan Africa, India, Nepal, the Middle East, and New Guinea.

Of course, the world's people have had their own cultural models and schema for a very long time. Often, these beliefs and values conflict with developmental idealism and other aspects of world culture. Consequently, the introduction of developmental idealism in a society is usually not followed by simple adoption, but more often is

resisted and modified. As a result, the pathways of change and continuity frequently vary from population to population. Nevertheless, the spread of developmental idealism has affected many dimensions of marriage and family around the world. In many places, there has been resistance which slowed change, and the resisters have succeeded in keeping many dimensions of local culture, but in almost every place there have been changes, often dramatic, with hybridization being common.

In this paper we focus on the measurement reliabilities of one particular dimension of developmental idealism: the perceived correlation between development and various family behaviors and structures associated in the literature with modernity. In our discussion above, we argued that developmental idealism posits that development would change various aspects of family structure and that certain family changes would foster development. In our analyses here we implicitly ask people to ignore whether development causes family or family causes development and focus only on whether certain family elements are correlated with development—and in which direction.

Data and Measures

The countries included in this study cover a geographical diversity ranging from Argentina in South America, to Egypt in North Africa, and to China in East Asia. The countries represent a wide range of social and economic circumstances, including life expectancy, fertility levels, educational achievements, and religion. We use data collected in each of the countries through face-to-face interviews. Data collections were conducted in 2007 and 2008.

Our data from Argentina were collected in a survey designed to represent adult residents (ages 18 and older) of urban agglomerates of 500,000 people or more. Such urban areas represent about 60 percent of Argentina's population1.

1 The sample in Argentina was drawn using a multi-stage procedure with urban agglomerates and clusters within agglomerates being randomly selected. Households were chosen through a random walk to find whether an individual residing in the household fits a quota of gender and age previously locally established.

Our data from China were collected in a survey designed to represent adults (ages 17 and older) living in the province of Gansu. Gansu is located in West-central China, and is a low-income part of the country, with a majority Han population, but also with a significant Muslim minority2.

Our data from Egypt were collected in a survey designed to represent women and the husbands of the married women in two Governorates: Qaliubia Governorate, which is north of Cairo, and Fayoum Governorate which is south of Cairo. We selected these districts in order to draw from both Upper (Southern) and Lower (Northern) Egypt and to have a diversity of respondents by rural-urban residence, ethnicity, and religious group. Our sample represents women aged 18-54, plus the husbands of the married women.

The questions we used in our analyses come from a module that asks respondents whether certain family attributes are more common in developed countries or more common in not developed countries. The family attributes asked about come from a wide range of attributes including age at marriage, arranged marriages, fertility, unmarried childbearing, cohabitation, intergenerational coresidence, divorce, family unity, respect for elders and gender equality. The wording of the survey questions for the twelve items included in the analyses are listed in Table 1. As noted in the table, a third option "about the same" was not read aloud, but was accepted if the respondent volunteered that answer. For the analysis these three categories were collapsed into two categories, one that indicates the response in agreement with developmental models, which is marked in parentheses in Table 1; it was coded "1" for the analyses. The other response in addition to those cases that volunteered an "about the same" answered were collapsed in the other category, and were coded "0".

Construct Conceptualization and Measurement Reliability

We begin our conceptualization with the understanding that the scholarly and policy literature has generally linked together each of the twelve items in Table 1 with the traditional-modern continuum. As discussed

2 The sample was selected using a multi-stage procedure, with random selection at all levels.

earlier, it associates high age at marriage, self-choice marriage, low fertility, unmarried childbearing, premarital sex, cohabitation, intergenerational residential independence, divorce, lack of family unity, lack of elderly respect, and gender equality with modernity. In this way the scholarly literature links modernity-traditionality with each of these family attributes. That is, there is a general developmental idealism construct that links together each of the twelve items with modernity in the same way. This conceptualization suggests that the items should fit together in a similar way and therefore form a general underlying construct or factor.

This conceptualization is shown in Figure 1 where we have one underlying developmental idealism construct (η_1) and twelve empirical measures (y_1 through y_{12}). Each of the twelve empirical measures is assumed to be linked to the underlying construct, or latent variable, with its own causal coefficient (λ_1 through λ_{12}). Each observed variable also has its own error of measurement (ε_1 through ε_{12}). The reliabilities for the observed measures in this framework are the square of the standardized lambda coefficients linking the latent and observed variables.

There are several reasons why the twelve items may not form a general underlying construct or factor. First, the ideas of developmental idealism have been disseminated around the world in different ways and in different contexts. We indicated earlier that the connections between development and divorce, premarital sex, cohabitation, and non-marital childbearing were conceptualized later than the other family attributes. These four items may therefore form an underlying construct separately from the other eight. Also, some of the twelve family attributes have been connected to modernity in different ways in different settings. For example, Latin America has had a long history of experience with consensual unions which result in such attributes as premarital sex, cohabitation, and non-marital childbearing being viewed differently in Argentina than in other parts of the world (cites). Also, a century ago divorce was relatively high in Egypt and was seen by many to be associated with the lack of modernity rather than with modernity (cite). Such country-specific considerations may make the twelve empirical measures fit together differently than the overall uniform model would suggest. Some might be seen to be related to development in the ways described in the scholarly literature, while others are not seen to be connected in this uniform way.

Second, each of the family attributes included in our surveys has its own specific meaning, and differences in meaning may result in them being seen as differentially related to modernity. For example, it is likely that individual survey respondents see low fertility and gender equality as different things and thus potentially related in different ways to modernity. Similarly, high age at marriage and divorce are likely seen as different things and possibly related to development in different ways. On the other hand, such items as unmarried childbearing, premarital sex, and cohabitation are conceptually more similar and therefore may be seen as more similarly connected to development.

As we show in Figure 2, the realization of these considerations in the worldviews of individuals would produce multiple underlying constructs rather than the single underlying construct shown in Figure 1. Figure 2 shows three underlying constructs, or latent variables ($\eta_{1,}$ $\eta_{2,}$, and η_3), but there might be four, five, or more. The Figure 2 conceptualization is just one example of a three-factor model in that it shows four measures for each of the underlying factors, again with error terms for each of the observed measures. Also, we show correlations among the three latent factors (c_{12}, $c_{13,}$ and c_{23}), with these correlations possibly ranging from minus one through zero to positive one. Of course, the number of variables for each underlying factor could vary.

We can use the assumptions of classical test reliability to estimate the models in both Figure 1 and Figure 2 because we have multiple indicators of each of the underlying constructs. If the assumption of the observed variables all being measures of the same underlying construct is met, the estimates of the lambdas (λ) and the reliabilities are unbiased.

However, if the observed variables in Figure 1 do not all measure exactly the same underlying construct, the use of the conceptualization in Figure 1would produce underestimates of the lambdas and the reliabilities. Similarly, if each of the observed variables linked to a specific underlying factor in Figure 2 do not measure exactly the same underlying construct, the use of the Figure 2 conceptualization would produce underestimates of the lambdas and reliabilities.

This can be seen in Figure 3, where we conceptualize each observed indicator of developmental idealism to be reflecting its own underlying construct or latent variable. As in Figure 2, in Figure 3 we allow each of the underlying constructs to be correlated with a value of "c", but because of the large number of such correlations, we do not show them explicitly in the figure. As before, these correlations can range from minus one through zero to positive one. Of course, if all the correlations among the underlying constructs in Figure 3 are equal to one, Figure 3 would reduce to Figure 1. Similarly, if the correlations among the first four underlying factors in Figure 3 are equal to one, then the first four underlying factors in Figure 3 would reduce to the first underlying factor in Figure 2.

Unfortunately, without making very strong assumptions, it is impossible to estimate Figure 3. The reason is that we have many more unknowns than knowns and the model is under identified. As a result, we are often required to use the model of Figure 1 or Figure 2 even when we suspect that Figure 3 is true and the correlations between factors in Figure 3 are less than one.

One important consequence of using Figure 1 or Figure 2 when Figure 3 is actually true and the correlation between the underlying factors is less than one is an underestimation of the lambdas and reliabilities. Furthermore, the underestimation bias increases as the correlations between factors in Figure 3 decreases. This is true because if Figure 3 is correct, the correlation (r_{12}) between two observed variables (y_1 and y_2) is the product of λ_1 times λ_2 times c_{12}. The product of the two lambdas would, thus, equal r_{12} divided by c_{12}. However, if we estimate the reliabilities of λ_1 and λ_2 through Figure 1 or Figure 2, the product of the two lambdas would simply equal r_{12} rather than r_{12} divided by c_{12}. Any departure of c_{12} from one would thus bias the estimated lambdas downward. For example, if c_{12} in the real world equals .5, the product of the two lambdas (λ_1 times λ_2) estimated from Figure 1 or Figure 2 would be one-half as large as it was in the real world.

We approached these issues of conceptualization by first examining the matrix of tetrachoric correlations among the twelve family measures. This correlation matrix is provided in Appendix A. We then did a series

of exploratory factor analyses consisting of one-, two-, three-, and four-factor models. Our three-factor exploratory factor analysis is summarized in Appendix B. The one factor model is consistent with Figure 1, while the two-, three-, and four-factor models are consistent with Figure 2.

The correlation matrix and exploratory factor analyses revealed that a single underlying factor incorporating all twelve measures into one underlying construct and a two factor model did not provide good fits to the data. As we discuss below, these analyses suggested that we needed to identify either three or four underlying factors. We also estimated a confirmatory factor model with three factors and a confirmatory factor model with four factors, as in Figure 2. Table 2 provides standardized factor loadings (lambdas) and correlations among the factors for the two models. We also report in Table 2 several goodness of fit measures, including Chi-square, Cronbach's alpha, Root Mean Square Error of Approximation (RMSEA), and Comparative Fit Index (CFI). We follow the suggestions of Hu and Bentler (1999) and aim for RMSEA values at .06 or below and CFI values at .95 or higher. We estimated the confirmatory factor models using methods available in the statistical modelling program MPlus. The conceptual and methodological issues discussed above and the biasing effects of estimating Figure 2 models when the true model may be closer to Figure 3 will be kept in mind as we interpret our results.

Results

Univariate Distributions

We begin our discussion of results with the univariate distributions of the twelve variables. As shown in Table 1, substantial majorities of respondents in each of the three countries gave the developmental answer for each of the following six family attributes: married children living with their parents or in-laws; females marrying before the age of eighteen; elderly parents living with adult children; arranged marriages; couples having many children; and equality between women and men. That is, substantial majorities associated intergenerational coresidence, young age at marriage, arranged marriage, and high fertility with the lack of development and associated gender equality with development. The percentages giving such responses ranged from 67 to 88 percent in Argentina, from 60 to 92 percent

in China, and from 86 to 97 percent in Egypt. These results suggest that beliefs in the association of these family attributes with development have been widely disseminated, at least in these three countries.

In both China and Egypt, substantial majorities (between 78 and 88 percent) associated unmarried childbearing, unmarried cohabitation, and premarital sex with development. This means that in these two countries the separation of sex, cohabitation, and childbearing from marriage is widely seen to be associated with development.

However, Argentineans do not fully share this belief, not seeing these things necessarily associated with being developed. Although further research will be needed to document the reason for this, we expect that it is related to the fact that Latin America has had a long history of experience with sex, consensual unions, and childbearing outside marriage being a component of the Latin American and Caribbean family system. In Argentina, although with a comparatively lower prevalence than in the rest of the region, these behaviors were mainly confined to impoverished sectors, and in the poorest regions of the country. More recently consensual unions and unmarried childbearing have become common across all social strata, as it is also the case in Latin America, and these family behaviors have been characterized as modern practices, particularly among the most prosperous population, and comparable to what has been observed in wealthy western countries. In this context, it is likely that some respondents have contrasting views on how they place sex, unmarried cohabitation, and unmarried childbearing as more common in developed or not developed countries, being also for an important proportion a practice equally likely.

For three of the family attributes, family unity and loyalty, respect for elders, and marriages breaking up, there was little consensus across the countries on the distribution of these items between developed and non-developed places. For each of these three items, Argentineans mostly gave answers opposite of the developmental model. Chinese respondents also gave non-developmental model responses for the items about family unity and loyalty and respect for elders. They seem to associate these two family attributes with development, contrary to the

developmental model. In accordance with the developmental model, Chinese respondents associate marital instability with development.

Egyptians, on the other hand, associate family unity and loyalty and respect for elders with not being developed, consistent with the developmental model. Yet, contrary to the developmental model, they associate marital instability with the lack of development. We expect that the Egyptian views on marital instability is associated with the fact that Egypt historically had high divorce rates and Western countries had low divorce rates, which caused Egyptians to associate together divorce and the lack of development (cite). This provides evidence that the global development model can be interpreted differently within local contexts.

Measurement Reliabilities

We now shift to the main goal of our paper, the reliability of our measures reflecting individual beliefs of individual Argentinians, Chinese, and Egyptians in the relationship between development and family structures. Our main research question is how reliable are the measures in capturing the beliefs of individuals and in differentiating among individuals in the beliefs held.

We begin with our various indicators of the goodness of fit for each of the two models in each of the three countries. Our first observation is that the chi-square values for both models in each of the three countries are quite large relative to their degrees of freedom. This means that we must reject the hypothesis that our models adequately fit the raw data within sampling error.

However, it is very difficult with large samples and simple models to estimate a parsimonious model that fits the data within the bounds of sampling error. To take this fact into account, we turn to the CFI and RMSEA measures. For both China and Egypt, the CFI measures for both the three and four factor models are approximately .98 and the RMSEA measures are in the neighborhood of .05, representing high levels of statistical fit. The CFI measures are somewhat lower for Argentina--.85 and .88—and the Argentina RMSEA measures are somewhat

higher--.06. Thus, even though the fits in Argentina are not as good as in China and Egypt, they are still very good. These results suggest that even though the two models do not entirely represent the empirical data, overall they provide excellent fits.

We now shift to the factor loadings (lambdas) associated with the various models. We first note that many of the factor loadings are similar across countries. However, formal tests of significance reject the null hypothesis that the loadings are identical in the three countries.

We first consider loadings for Factor 1 consisting of five family variables: MDCHDLVP; YNGMARR; ELDLIVARR; ARRMARR; and HIFERTLTY. One observation is that the loadings for the variables in this factor are very similar in the three and four factor models. In addition, the loadings for this factor are relatively high in each of the countries. However, the loadings tend to be the highest in Egypt, ranging from .61 to .86, second highest in China, ranging from .46 to .78, and lowest in Argentina, ranging from .07 to .78. The loadings for ARRMARR and HIFERTLTY are especially low in Argentina, suggesting that either the reliabilities for these two dimensions are low or these two dimensions are measuring a different underlying construct, an issue that we will return to below.

Factor 2 only has two family dimensions within it: FAMTIES and ELDRESPT. The loadings for these two variables are relatively high, and, as with Factor 1, are similar in the three and four factor models. In each of the three countries, the loadings range from .53 to .85, depending on country and item. Unlike in Factor 1, there does not seem to be consistent differences across countries in the magnitude of the loadings.

Factor 3 in our three-factor model contains five family dimensions: BBNOMAR; COHAB; PSEX; MARDISSO; and GENEQUAL. Here we note especially high factor loadings for three of these family dimensions: BBNOMAR; COHAB; and PSEX. They range from .72 to .99 across the three items within the three countries. However, the loadings for MARDISSO and GENEQUAL are much lower, being in the .26 to .5 range across the three countries.

The relatively high loadings for three variables and the relatively low loadings for two variables in Factor 3 motivated us to separate Factor 3 into two factors in a four-factor model. We see from Table 2 that the loadings for the BBNOMAR, COHAB, and PSEX items in the four-factor model are very similar to the loadings for these items in the three-factor model.

The loadings for our new Factor 4 range from a low of .34 to a high of .74, depending on the item and country. These are moderate loadings, indicating either that the items are not measured with a high degree of reliability or that they are measuring different underlying constructs.

In order to evaluate the sensitivity of our factor loadings to different specifications of the conceptual model, we estimated several additional three and four factor models. We adjusted the models to take into account the modification indices showing where the biggest departures from the models in Table 2 occurred. These modification indices pointed towards estimating three factor models that allowed GENEQUAL and ELDRESPT to be linked with more than one of the three factors. However, allowing these variables to be indicators of more than one underlying factor only marginally improved the fit of the models and affected, as expected, the factor loadings for these two variables. However, the loadings for the other ten variables were hardly affected at all with these alternative specifications for GENEQUAL and ELDRESPT. This suggests that our factor loadings are robust to different specifications of the overall model.

Of particular importance for our evaluation of reliability are the especially high factor loadings for BBNOMAR, COHAB, and PSEX in Factor 3 of both our three and four factor models. The loadings of .72 to .99 indicate reliabilities of at least .5 for all variables and approaching one in some instances. Such high reliabilities indicate that these three items are both measuring the same underlying construct and are doing so with great reliability. That is, these three items do, in fact, fit the assumptions of Figure 2 and they do so very reliably.

These results suggest that respondents in Argentina, China, and Egypt all see nonmarital childbearing, nonmarital cohabitation, and premarital sex as very similar phenomenon. They also see them to be

correlated with development in very similar ways. Such findings are not entirely surprising as each of the three items is directly connected to marriage and its role in regulating sexual expression and childbearing. Furthermore, when we have such closely related family attributes, our measurement of their perceived association with development is very reliable.

The high loadings for our three items in Factor 3 have important implications for our interpretations of the more moderate loadings in Factors 1, 2, and 4 (in our four-factor model). The more moderate loadings for the family items we assigned to the other three factors are either the result of them having more moderate reliabilities or that they are measuring somewhat different things, or both. Our data do not allow us to adjudicate this issue empirically.

However, we believe that there are excellent conceptual reasons to expect that the variables in Factor 1 are not measuring the same underlying construct. That is, the conceptual model for Factor 1 may be closer to Figure 3 than to Figure 2. That is, MDCHDLVP, YNGMARR, ELDLIVARR, ARRMARR, and HIFERTLTY are conceptually distinct and are not reflecting the same underlying construct. The fact that they are not measuring exactly the same thing contributes to low loadings of these variables in Factor 1. Similar reasoning applies to the variables in Factor 2 and the variables in Factor 4.

It is also useful to note that we see no reason to expect that the three family dimensions in Factor 3—BBNOMAR, COHAB, and PSEX—should be measured any more reliably than the family dimensions in the other factors. These three variables provide an estimate of reliabilities of items measuring the same underlying construct, and we expect that these reliability estimates would apply to the other family dimensions we measured, if we were able to utilize measures that fit closer to Figure 2 than to Figure 3. Furthermore, even with the violation of the assumptions of Figure 2, we still obtain reasonably high factor loadings for the variables in Factors 1, 2, and 4. In sum, our data provide considerable evidence of a high degree of measurement reliability for the various items.

Cronbachs alpha provides another indicator of measurement reliability—one that is commonly used in the literature. Our estimates for the four factors in our four-factor model are provided in the bottom panel of Table 2. As expected, even with only three variables, the Cronbach alphas for Factor 3 are very high, ranging from .84 to .96 across the three countries. The Cronbach alphas for the other three factors, as expected, given our earlier results, range from a low of .40 for Factor 4 in Egypt to a high of .85 for Factor 1 in Egypt.

Finally, we address the magnitudes of the correlations among the various factors that we estimated. Focusing on the estimates of correlations in our four-factor model, we find almost uniformly high inter-factor correlations in Egypt. With the exception of the relatively low correlation between Factor 2 and 4 (which is .27), we find inter-factor correlations ranging from .61 to .85. This means that in Egypt, people who see one set of family items being associated with development also see the other family items to be associated with development. This suggests that in Egypt there is a strong crystallization of ideas about what family attributes go with development.

Inter-factor correlations in China are lower than in Egypt, but are still substantial. With the exception of the correlation between Factor 2 and Factor 4 (which is .14), the inter-factor correlations range from .20 to .63. This suggests that in China there is also substantial crystallization of beliefs about family correlates of development, although this is not as high as in Egypt. Such crystallization is particularly strong in China between Factor 1 and Factor 2 and between Factor 1 and Factor 4. Apparently, those Chinese who see the elements of Factor 1 (living arrangements, marriage, and fertility) to be associated with development also see the elements of Factor 2 (family ties and elder respect) and the elements of Factor 4 (gender equality and marital dissolution) to be associated with development. Of course, since our three factor model included gender equality and marital dissolution in Factor 3, the separation of these two factors into Factor 4 in the four factor model results in a very high correlation between Factors 3 and 4 (a high correlation that is also evident in the other two countries).

The inter-factor correlations in Argentina are, in general, somewhat lower than those in China and Egypt. Nevertheless, Factor 4 is moderately correlated with Factors 1 and 2, as well as Factor 3. This indicates that

although the two elements of Factor 4 may be represented as a separate factor, they are moderately correlated with the other factors.

The fact that in each country there are moderate to high correlations among the four factors suggest that there is a moderate to high degree of crystallization of views about the relationship between family attributes and development. This degree of uniformity appears to be highest in Egypt, lowest in Argentina, and with China in the middle.

We summarize this overall level of crystallization or uniformity by calculating Cronbach's alpha for a one-factor model consisting of all twelve family items. Such twelve-item, one-factor Cronbach's alphas are respectively .67, .78, and .88 for Argentina, China, and Egypt. The Cronbach's alpha for Egypt is especially high, again indicating that individual Egyptians who see one family attribute to be related in the expected way to development also see other family attributes to be related to development in the expected way. This also indicates that researchers wanting to have an overall indicator of an individual Egyptian's view of the relationship between family attributes and development could use the one-factor model as an overall indicator. A similar approach could be used in the other two countries, but with a bit less clarity in China and with somewhat less clarity in Argentina.

Conclusions

The primary motivating question for this paper was: how reliably can the differences between individuals on beliefs concerning the association between development and family attributes be measured? The data indicate that when we have family items that are measuring the same underlying construct, the measurement reliabilities are very high. This is demonstrated by the fact that the measurement reliabilities for the family items BBNOMAR, COHAB, and PSEX in our Factor 3 are very high. The factor loadings for these three variables range from .73 to .87 in Argentina, from .77 to .99 in China, and from .90 to .97 in Egypt(four-factor model). Similarly, the Cronbach's alphas for the factor combining these variables range from .84 to .96 (four-factor model). Thus, these three items are not only measuring the same thing, but are doing so very reliably.

The loadings and Cronbach's alphas for the other factors identified are also substantial, but smaller than for Factor 3. Although we cannot know whether these lower loadings for these other factors are the results of lower reliabilities or the various indicators measuring different underlying constructs, we believe that the latter explanation is much more likely. The variables in Factors 1, 2, and 4 are much less similar to each other than are the items in Factor 3. This makes a very strong presumption that they are not measuring exactly the same underlying construct. Furthermore, we see no reason why the items in Factors 1, 2, and 4 should be measured with less reliability than the items in Factor 3. Our tentative conclusion, therefore, is that the items in Factors 1, 2, and 4 are very reliably measured, but are each measuring somewhat different things. Of course, additional research will be needed to confirm or disconfirm this tentative conclusion. Such research is of high priority.

Nevertheless, even though the items in Factors 1, 2, and 4 are not measuring exactly the same thing, and therefore violate the classic measurement model of Figure 2, the loadings for most of the variables in these factors are relatively high. This also suggests a substantial amount of reliability for these family items. It also means that these factors form a coherent set of measures for differentiating between the beliefs of different people. This conclusion is also supported by the fact that the Cronbach's alphas for these three factors range from .40 to .85. If we had additional items with similar patterns of inter-item correlations, these alphas would be larger.

Our research also has implications beyond the estimation of measurement reliabilities. We have identified sets of varying numbers of items that fit together into four fairly coherent factors. We have already commented on how the three items in Factor 3 (in the four-factor model) make a very coherent and reliable factor or scale. The five items in Factor 1 and the two items in Factor 2 also make fairly coherent scales. Factor 1 is especially coherent for China and Egypt. The two items in Factor 4 make a less coherent set.

Of course, we could combine all twelve of the indicators into a single factor or scale. Such a scale draws from across all family aspects and incorporates the various dimensions into one scale. As we noted earlier, such a

scale would have Cronbach alphas of .67, .78, and .88 in the three countries respectively. Such a twelve-item, one factor model would thus be quite successful in capturing a wide range of evaluations of family associations with development.

One could also justify the one factor model consisting of all twelve measures on the grounds that the twelve measures provide a wide range of developmental idealism items. They indicate the extent to which individuals view the connection between family attributes and modernity in similar ways to scholars and other elites. This approach could be justified even if the twelve-item scale had much lower Cronbach alphas because they indicate overall closeness to the scholarly and elite viewpoint. This would be similar to the well-used index of activities of daily living (ADL) that counts the number of things that a person can (or cannot) do, such as bathing, dressing, toileting, eating, grooming, walking, and climbing stairs (Buurman et al 2011). It would also be similar to the construction of a global measure of perceived stress that combines people's evaluations of the degree to which various life circumstances might or might not be producing stress (Cohen, Kamarck, and Mermelstein 1983). In each of these two latter instances, the individual items may be correlated, but that is not an essential element of the measurement structure.

We close with the observation that our research has been limited to settings within the three countries of Argentina, China, and Egypt. It cannot be directly extrapolated to the entire populations of any of these three countries. However, we believe that our results across settings within these three countries suggest that developmental idealism can be measured reliably in multiple places. Such results suggest the usefulness of additional research in national studies in Argentina, China, and Egypt as well as new research in many other places around the world.

References

Abu-Lughod, Lila. 1998. *The marriage of feminism and Islamism in Egypt: Selective repudiation as a dynamic of postcolonial cultural policies*. Edited by Lila Abu-Lughod of *Remaking women: Feminism and modernity in the Middle East*. Princeton, NJ: Princeton University Press.

Adhikari, D. P. 1998. *The History of Nepalese Nationalism*. Nayabazar, Kathmandu: Jeewan Printing Support Press.

Ahearn, Laura M. 2001. *Invitations to Love: Literacy, Love Letters, and Social Change in Nepal*. Ann Arbor, MI: The University of Michigan Press.

Amin, Samir. 1989. Eurocentrism. New York: Monthly Review Press.

Anderson, Michael. 1986/1980. *Approaches to the History of the Western Family.* London: Macmillan Publishers, Ltd.

Axinn, William G. and Jennifer S. Barber. 2001. Mass education and fertility transition, *American Sociological Review* 66(4): 481-505.

Axinn, William G. and Scott T. Yabiku. 2001. Social change, the social organization of families, and fertility limitation, *American Journal of Sociology* 106(5): 1219-1261.

Baker, Lee D. 1998. *From Savage to Negro: Anthropology and the Construction of Race, 1896-1954.* Berkeley: University of California Press.

Baker, David P., and Gerald K. Letendre. 2005. *National Differences, Global Similarities: World Culture and the Future of Schooling*. Stanford, CA: Stanford University Press.

Barber, Jennifer S., and William G. Axinn. 2004. New ideas and fertility limitation: The role of mass media. *Journal of Marriage and Family*. 66:1180-1200.

Barber, Jennifer S., Ganesh Shivakoti, William G. Axinn, and Kishor Gajurel. 1997.

Sampling strategies for rural settings: A detailed example from the Chitwan Valley Family Study, Nepal, *Nepal Population Journal* 6(5): 193-203.

Barrett, Deborah and David John Frank. 1999. Population control for national development: From world discourse to national policies, in J. Boli and G.M. Thomas (eds.), *Constructing World Culture: International Nongovernmental Organizations Since 1875.* Stanford, CA: Stanford University Press.

Benavot, Aaron, Yun-Kyung Cha, David Kamens, John W. Meyer, and Suk-Ying Wong. 1991. Knowledge for the masses: World models and national curricula, 1920-1986, *American Sociological Review* 56(1): 85-00.

Berkovitch, Nitza. 1999. The emergence and transformation of the international women's movement, in J. Boli and G.M. Thomas (eds.), *Constructing World Culture: International Nongovernmental Organizations Since 1875*. Stanford, CA: Stanford University Press, pp. 100-126.

Beutel, Ann M., and William G. Axinn. 2002.Gender, social change, and educational attainment. *Economic Development and Cultural Change* 51(1):109-134.

Blaut, James M. 1993. The Colonizer's Model of the World: Geographical Diffusionism and Eurocentric History. New York: The Guilford Press.

Binstock, Georgina and Arland Thornton. 2007. Knowledge and use of developmental thinking about societies and families among teenagers in Argentina, *Demografía* 50(5): 75-104.

Bista, Dor B. 1991. *Development and Fatalism: Nepal's Struggle for Modernization*. Calcutta: Orient Longman Limited.

Bock, Kenneth Elliott. 1956. *The Acceptance of Histories: Toward a Perspective for Social Science*. Berkeley: University of California Press.

Böröcz, József. 2000. The Fox and the Raven: The European Union and Hungary renegotiate the margins of 'Europe'. *Comparative Studies in Society and History* 42: 847-75.

Boyle, Elizabeth Heger. 2002. *Female Genital Cutting: Cultural Conflict in the Global Community*. Baltimore: The Johns Hopkins University Press.

Bromley, Patricia, John W. Meyer, and Francisco O. Ramirez. 2009. Student-centeredness in social science textbooks, 1970-2008: A cross-national study. Unpublished paper. School of Education / Department of Sociology, Stanford University.

Bumpass, Larry L. 1990. What's happening to the family? Interactions between demographic and institutional change, *Demography* 27(4): 483-498.

Burguière, Andrè, Christiane Klapisch-Zuber, Martine Segalen, and Françoise Zonabend, (eds.), 1996/1986. *A History of the Family*. 2 vols. Cambridge, MA: Harvard University Press.

Caldwell, John C. 1982. *Theory of Fertility Decline*. London: Academic Press.

Caldwell, John C., P. H. Reddy, and Pat Caldwell. 1988. *The Causes of Demographic Change: Experimental Research in South India*. Madison, WI: The University of Wisconsin Press.

Césaire, A. 1972. *Discourse on colonialism.* New York.

Chabbott, Collette. 2003. *Constructing Education for Development: International Organizations and Education for All.* New York: Routledge Falmer.

Chakrabarty, Dipesh, ed. 2000. *Provincializing Europe, Postcolonial Thought and Historical Difference*. Princeton: Princeton University Press.

Cherlin, Andrew J. 1992. *Marriage, Divorce, Remarriage*. Cambridge, MA: Harvard University Press.

Chesnais, Jean-Claude. 1992. *The Demographic Transition: Stages, Patterns, and Economic Implications*. Oxford: Oxford University Press.

Cleland, John and Christopher Wilson. 1987. Demand theories of the fertility transition: An iconoclastic view, *Population Studies* 41(1): 5-30.

Coale, Ansley J. and Susan Cott Watkins (eds.), 1986. *The Decline of Fertility in Europe*. Princeton: Princeton University Press.

Cole, Wade M. 2005. Sovereignty relinquished? Explaining commitment to the international human rights covenants, 1966-1999, *American Sociological Review* 70(3): 472-495.

Dahl, Gudrun and Annika Rabo (eds, 1992. *Kam-Ap or Take-Off: Local Notions of Development*. Stockholm: Stockholm Studies in Social Anthropology.

D'Andrade, Roy G. 1984. *Cultural meaning systems*. Cambridge: Cambridge University Press.

Deeb, Lara, ed. 2006. *An Enchanted Modern: Gender and Public Piety in Shi'i Lebanon.* Princeton, NJ: Princeton University Press.

Drori, Gili S., John W. Meyer, Francisco O. Ramirez, and Evan Schofer. 2003. *Science in the Modern World Polity: Institutionalization and Globalization.* Stanford, CA: Stanford University Press.

Elliott, Michael A. 2007. Human rights and the triumph of the individual in world culture, *Cultural Sociology* 1: 343-363.

Escobar, Arturo. 1995. *Encountering development: The making and unmaking of the third world*. Princeton, NJ: Princeton University Press.

Frank, David John, Bayliss Camp, and Steven A. Boutcher. 2010. Worldwide trends in the criminal regulation of sex, 1945-2005, *American Sociological Review* 75(6): 867-893.

Frank, David John, and John W. Meyer. 2007. University expansion and the knowledge society, *Theory and Society* 36: 287-311.

Fricke, Thomas E. 1988. Marriage, household cycles, and the maintenance of equality among the Tamang of North Central Nepal, *Contributions to Nepalese Studies* 15(1): 1-18.

Fricke, Tom. 1997. Culture theory and population process: Toward a thicker demography, in D.I. Kertzer and T. Fricke (eds.), *Anthropological Demography: Toward a New Synthesis.* Chicago: University of Chicago Press, pp. 248-277.

Ferguson, James, ed. 1999. *Expectations of Modernity: Myths and Meanings of Urban Life on the Zambian Copper Belt*. Berkeley, CA: University of California Press.

Geertz, Clifford. 1973. *The Interpretation of Cultures*. New York: Basic Books.

Ghimire, Dirgha J. and William G. Axinn. 2006. Family Change in Nepal: Evidence from Western Chitwan. *Contributions to Nepalese Studies* 33(2): 177-201.

Ghimire, Dirgha J., William G. Axinn, Scott T. Yabiku, and Arland Thornton. 2006. Social change, premarital non-family experiences and spouse choice in an arranged marriage society, *American Journal of Sociology* 111(4): 1181-1218.

Guneratne, Upali Arjun 1994. The tharus of Chitwan: Ethnicity, class and the state in Nepal. Unpublished Ph. D. dissertation. The University of Chicago, Chicago, Illinois.

Guneratne, Arjun 1998. Modernization, the state and the construction of Tharu identity in Nepal, *The Journal of Asian Studies* 57(93): 749-773.

Guneratne, Arjun. 2001. Shaping the tourist's gaze: Representing ethnic differences in a Nepali village, *The Journal of the Royal Anthropological Institute* 7(3): 527-543.

Hajnal, John. 1965. European marriage patterns in perspective, in D.V. Glass and D.E.C. Eversley (eds.), *Population in History.* Chicago: Aldine Publishing Company, pp. 101-143.

Harris, Marvin. 1968. *The Rise of Anthropological Theory*. New York: Thomas Y. Crowell Company.

Hodgen, Margaret T. 1964. *Early Anthropology in the Sixteenth and Seventeenth Centuries*. Philadelphia: University of Pennsylvania Press.

Jennings, Francis. 1975. *The Invasion of America: Indians, Colonialism, and the Cant of Conquest*. Chapel Hill: University of North Carolina Press.

Johnson-Hanks, Jennifer, Christine Bachrach, S. Philip Morgan, and Hans-Peter Kohler. Forthcoming. *Understanding Family Change and Variation: Structure, Conjuncture, and Action.* New York: Springer.

Justice, Judith. 1986. *Politics, Plans, and People: Culture and Health Development in Nepal.* University of California press.

Koo, Jeong-Woo and Francisco O. Ramirez. 2009. National incorporation of global human rights: Worldwide expansion of national human rights institutions, 1966 – 2004, *Social Forces* 87(3): 1321-1354.

Krücken, Georg and Gili S. Drori. 2009. *World Society: The Writings of John W. Meyer.* Oxford: Oxford University Press.

Laslett, Peter. 1977. *Family Life and Illicit Love in Earlier Generations*. Cambridge: Cambridge University Press.

Latham, Michael E. 2000. *Modernization As Ideology*. Chapel Hill, NC: University of North Carolina Press.

Le Play, Frederic. 1982/1855-1881. *Frederic Le Play on Family, Work and Social Change.* Chicago: The University of Chicago Press.

Lesthaeghe, Ron. 2010. The unfolding story of the second demographic transition, *Population and Development Review* 36(2): 211-251.

Lesthaeghe, Ron, and K. Neels. 2002. From the first to the second demographic transition: An interpretation of the spatial continuity of demographic innovation in France, Belgium, and Switzerland, *European Journal of Population* 18(4): 225-260.

Liechty, Mark. 2003. *Suitably modern: making middle-class culture in a new consumer society.* Princeton: Princeton University Press.

Luke, Nancy, and Susan Cotts Watkins. 2002. Reactions of developing-country elites to international population policy. *Population and Development Review*. 28(4):707-733.92.

Macfarlane, Alan. 1986. *Marriage and Love in England: Modes of Reproduction, 1300-1840.* Oxford: Basil Blackford.

Mandelbaum, Maurice. 1971. *History, Man, and Reason: A Study in Nineteenth-Century Thought*. Baltimore: The John Hopkins Press.

Mason, Karen Oppenheim. 1997. Explaining fertility transitions, *Demography* 34(4): 443-454.

Malthus, Thomas Robert. 1986/1803. An essay on the principle of population, in E.A. Wrigley and D. Souden (eds.), *The Works of Thomas Robert Malthus.* London: William Pickering.

Melegh, Attila, Arland Thornton, Dimiter Philipov, and Linda Young-DeMarco. 2010. Mapping developmental hierarchies in Europe: A Bulgarian perspective. Working Papers on Population, Family and Welfare. No. 13. Demographic Research Institute, Hungarian Central Statistical Office, Budapest.

Meyer, John W., John Boli, George M. Thomas, and Francisco O. Ramirez. 1997. World society and the nation-state, *American Journal of Sociology* 103(1): 144-181.

Meyer, John W., Patricia Bromley, and Francisco O. Ramirez. 2010. Human rights in social science textbooks: Cross-national analyses, 1970 – 2008, *Sociology of Education* 83: 111-134.

Millar, John. 1979/1779. *The Origin of the Distinction of Ranks*. Edited by William C. Lehmann. New York: Arno.

Nisbet, Robert A. 1969. *Social Change and History*. New York: Oxford University Press.

Nisbet, Robert. 1980. *History of the Idea of Progress*. New York: Basic Books.

Osella, Filippo, and Caroline Osella. 2006. Once upon a time in the West: Stories of migration and modernity from Kerala, South India, *Journal of the Royal Anthropological Institute* 12(3): 569-588.1-513.

Pigg, Stacy L. 1992. Inventing social categories through place: Social representations and development in Nepal, *Comparative Studies in Society and History* 34(3): 49

Pigg, Stacy L. 1996. The Credible and the Credulous: The question of "villagers' beliefs" in Nepal, *Cultural Anthropology* 11(2): 160-201.

Reher, David S. 1998. Family ties in western Europe: Persistent contrasts, *Population and Development Review* 24(2): 203-234.

Regmi, R.R. 1999. *Dimensions of Nepali Society and Culture*. SAAN Research Institute, Gairidhara, Kathmandu.

Sanderson, Stephen K. 1990. *Social Evolutionism: A Critical History*. Oxford: Basil Blackwell.

Sewell, William H. 1992. A theory of structure: Duality, agency, and transformation. *American Journal of Sociology* 98 (1): 1-29.

Shrestha, Nanda R. 1989. Frontier settlement and landlessness among Himalayan migrants in Nepal Tarai, *Annals of the Association of American Geographers* 79,3: 370-389.

Swidler Ann. 2001. *Talk of love: how culture matters.* Chicago: University of Chicago Press.

Swidler, Ann. 1986. Culture in action: Symbols and strategies. *American Sociological Review* 51 (2): 273-286.

Szreter, Simon. 1993. The idea of demographic transition and the study of fertility change, *Population and Development Review* 19(4): 659-702.

Thomas, George M., John W. Meyer, Francisco O. Ramirez, and John Boli. 1987. *Institutional Structure: Constituting State, Society, and the Individual*. Newberry Park: Sage Publications.

Thornton, Arland. 2001. The developmental paradigm, reading history sideways, and family change, *Demography* 38(4): 449-465.

Thornton, Arland. 2005. *Reading History Sideways: The Fallacy and Enduring Impact of the Developmental Paradigm on Family Life.* Chicago: University of Chicago Press.

Thornton, Arland, Georgina Binstock, and Dirgha Ghimire. 2008. International Dissemination of Ideas About Development and Family Change, in Rukmalie Jayakody, Arland Thornton, and William G. Axinn (eds.) *International family change: Ideational Perspectives*. Mahwah, NJ: Lawrence Erlbaum Assoc.

Thornton, A., Axinn, W. G., Fricke, T., and Alwin, D. F. 2001. Values and Beliefs in the Lives of Children and Families, in A. Thornton (ed.) *The Well-Being of Children and Families: Research and Data Needs*. Ann Arbor: University of Michigan Press, 215-243.

Thornton, Arland, Georgina Binstock, Mohammad Jalal Abbasi-Shavazi, Dirgha Ghimire, Arjan Gjonca, Attila Melegh, Colter Mitchell, Mansoor Moaddel, Yu Xie, Linda Young-DeMarco, and Kathryn Yount. 2011. "Knowledge and Beliefs of Ordinary People about Developmental Hierarchies: The viewpoints of ordinary people in thirteen countries." Presented at the American Sociological Association, Las Vegas, NV.

Thornton, Arland, Mansoor Moaddel, Kathryn Yount, Linda Young-DeMarco, and Jill Daugherty. 2010a. Lay views of the development-morality nexus in the U.S. and Middle East: Adherence to modernization, world-system, and clash-of-civilization perspectives, Paper presented at the annual meeting of the American Sociological Association, Atlanta, Georgia, August 14-17.

Thornton, Arland, Dirgha J. Ghimire, and Colter Mitchell. 2010b. The Measurement and Prevalence of Knowledge of Schema about Families and Development. Unpublished paper, University of Michigan.

Thornton, Arland, Georgina Binstock, Kathryn Yount, Mohammad Jalal Abbasi-Shavazi, Dirgha Ghimire, and Yu Xie. Forthcoming. International fertility change: New data and insights from the developmental idealism framework, *Demography.*

Tilly, Charles. 1984. *Big Structuring, Large Processes, Huge Comparisons*. New York: Russell Sage Foundation.

Todorova, Maria. 2006. *Balkan Family Structure and the European Pattern: Demographic Developments in Ottoman Bulgaria.* Budapest, Hungary: Central European University Press.

Tsutsui, Kiyoteru and Christine Min Wotipka. 2004. Global civil society and the international human rights movement: Citizen participation in human rights international nongovernmental organizations, *Social Forces* 83(2): 587-620.

United Nations. 1948. Universal Declaration of Human Rights. General Assembly Resolution 217 A (III).

United Nations. 1962. Convention on Consent to Marriage, Minimum Age for Marriage and Registration of Marriages. General Assembly Resolution 1763 A (XVII).

United Nations. 1979. Convention on the Elimination of All Forms of Discrimination Against Women. General Assembly Resolution 34/180.

United Nations Development Programme (UNDP). 2001. *Human Development Report 2001: Making Technology Work for Human Development.* New York: Oxford Press.

United Nations Development Programme (UNDP). 2002. *Human Development Report 2002: Deepening Democracy in a Fragmented World.* New York: Oxford Press.

van de Kaa, D.J. 1996. Anchored narratives: The story and findings of half a century of research into the determinants of fertility, *Population Studies* 50(3): 389- 432.

Viazzo, Pier Paolo. 2009. Kin in Europe between continuity and change, Paper presented at workshop on 'The Persistance of the Past' at Rostock, Max Planck Institute for Demographic Research, May 25-27, 2009.

Wall, Richard. 1983. Introduction, in R. Wall, J. Robin, and P. Laslett (eds.), *Family Forms in Historic Europe.* Cambridge: Cambridge University Press, pp. 1-63.

Wallerstein, Immanuel. (1991). "The modern world-system as a civilization." In I. Wallerstein (ed.), *Geopolitics and geoculture. Essays on the changing world-system*. Cambridge: Cambridge University Press.

Wang, Zheng. 1999. *Women in the Chinese Enlightenment: Oral and Textual Histories*. Berkeley, CA: University of California Press.

Westermarck, Edward Alexander. 1894/1891. *The History of Human Marriage*. London: Macmillan Co.

Wotipka, Christine Min and Kiyoteru Tsutsui. 2008. Global human rights and state sovereignty: State ratification of international human rights treaties, 1965-2001. *Sociological Forum* 23(4): 724-754.

Yabiku, Scott T and Sarah Schlabach 2009. "Social Change and the Relationships between Education and Employment." Population Research and Policy Review 28(4): 533-549.

Yang, Li-shou, and Arland Thornton. 2011. Perceptions of Developmental Hierarchies in Taiwan -- Conceptual, Substantive, and Methodological Insights. Unpublished paper, University of Michigan.

Yount, Kathryn M., Arland Thornton, Sohair Mehanna, Shilpa Patel, and Mansoor Moaddel. 2010. Lay Accounts of 'Modern' and 'Traditional' Family in Greater Cairo: A Test of Developmental Models of Family Life. Paper presented at: Symposium on the Globalization of Modernization Theory: Clashes of Modernities and Moralities; June 9-10, 2010, University of Michigan, Ann Arbor.

Figure 1
One Factor Model of Latent and Observed Variables

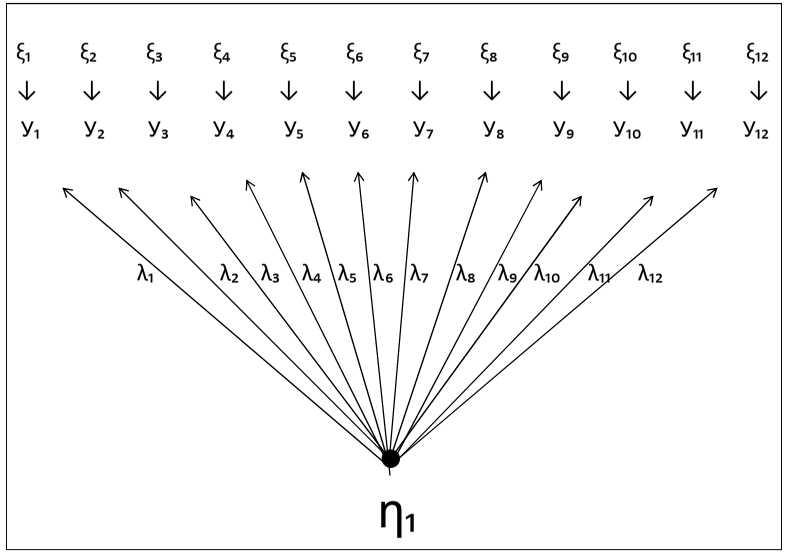

Figure 2
Three Factor Model of Latent and Observed Variables

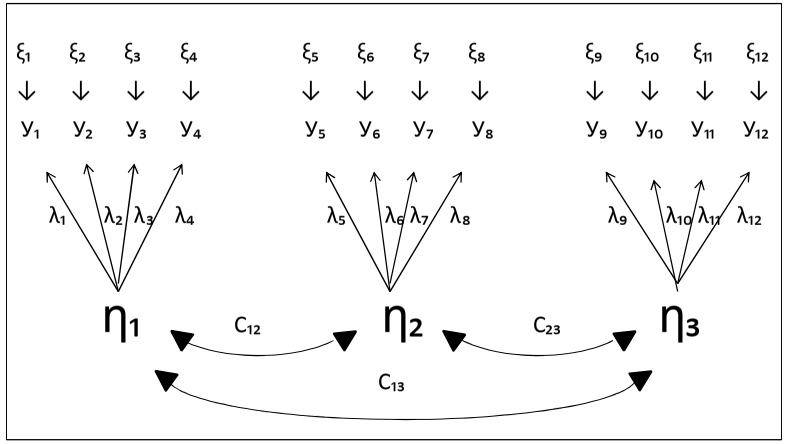

Figure 3
Nine Factor Model of Latent and Observed Variables

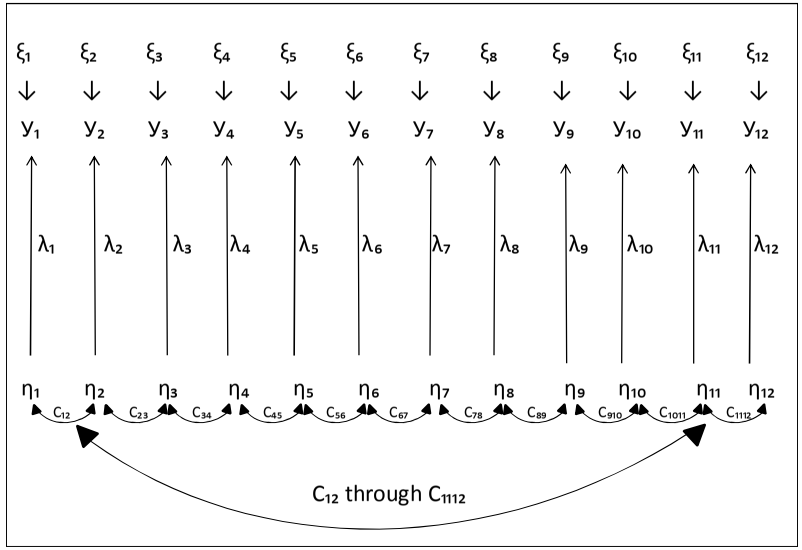

Table 1. Measures for Respondent's Perception of Where Certain Family Attributes are More Common, and Proportion of Respondents Choosing the Developmental Answer, by Country Research Site.

Variable	Question Wording and Coding *In general, is [this] more common in countries that are not developed or more common in countries that are developed?*	Research Sites Argentina N=1003	China N=633	Egypt N=1500
MDCHDLVP	Married children living with their parents or in-laws (***Not Developed)***	0.80	0.65	0.97
YNGMARR	Females marry before the age of eighteen (***Not Developed)***	0.79	0.84	0.95
ELDLIVARR	Elderly parents living with their adult children (***Not Developed)***	0.67	0.60	0.92
ARRMARR	Arranged marriages (***Not Developed)***	0.68	0.92	0.94
HIFERTLTY	Couples having many children (***Not Developed)***	0.88	0.89	0.94
FAMTIES	Family unity and loyalty (***Not Developed)***	0.35	0.27	0.88
ELDRESPT	Respect for elders (***Not Developed)***	0.27	0.36	0.78
BBNOMAR	Babies born to unmarried mothers (***Developed)***	0.23	0.78	0.85
COHAB	Opposite sex couples living together without being married (***Developed)***	0.32	0.85	0.88
PSEX	Premarital sex (***Developed)***	0.23	0.86	0.86
GENEQUAL	Equality between women and men (***Developed)***	0.70	0.87	0.86
MARDISSO	Marriages breaking up (***Developed)***	0.42	0.82	0.41

Note: Responses to these questions were coded dichotomously so that responses indicating agreement with developmental models are shown in parenthesis and were coded "1". Responses indicating disagreement were coded "0". A third option "about the same" was not read aloud, but was accepted if the respondent volunteered that answer, and were coded "0" for our analyses.

Table 2: Confirmatory Factor Analysis Results. Loadings, Factors correlations and Goodness of Fit for Selected Three-Factor and Four-Factor Models. Standarized Coefficients.

	Model 1			Model 2		
	Argentina	China	Egypt	Argentina	China	Egypt
Loadings (λ)						
Factor 1						
MDCHDLVP	0.783	0.779	0.690	0.731	0.775	0.688
YNGMARR	0.526	0.496	0.614	0.561	0.504	0.614
ELDLIVARR	0.626	0.738	0.863	0.628	0.732	0.861
ARRMARR	0.074	0.610	0.797	0.089	0.622	0.798
HIFERTLTY	0.281	0.462	0.676	0.318	0.467	0.678
Factor 2						
FAMTIES	0.534	0.855	0.714	0.580	0.853	0.719
ELDRESPT	0.764	0.590	0.647	0.704	0.591	0.642
Factor 3						
BBNOMAR	0.787	0.762	0.944	0.796	0.767	0.946
COHAB	0.856	0.993	0.969	0.871	0.995	0.970
PSEX	0.725	0.954	0.899	0.734	0.954	0.900
GENEQUAL	0.414	0.300	0.499	--	--	--
MARDISSO	0.473	0.486	0.258	--	--	--
Factor 4						
GENEQUAL	--	--	--	0.641	0.712	0.342
MARDISSO	--	--	--	0.498	0.382	0.736
Factors correlation						
F1 with F2	0.160	0.529	0.853	0.176	0.528	0.852
F1 with F3	0.102	0.247	0.635	0.015	0.202	0.608
F1 with F4	--	--	--	0.385	0.405	0.616
F2 with F3	0.221	0.228	0.705	0.165	0.234	0.731
F2 with F4	--	--	--	0.366	0.141	0.273
F3 with F4	--	--	--	0.669	0.633	0.640
Goodness of Fit						
Chi-sq. value	253.66	150.12	205.69	207.43	137.21	170.14
D.F.	51	51	51	48	48	48
P-value	0.000	0.000	0.000	0.000	0.000	0.000
CFI	0.850	0.975	0.975	0.882	0.977	0.98
RMSEA	0.063	0.055	0.045	0.058	0.054	0.041
Cronbach alpha						
Factor 1	0.539	0.747	0.854	0.539	0.747	0.854
Factor 2	0.581	0.670	0.631	0.581	0.670	0.631
Factor 3	0.777	0.812	0.828	0.840	0.923	0.957
Factor 4	--	--	--	0.484	0.428	0.403

Appendix A. Tetrachoric Correlation Matrix of Perceptions Where Certain Family Attributes are More Common

Argentina

	MDCHDLVP	YNGMARR	ELDLIVARR	ARRMARR	HIFERTLTY	FAMTIES	ELDRESPT	BBNOMAR	COHAB	PSEX	GENEQUAL	MARDISSO
MDCHDLVP												
YNGMARR	0.44											
ELDLIVARR	0.51	0.25										
ARRMARR	0.00	0.12	-0.04									
HIFERTLTY	0.19	0.25	0.14	0.05								
FAMTIES	0.04	0.10	0.17	-0.14	0.13							
ELDRESPT	0.00	0.02	0.09	0.00	0.05	0.41						
BBNOMAR	-0.10	-0.04	0.08	0.28	-0.07	0.00	0.06					
COHAB	0.02	0.01	0.08	0.20	-0.08	0.08	0.17	0.70				
PSEX	-0.05	-0.03	0.07	0.21	-0.17	0.01	0.16	0.57	0.65			
GENEQUAL	0.09	0.15	0.15	0.32	0.04	-0.06	0.01	0.39	0.24	0.28		
MARDISSO	0.04	0.20	0.17	0.06	0.17	0.25	0.24	0.31	0.36	0.30	0.32	

China

	MDCHDLVP	YNGMARR	ELDLIVARR	ARRMARR	HIFERTLTY	FAMTIES	ELDRESPT	BBNOMAR	COHAB	PSEX	GENEQUAL	MARDISSO
MDCHDLVP												
YNGMARR	0.37											
ELDLIVARR	0.62	0.28										
ARRMARR	0.36	0.58	0.21									
HIFERTLTY	0.30	0.27	0.21	0.51								
FAMTIES	0.29	0.20	0.50	0.23	0.08							
ELDRESPT	0.18	-0.05	0.34	0.05	0.12	0.50						
BBNOMAR	0.22	-0.06	0.18	0.11	0.20	0.14	0.31					
COHAB	0.22	0.02	-0.03	0.12	0.11	0.06	0.20	0.75				
PSEX	0.23	0.00	0.02	0.11	0.23	0.14	0.12	0.70	0.95			
GENEQUAL	0.00	0.21	-0.10	0.25	0.20	-0.05	-0.12	0.28	0.28	0.22		
MARDISSO	0.27	0.13	0.16	0.25	0.20	0.12	0.15	0.40	0.40	0.37	0.27	

Egypt

	MDCHDLVP	YNGMARR	ELDLIVARR	ARRMARR	HIFERTLTY	FAMTIES	ELDRESPT	BBNOMAR	COHAB	PSEX	GENEQUAL	MARDISSO
MDCHDLVP												
YNGMARR	0.52											
ELDLIVARR	0.57	0.59										
ARRMARR	0.57	0.43	0.64									
HIFERTLTY	0.51	0.50	0.52	0.55								
FAMTIES	0.58	0.33	0.66	0.56	0.26							
ELDRESPT	0.34	0.14	0.28	0.48	0.19	0.46						
BBNOMAR	0.32	0.35	0.58	0.47	0.45	0.47	0.51					
COHAB	0.27	0.37	0.49	0.42	0.43	0.42	0.54	0.91				
PSEX	0.28	0.30	0.47	0.39	0.44	0.33	0.44	0.85	0.89			
GENEQUAL	0.27	0.31	0.33	0.44	0.45	0.03	0.20	0.41	0.46	0.39		
MARDISSO	0.02	0.07	0.12	0.12	0.05	-0.05	0.16	0.28	0.24	0.24	0.25	

Appendix B. Exploratory Factor Analysis. Loadings and Goodness of Fit of Three-Factor Model. Standardized Coefficients.

	Argentina			China			Egypt		
	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3
Loadings (λ)									
MDCHDLVP	0.804	-0.088	-0.005	0.470	0.452	0.043	0.718	0.021	-0.077
YNGMARR	0.540	-0.012	0.068	0.715	0.000	-0.152	0.766	-0.046	0.205
ELDLIVARR	0.555	0.026	0.167	0.317	0.729	-0.150	0.632	0.277	-0.088
ARRMARR	0.113	0.374	-0.193	0.806	-0.042	-0.009	0.676	0.197	0.004
HIFERTLTY	0.293	-0.124	0.134	0.491	0.031	0.108	0.826	-0.011	0.386
FAMTIES	0.003	-0.176	0.780	0.041	0.658	0.000	0.005	0.679	-0.970
ELDRESPT	-0.044	0.023	0.539	-0.179	0.628	0.157	-0.014	0.601	-0.223
BBNOMAR	-0.010	0.822	0.006	-0.004	0.188	0.731	0.042	0.921	-0.004
COHAB	0.000	0.793	0.162	-0.003	-0.024	1.013	-0.023	0.974	0.046
PSEX	-0.036	0.715	0.090	0.024	0.003	0.938	0.003	0.879	0.099
GENEQUAL	0.259	0.463	-0.081	0.313	-0.276	0.292	0.598	0.062	0.526
MARDISSO	0.178	0.337	0.341	0.242	0.080	0.382	0.062	0.206	0.222
Goodness of Fit									
Chi-square value		81.105			60.267			56.084	
Degrees of freedom		33			33			33	
P-value		0.0000			0.0026			0.0073	
RMSEA		0.038			0.036			0.022	
Eigenvalue		1.510			1.706			1.219	

References

Reference list to be constructed