Global Influences on Malawians' Ideal Family Size Preferences

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Abstract:
Scholars theorize that messages advocating for small family size are promoted worldwide. This paper examines the influence of global messages advocating for small family size on the ideal family size preferences of people in Malawi. It is argued that Malawians are exposed to such messages through education curricula, media programs, urban environments, and foreign aid-funded family planning interventions. Combining surveys with administrative and archival data, I test the influence of these mechanisms of global messaging in Malawi. Education is related to lower preferences in family size, especially exposure to the *Life Skills* and *Social Studies* subjects in the national curriculum. Newspaper and television use, along with urban living, are also associated with smaller preferences. Notably, neither radio use nor the implementation of family planning interventions are associated with smaller family size preferences.

Introduction

In his article based on his Presidential address at the Population Association of America's conference in 2001, Arland Thornton theorized that people around the world have an idealized vision of what family life can and should be like in a "developed" state. He explained that people implicitly assume that "the modern family is good and attainable" (Thornton 2001:454). He continued,

> "By *modern family* I mean the aspects of family identified by generations of earlier scholars as modern, including the existence of many nonfamily institutions, individualism, nuclear households, marriages arranged by mature couples, youthful autonomy, courtship preceding marriage, and a high valuation of women. I also include family planning and low fertility."

Thornton went on to describe how this view of a modern family gained appeal as an explanation for the wealth of northwest Europe and then was actively disseminated elsewhere as a blueprint for development that other societies could follow. As a result, Thornton expected that most publics around the world associated these attributes of the modern family as causal factors in bringing about development, and vice versa. In the years since his talk, Thornton and other scholars have conducted numerous surveys in countries from nearly every region of the world. As hypothesized, their results indicate widespread belief among publics across the globe in the correlation between the posited modern family attributes and development (Abbasi-Shavazi et al. 2012; Allendorf 2013; 2017; Allendorf and Thornton 2015; Lai and Thornton 2015; Thornton et al. 2012a; 2012b; 2014; 2017a; 2017b).

Building on this emerging literature, the purpose of this paper is to theorize and test the influence of several mechanisms by which individuals are exposed to a specific ideal about modern family life: small family size. The analysis is conducted in the context of Malawi, where data availability to test the effects of specific programs designed to spread messages promoting small family size on individuals' family size preferences is unmatched. Additionally, Malawi is of interest because it does not fit the structural conditions some scholars (e.g. Inglehart and Baker 2000) theorize are necessary for individualistic ideals such as preferences for small family size to take root, as Malawi is especially poor and has high fertility and low life expectancy.

The emphasis in this paper on the flow of cultural ideals is a longstanding tradition in demography. While much demographic research today focuses on the influence of socioeconomic factors on individuals' demographic behaviors, several of the main theoretical perspectives in demography are rooted in theories of ideational diffusion. Bachrach (2014) notes how "as economic drivers alone proved insufficient for explaining fertility declines, many demographers began to think about cultural change in terms of the spread of ideas" (p. 6). She cites several giants in demographic research—Caldwell (1976), Freedman (1979), Cleland and Wilson (1987), Coale and Watkins (1986), and Lesthaeghe (1983)—as primary examples of scholars whose demographic theories feature cultural ideals as major centerpieces. Other demographers in recent years also emphasize the importance of accounting for the predictive power of cognitive schemas and their attendant cultural attitudes, beliefs, and values on individuals' actions (e.g. Frye 2012; Johnson-Hanks 2011). Given the centrality of cultural ideals in these theories, they are important outcomes in their own right and there is a need to identify the mechanisms that carry such ideals to individuals in particular locales.

Conceptualization and Theory

Developmental Idealism

As theorized by Thornton (2001; 2005), *developmental idealism* (hereafter, DI) is a collection of ideals regarding social change and "development." Developmental ideals may take *public* and *personal* cultural forms (Lizardo 2017). When they appear as widely circulated global cultural messages, such as scripts and narratives, they operate as elements of public culture. As individual people are exposed to developmental ideals in their public forms, they internalize them in differing degrees, at which point such ideals become a part of individuals' cognitive schemas, or personal culture. DI schemas include reciprocal beliefs about what types of changes in societies and individuals lead to development and how development in turn changes societies and individuals. They also include values about which social attributes are most desirable and elevates certain attitudes as modern and progressive. Notably, neither Thornton nor his colleagues normatively endorse or reject DI schemas, rather the aim of their research is to describe them and track their dissemination and influence (Thornton et al. 2015).

DI has deep historical roots, dating back to northwestern European societies several centuries ago and spreading worldwide since then (Abbattista 2011; Adas 1989; Brantlinger 1985; Brick 2012; Cooper and Packard 1997; Granovetter 1979; Harris 1968; Heyck 2011; Nisbet 1969; Rubiés 2011; Stocking 1968; Swindle 2017; Thomson 2011; Thornton 2001; 2005; Wallerstein 2006). Drawing upon much of the empirical work in the literature on the diffusion of *world culture* as well as other literatures, Thornton and colleagues (2015:290-292) theorize that the ideals that comprise DI mostly originated from international organizations and experts and then were actively disseminated worldwide to individual people in the grassroots of societies through a host of mechanisms, including foreign aid agencies, INGOs and NGOs, religious missionaries, international trade and business, social movement activism, mass education curriculums, media reports, and tourism, among others. They note that many public cultural elements of developmental idealism are so ubiquitous today that many people worldwide generally take them for granted as truths about how the world works (Ferguson 1994; 1999; Pigg 1992; 1996).

Thus far, most empirical research on DI has been primarily based on a cross-national survey research program (Thornton et al. 2010). Scholars find that developmental ideals are widely known by public majorities across a spattering of surveyed countries representing all regions of the world. For example, large majorities say that lower fertility, higher age at first marriage, and gender equality brings higher societal development (e.g. Abbasi-Shavazi et al. 2012; Thornton et al. 2012a; 2014). Even greater majorities from five surveyed nations from the Persian Gulf and eastern Mediterranean say that if their country's level of development increased then they would experience greater levels of personal freedom, democracy, and human rights (Thornton et al. 2017). Scholars have observed small to no differences in knowledge of specific DI propositions across categories of education, age, and socio-economic status (e.g. Dorius 2016; Melegh et al. 2013; 2016; Thornton et al. 2012a; 2012b; 2017).[1] This may be due to the fact that most of the developmental ideals examined through survey research thus far represent some of the oldest and most publically institutionalized cultural elements of DI, like the script that

[1] Allendorf's (2013; 2017; Allendorf and Thornton 2015; Allendorf et al. 2017) recent work on marriage, gender, and caste in Nepal highlights important stratification in DI endorsement across marital status, gender identity, and caste.

reduced fertility leads to development. Individual-level heterogeneity is more likely to be present in measures of individuals' attitudes or preferences than in beliefs about the way the world works, especially among individuals living in places with lower levels of exposure to developmental ideals as manifested in public culture.

In summary, the existing literature on developmental idealism provides ample theoretical and empirical motivation to suggest that global cultural messages can trickle down to individuals, shaping their personal preferences. Of central interest, but largely yet to be articulated in the existing literature, is the identification and testing of precise mechanisms by which individuals in a given locale are exposed to a certain global cultural ideal, such as the value of small family size, and whether they come to internalize this ideal into their personal culture. I now turn my attention to theorizing several (but not all) possible mechanisms by which Malawians are exposed to messages advocating for the developmental ideal of small family size.

Global Messaging about Small Family Size

In his *Essay on Population*, Thomas Malthus (1986[1803]) outlined his advocacy for older age at marriage and, by implication, lower fertility. In the context of the debate over the English Poor Laws and whether to give the poor assistance proportionate to their family size, he stated,

> "In the distribution of our charity, or in any efforts which we may make to better the condition of the lower classes of society… We must on no account do anything which tends directly to encourage marriage; or to remove, in any regular and systematic manner, that inequality of circumstances which ought always to exist between the single man and the man with a family" (p. 289).

Malthus was concerned that by giving the poor additional assistance when they were married (and by implication would have more children to feed), it would encourage rather than discourage fertility, which would in turn contribute to an overall population boom and, eventually, starvation. Malthus' views have been foundational in social and political theory ever since his original articulation. They influenced social scientists during the mid 1900s who were dreadfully afraid of a population surplus and its potential worldwide devastation. They also gave rise to the field of demography and the funding of demographic research by national governments (Hodgson 1991; Merchant 2017; Thornton 2005).

Social scientists have distanced themselves from some of Malthus' claims over the years, especially his argument for moral restraint from sexual activity and his opposition to contraception on the basis that it undermines the impetus of single men to work hard. His claim that small family size is good for development, however, has stuck. Malthus' belief that small family size contributed to development in England was extrapolated as a general law and applied to societies without regard to prior family arrangements or practices (Thornton 2005). This is still the case today, not only among scholars but prominent intragovernmental organizations as well. The first sentence on the *Family Planning* section of the United Nations' Population Fund's (2017) website states, "Access to safe, voluntary family planning is a human right." It appears that low fertility and small family size figure as central developmental ideals. This is the case even though contemporary scholars have since discovered that the historical record upon which Malthus and others have and continue to base their position that small family size causes development was not accurately read or interpolated (Goode 1963; MacFarlane 1978; 1986; Thornton 2005).

Global messages about small family size have been diffused around the world, and legally formalized into population policies, both in the forms of international treaties and national laws. Research shows that most countries have now signed such treaties and created population policies, though their implementation at the national and local levels is somewhat disjointed (Barrett and Tsui 1999; Robinson 2015; Tsui 2001). In general, however, these policies factor into national and local government programs and shape social life on the ground for many people, producing both intended consequences and unintended repercussions (Robinson 2017; Watkins 2000).

Efforts to Disseminate the Value of Small Families in Malawi

The promotion of smaller family sizes in Malawi, is, compared to its neighboring countries, quite recent (Chimbwete et al. 2005). Prior to the country's transition to multi-party democracy in the mid 1990s, President Hastings Kamuzu Banda strongly resisted foreign influence, especially with respect to gender and sexuality. He accepted very little international aid, mandated all United States Peace Corps volunteers leave the country after they were discovered to be promoting contraception, prohibited nearly all INGOs, and strongly limited international trade (Forster 1994; Short 1974; Thornton et al. 2014). Over time and especially after Banda's loss of power, the national government began to sign off on international treaties related to women's rights and create population policies, with a formal policy—with the final edit by a consultant from the International Labour Organisation (Chimbwete et al. 2005)—coming in 2001. Since then, the government's on-the-books policies have been more aligned with developmental ideals about the benefits of small families, contraceptive access and use, and sexual and reproductive rights more broadly.

Despite the longstanding opposition to family planning and limited fertility by Banda and others, survey results from contemporary Malawi show that Malawian citizens are well-informed regarding the posited linkages between family life and development. Thornton, Pierotti, Young-DeMarco, and Watkins (2014) find that the vast majority of Malawian men from their sample of one rural area and one urban area (n = 1,296) said an increase in societal development would lead to less arranged marriages, fewer children, more women married after the age of 18, and greater gender equality, all central elements of DI. Other qualitative studies of contraceptive use by Tavory and Swidler (2009) as well as Chimbiri (2007) show how Malawians re-appropriate condoms to instill them with cultural meanings that make sense in their societal context: The playful bantering between partners of whether to use a condom signals their level of desire for one another, as well as commitment to making the relationship last. Malawians' ability to innovate and modify the meanings of the condom play off of their knowledge of DI. Other studies of Malawians' family size preferences emphasize the importance of daily uncertainty in ordinary life in Malawi given the unstable economy and their dependence on the land and others for material support (Sennott and Yeatman 2012; Trinitapoli and Yeatman 2011).

Given widespread awareness of developmental ideals surrounding various aspects of family life among ordinary people in Malawi, my focus is on elucidating specific mechanisms through which Malawians are exposed to the ideal of small families. Below I outline specific hypotheses about the role of education, media, urban environments, and foreign aid-funded family planning interventions.

Education. In a novel study by Behrman (2015), she demonstrates the effect of education on Malawian women's desired fertility causally by gauging the effects of the Universal Primary Education policy. She finds that education is associated with increased household decision-making, and postulates that this could in turn translate to more control over one's ability to control the number of children one has (and would want to have). Behrman explains that "schooling may directly improve student's knowledge about family planning and reproductive health through sexual education or information about biology, reproduction, and transmission of sexually transmitted infections" (p. 789). She further cites Caldwell (1976; 1980) and explains that,

> "schooling may expose students to new gender and family norms via textbooks, Euro-centric curriculums, exposure to female teachers as role models, and so on (Caldwell 1976, 1980). Caldwell theorized that mass schooling socializes children into a new type of morality that prioritizes the model of the Western nuclear family over the traditional extended family, leading to preference for smaller families" (p. 789).

Behrman's theorization about the role of education curricula in "teaching" students more general scripts about rights and equality dovetails well with the work of Frye (2012). She outlines the importance of education in introducing students to new ideas and new personal identities that favor a liberal conception of oneself as an empowered agent with individual rights (see also Baker 2014; Elliot 2007; Meyer 1977; Meyer and Jepperson 2000). As "enlightened" (Swidler and Watkins 2017) subjects, they are more likely to seek out, learn, and adopt developmental ideals of various types as a way to express their personal identity as a "modern" person.

Within Malawi, small family size messages are also explicitly a part of the more recent *Life Skills* and *Social Studies* subjects in the national curriculum. Though originally conceived as a way to orient students about the dangers of HIV/AIDS (UNICEF 2012), the *Life Skills* textbooks used in Malawi include chapters on family size and the timing of marriage, in addition to contraception during the more senior levels of school (Kadyoma et al. 2012). The government gradually unrolled the *Life Skills* subject matter into the curriculum of various grades during the 2000s, which I show in Figure 1. *Life Skills* began as a non-core subject taught only in the fourth grade of primary school in 2001 to being a testable subject for all grade levels by 2011. The *Social Studies* subject, long a part of Malawi education but reformed in 2001, used a textbook with chapters on "gender and development," "human rights," and "social and ethical values for international life," which refer explicitly to the virtues of small families (Fabiano and Maganga 2002). Thus, I expect that educational achievement, especially when it includes exposure to the *Life Skills* and *Social Studies* subjects, leads Malawians to desire a smaller family size.

Media. Other scholars outline the importance of media consumption as an additional source by which global messages about small family size and family planning may be spread. Englund (2011) observes there is "an important continuity in Malawi public broadcasting: … developmentalism" (p. 40). By "developmentalism," he refers to the messages of DI, including messages about the value of smaller families. Public figureheads such as the President and the Minister of Gender, Children, and Community Development often conduct public press conferences in which they call for family planning and smaller families that are featured prominently in local media. Opinion pieces in local newspapers offer similar messages, such as that penned by a certain Desmond Dudwa Phiri entitled “Our Population Problem.”

> “Who has not heard of congested classrooms and hospitals? If the population were less, the food shortage would have been manageable. Land shortages are being felt all over the country… urban centres are bulging with migrations from rural centres looking for jobs which do not exist… Any student of economics or sociology eventually comes across the name of Thomas Robert Malthus (1766-1834), a Cambridge professor of political economy who originated the science of demography as it is practised today. Malthus noted that a country’s population tends to grow faster than the means of sustaining it. In ordinary language, we would say population grows at a faster rater than food production. …In 1964 when Malawi gained independence, its population was just a little more than four million. It is now 17 million… In developed countries, populations are drastically controlled due to the invention of more efficient methods of birth control such as contraceptive pills, improvement in abortion and sterilization. Besides, the people’s culture favours small families. In developing countries like Malawi, some religious teachings have contributed to undue population growths and sexually transmitted infections because they tell their followers that use of condoms encourages promiscuity. This is fallacious. Malawi must tackle its population growth drastically. Besides persuasion, there should be some penalties against those who go beyond the recommended number of children per family. Free education should be accorded only to two children per family.”

Phiri’s references to Malthus are tightly aligned with international messaging about the benefits of small families. Similar narratives are relayed across radio and television programs run by the national government featuring related fictional and real stories, such as not being able to provide enough food for one’s child.

In my experience, television media varies somewhat from newspaper and radio media in Malawi. The Malawi government does run similar content on television as it does through the newspapers and radio stations, but several other channels appear to be far more popular, when they can be accessed, which are primarily music video stations from South Africa as well as Zambia, Malawi, and other neighboring countries. The content of these videos varies, but a dominant theme is that of the dominant husband who cheats on his wife. The theme of spousal control and patriarchy are pervasive and may drown out some of the global messages advocating for developmental ideals such as individualism, family planning, and gender equality. I therefore anticipate that newspaper and radio use is associated with lower ideal family size preferences, but television use is not.

Urban Environments. Global messages advocating for smaller families are also more prevalent and more important to know in urban settings in Malawi. Urban areas in Malawi (and elsewhere) are more conducive than rural areas to the flow of information; there is greater population density, heterogeneity, and movement, and people often have larger and wider social networks (Bongaarts and Watkins 1996). Swidler and Watkins (2017:78-122; see also Englund 2006) observe that people in both rural and urban areas of Malawi often eagerly attempt to learn foreign ideals, stay up to date on the latest development fads and jargon, and become proficient in foreign languages in order to position and market themselves as potential "brokers" between foreigners and the "helpless villagers" that foreigners seek to "save." However, the pressure to keep up is likely greater in urban areas because the opportunities are more readily apparent (though still very obscure). Foreign aid agencies and large international NGOs have their main offices chiefly in urban areas, especially Lilongwe and Blantyre, as well as their district offices in regional cities such as Liwonde, Ntcheu, and Nkhotakota (Tawfik and Watkins 2007). Accordingly, I anticipate that Malawians living in urban areas are more likely to desire smaller families than those living in rural areas.

Foreign Aid-Funded Family Planning Interventions. A fourth potential mechanism for the dissemination of small family size messaging in Malawi are family planning interventions funded and designed by foreign aid agencies. Interventions conducted in the name of "development" are ubiquitous in Malawi, due in large part to the expansion of foreign and domestic efforts to combat the HIV/AIDS epidemic (Hannan 2012; Morfit 2011). Development practitioners eat, breathe, and sleep DI (Thornton et al. 2015). Most are exceptionally zealous to promote various developmental ideals as universally good, progressive, and desirable, including the ideal of small families (Ferguson 1994; 1999). Their vigor is transferred, with some variations, to the Malawian elites and aspiring elites who work with them, who seek to differentiate themselves as "modern" Malawians (Watkins and Swidler 2013:201).

Some foreign aid interventions have the explicit aim of encouraging family planning. These interventions generally take a few forms. One is that of roadshow campaigns in traveling buses that aim to "spread awareness" about developmental ideals such as human rights and gender equality, but also things like the value of family planning, small family size, and contraceptive use. Another is the provision of sexual and reproductive health materials and services at hospitals, clinics, and other institutions. In either case, narratives about small family size and controlled fertility are diffused, both implicitly through the giving away of condoms and provision of other reproductive services and explicitly through speeches given at campaigns and the ever-ubiquitous "trainings" (Swidler and Watkins 2013; 2017). I expect that funding allocated to family planning interventions conducted nearby an individual's residence has a negative effect on their desired family size.

Data and Methods

I combine three repeated cross-sectional national surveys with temporal data regarding the saturation of anti-IPV scripts within the national education curriculum and district-level, time-varying data on foreign aid funding for family planning interventions focused on family planning. I also incorporate district-level estimates from Malawi census data for additional control variables. The multilevel dataset I construct allows me to test for both fixed and random effects of individual- and district-level predictors on Malawians' ideal family size preferences.

Data

Survey data comes from the 2004, 2010, and 2015-16 Malawi Demographic and Health Surveys (MDHS) (NSO and ICF 2017; NSO and ICF Macro 2011; NSO and OCR Macro 2005). These nationally-representative surveys all feature a two-stage cluster design in which enumeration areas were selected from districts. The 2004 survey is representative across the ten largest districts in Malawi. The 2010 and 2015-16 surveys are representative across all 27 districts.[2] In all survey waves, all women between the ages of 15-49 from selected households were invited to participate. In one third of the selected households, all eligible men ages 15-54 were invited to be interviewed. Probability weights from each survey, with separate weights for women and men, are used.

To construct data regarding the timing of when *Life Skills* and *Social Studies* were taught and became testable subjects in Malawi, I used information from a variety of sources, including reports by: UNICEF's country office (2004:41; 2006:18; 2009:53; see also Kalanda 2010:170), Malawi's Ministry of Education, Science, and Technology (MoEST 2008:11), and researchers at the University of Malawi (Kishindo 2011; Maluwa-Banda 2004:78).

Data for funding allocated to foreign aid-funded development interventions come from the Malawi government's Aid Management Platform (MoFEPD 2017; see also Peratsakis et al. 2012; Tierney et al. 2011). These data feature a wealth of information about aid interventions conducted in Malawi funded through foreign aid. These data list all development interventions in Malawi funded by national foreign aid agencies (e.g. USAID) and intergovernmental organizations (e.g. UN). Interventions are coded by type of activity (e.g. gender, road construction, business development, etcetera) and annual funding amounts, and are grouped by the geographic locations in which they occurred. It is unknown to what extent aid interventions go undocumented in these data, but researchers who created the initial data for Malawi's Aid Management Platform back in 2012 estimated that they has located and included about 80% of all interventions (Peratsakis et al. 2012). Interventions conducted since 2012 are less likely to go undocumented, so that percentage is likely improved today.

For information on various socioeconomic aspects of Malawian society that I use for control variables, I turn to Malawi census data from 1998 and 2008 available from the University of Minnesota Population Center's International Microdata Series (MPC 2015). I interpolate and extrapolate district-level estimates from these micro-level data for each corresponding year of my survey data based on temporal trends in estimates between the two census waves.

Measures

Descriptive statistics for all measures are included in Table 1. My dependent variable for ideal family size is a recoded version of respondent's answer to the prompt: *If you could go back to the time you did not have any children and could choose exactly the number of children to have in your whole life, how many would that be?*[3] I top-code respondents' answers to ten. I also bottom code responses of zero and one to two; I do this because the primary script of small family size diffused across Malawi does not promote not having children, and such a script would be rejected. Furthermore, only 1.5% and 1.1% of respondents select zero and one child as their ideal number, whereas 16.2% choose two children. The mean ideal number of children among all respondents in my merged sample is 3.88.

I use a continuous measure of years of educational achievement. I then estimate the number of years a respondent was likely exposed to either the *Life Skills* or *Social Studies* curricula based on when these curricula began to be taught in schools in Malawi and respondents' educational achievement and age. There is undoubtedly some error in these estimates, as students often take multiple years off of school to work or due to a lack of

[2] There are 28 districts in Malawi, but Likoma district is excluded from the surveys I use. Likoma is a small island in Lake Malawi with a population of less than 11,000.
[3] The prompt for respondents who have no children is slightly simplified.

payments of school fees, and therefore are older than expected based on their grade level. In all modeling strategies I interact education and combined exposure to these two curricula.

I employ dummy variables for at least weekly newspaper, radio, and television use, as well as currently living in an urban location.

Foreign aid data is available at the district level. I take the cumulative amount of foreign aid in the past five years directed at 78 development interventions focused on family planning or sexual and reproductive health, rights, and services. I use data for aid disbursed where possible and fill in with committed aid totals when disbursed data is missing. I next draw upon 1998 and 2008 census data from Malawi (MPC 2015) to interpolate the population of each district at each year between those time points and then extrapolate estimates for each district during each year up until 2016. I then divide the foreign aid measures by the population totals to get time-varying per capita estimates of the amount of cumulative foreign aid funding targeting family planning that was allocated in the past five years to the district in which a respondent currently resides. I then lag these measures by one year to better estimate causal processes of aid affecting individuals' preferences.

I include a control variable for the "demand" for foreign aid funding for family planning interventions because such aid is apt to be directed at certain districts based on their prior fertility estimates. The control variable estimates the mean of the number of children born in each district at the first year in which our data are compiled: 2004. This measure is interacted with my variable for foreign aid for family planning interventions.

Finally, I rely on several additional control variables: ever married, currently in a polygamous relationship, matrilineal (as opposed to patrilineal) ethnicity, gender, age, religious identity, and number of children ever born. All but the final three of these variables are binary. Age and number of children ever born are continuous. Religious identity is categorical with a combined reference category of Muslims, "traditional" religion, other, or none, and three categories for Catholics, Protestants, and all other Christian denominations. I use an control variable gathered from Malawi census data to estimate the percent of women in one's district who work outside their own home or farm (MPC 2015). I also include dummy variables for each survey year.

Methods

I compare results of three equations with the same variables, but with three different modeling strategies. The first strategy is a ordinary least squares regression model with fixed effects, taking into account first-order probability weights provided by the MDHS. The second strategy is a multilevel mixed effects model, in which all predictor variables are set as fixed effects, but the entire model is allowed to vary across districts by adding random effects for districts to the model. This approach also features probability weights at the first and second levels of the model, scaled appropriately via the manual strategy outlined by Rabe-Hesketh and Skrondral (2007). Weights for the district level are simply set to 1. Given the lack of district-level weights provided by the MDHS due to privacy concerns as expressed on their website, this calls into question the validity and usefulness of the weights for multilevel modeling approaches. Thus, the third approach I take is a repeat of the second model, but without any weights. I compare the standard errors across the three models to determine the relative utility of the survey weights and the differential population-average versus district-specific effects of the predictors on respondents' ideal number of children.

Findings and Conclusion

Preliminary findings of the three models performed—fixed effects with survey weights, multilevel mixed effects with survey weights, and multilevel mixed effects with no survey weights—are presented sequentially in Table 2. I have yet to write up these findings, but make a brief summary for the time being. I outline a few possible directions for additional research plans.

Table 2 shows that education and urban living are clearly associated with lower ideal family size, as hypothesized. The negative coefficients for these predictors indicate that for each one unit increase in these factors, respondents ideal family size preferences significantly decreases. This is true across both the population-average (OLS fixed effects) model results and the district-specific (weighted and unweighted random effects) models results, with no major differences in the results between these modeling approaches.

The relationship shown in Table 2 between ideal family size and the three different sources of media is surprising. The lack of a negative effect for radio use is striking, as many researchers have shown the influence of radio programs on fertility and fertility preferences. Further investigation is needed to see if the effects of radio use have diminished over time, ultimately washing out any overall effect. As Malawi's media has democratized since Banda's fall from power and more privately-owned media outlets have emerged during the late 2000s and into the 2010s, the scope of radio content in particular has broadened. Further research is necessary to examine whether the effects of radio use have changed over time.

The results for Social Studies and Life Skills curricula exposure require more explaining. When education is set to a value of zero, such curricula exposure is associated with higher ideal family size preferences. However, it is impossible for respondents to have such curricula exposure without educational achievement, as the former is premised on enrollment. Notably, the interaction reported between such curricula exposure and educational achievement shows that the negative effects of educational achievement on ideal family size are further strengthened with the addition of more exposure to the *Life Skills* and *Social Studies* subjects. This relationship, as captured in the third modeling strategy of an unweighted multilevel random effects model, is presented graphically in Figure 2. Figure 2 depicts the average marginal effects of education at increasing levels of such curricula exposure. The negative effects of education increase with additional exposure to *Life Skills* and *Social Studies.* This provide support for the conclusion that these subjects of the national education curriculum are, at least in part, pushing students toward smaller family size preferences. I note that other researchers have not theorized or empirically tested the influence of these subjects before (but, see Frye 2012). In addition, these education subjects are now taught in many if not most countries across the African continent, as well as many other nations worldwide.

The results for the relationship between family planning aid and family size preferences are in the opposite direction as hypothesized, though they are only significant in the fixed effects model. Their lack of significance in the random effects models is important because, as a district-level predictor, this demonstrates that the results are not robust to district-specific explanations, but only a general population-wide trend. Recall that family planning aid is interacted with district means from 2004 for the average children born to women in the sample, which serves as a control on the fact that foreign aid agencies likely target districts with higher fertility as sites in need of family planning aid. The interaction does moderate the relationship between aid and ideal family size somewhat, but it remains in the positive direction.

In other research on the effects of foreign aid on attitudes toward violence against women in Malawi, I find that foreign aid funding toward interventions that are focused specifically on changing social norms and attitudes about violence against women is associated with greater attitudinal rejection of such violence. Funding for interventions to help victims of violence, or promote gender equality in other ways, is not, however. This result is relevant for the focus of this research on ideal family size preferences because it is possible that only funding for interventions focused on changing individuals' preferences, and not funding for family planning services generally, is associated with smaller family size preferences. More refined coding of the family planning interventions between those with an explicit focus on changing publics' preferences, beliefs, values, or attitudes and those that focus on providing family planning services, or other programs, is necessary.

In conclusion, I note that this study provides some initial evidence of the predictive power of exposure to global messages on individuals' preferences. Globally-promoted developmental ideals are reaching and influencing individuals across Malawi, one of the most remote and least internationally connected places in the world.

Table 1. Descriptive Statistics of all Variables by Year

	Mean	SE	CI (95%)
Family Size Preference (bottom-coded to 2 & top-coded to 10)			
2004	4.12	0.01	4.09, 4.14
2010	0.86	0.00	0.86, 0.87
2016	0.84	0.00	0.83, 0.84
Education			
2004	4.88	0.03	4.82, 4.94
2010	5.65	0.02	5.61, 5.69
2016	6.34	0.02	6.30, 6.38
Social Studies & Life Skills			
2004	0.10	0.00	0.09, 0.10
2010	1.07	0.01	1.05, 1.10
2016	3.83	0.03	3.77, 3.88
Newspaper Use (weekly)			
2004	0.15	0.00	0.14, 0.16
2010	0.15	0.00	0.15, 0.16
2016	0.10	0.00	0.10, 0.11
Radio Use (weekly)			
2004	0.70	0.00	0.70, 0.71
2010	0.63	0.00	0.63, 0.64
2016	0.36	0.00	0.35, 0.36
Television Use (weekly)			
2004	0.10	0.00	0.09, 0.10
2010	0.18	0.00	0.18, 0.18
2016	0.14	0.00	0.14, 0.14
Urban Living			
2004	0.14	0.00	0.14, 0.15
2010	0.14	0.00	0.13, 0.14
2016	0.22	0.00	0.21, 0.22
Family Planning Aid			
2004	1.93	0.00	1.93, 1.93
2010	19.13	0.01	19.12, 19.14
2016	20.10	0.02	20.06, 20.14
# of Children Ever Born (2004 Dist. Mean)			
2004	3.06	0.00	3.06, 3.07
2010	3.03	0.00	3.03, 3.04
2016	3.04	0.00	3.03, 3.04
Year: 2004			
2004	1.00	.	1.00, 1.00
2010	0.00	.	0.00, 0.00
2016	0.00	.	0.00, 0.00
Year: 2010			
2004	0.00	.	0.00, 0.00
2010	1.00	.	1.00, 1.00
2016	0.00	.	0.00, 0.00
Year: 2016			
2004	0.00	.	0.00,0.00
2010	0.00	.	0.00,0.00
2016	1.00	.	1.00,1.00
Muslim/Other/None			
2004	0.17	0.00	0.16, 0.17

2010	0.12	0.00	0.12, 0.13
2016	0.12	0.00	0.12, 0.13
Catholic			
2004	0.22	0.00	0.21, 0.22
2010	0.21	0.00	0.20, 0.21
2016	0.18	0.00	0.18, 0.19
Other Protestant			
2004	0.26	0.00	0.25, 0.27
2010	0.26	0.00	0.26, 0.27
2016	0.27	0.00	0.27, 0.28
Pentecostal			
2004	0.35	0.00	0.35, 0.36
2010	0.41	0.00	0.40, 0.41
2016	0.42	0.00	0.42, 0.43
Female			
2004	0.78	0.00	0.78, 0.79
2010	0.76	0.00	0.76, 0.77
2016	0.77	0.00	0.76, 0.77
Ever Married			
2004	0.80	0.00	0.80, 0.81
2010	0.76	0.00	0.76, 0.76
2016	0.75	0.00	0.74, 0.75
Polygamy			
2004	0.23	0.00	0.23, 0.24
2010	0.22	0.00	0.21, 0.22
2016	0.20	0.00	0.20, 0.20
Matrilineal Ethnicity			
2004	0.75	0.00	0.75, 0.76
2010	0.74	0.00	0.74, 0.75
2016	0.76	0.00	0.75, 0.76
Age			
2004	28.09	0.08	27.94, 28.24
2010	28.35	0.06	28.24, 28.46
2016	28.29	0.05	28.18, 28.40
Poorest Quintile			
2004	0.17	0.00	0.16, 0.17
2010	0.19	0.00	0.18, 0.19
2016	0.17	0.00	0.17, 0.17
Poor Quintile			
2004	0.20	0.00	0.19, 0.21
2010	0.20	0.00	0.19, 0.20
2016	0.18	0.00	0.18, 0.19
Middle Quintile			
2004	0.22	0.00	0.21, 0.23
2010	0.21	0.00	0.20, 0.21
2016	0.19	0.00	0.18, 0.19
Rich Quintile			
2004	0.21	0.00	0.21, 0.22
2010	0.21	0.00	0.20, 0.21
2016	0.20	0.00	0.19, 0.20
Richest Quintile			
2004	0.20	0.00	0.19, 0.21

2010	0.20	0.00	0.20, 0.21
2016	0.26	0.00	0.25, 0.26
Dist. Mean of Females Work Outside Home			
2004	19.13	0.10	18.94, 19.32
2010	28.04	0.09	27.87, 28.22
2016	37.81	0.11	37.60, 38.02
N	75968		

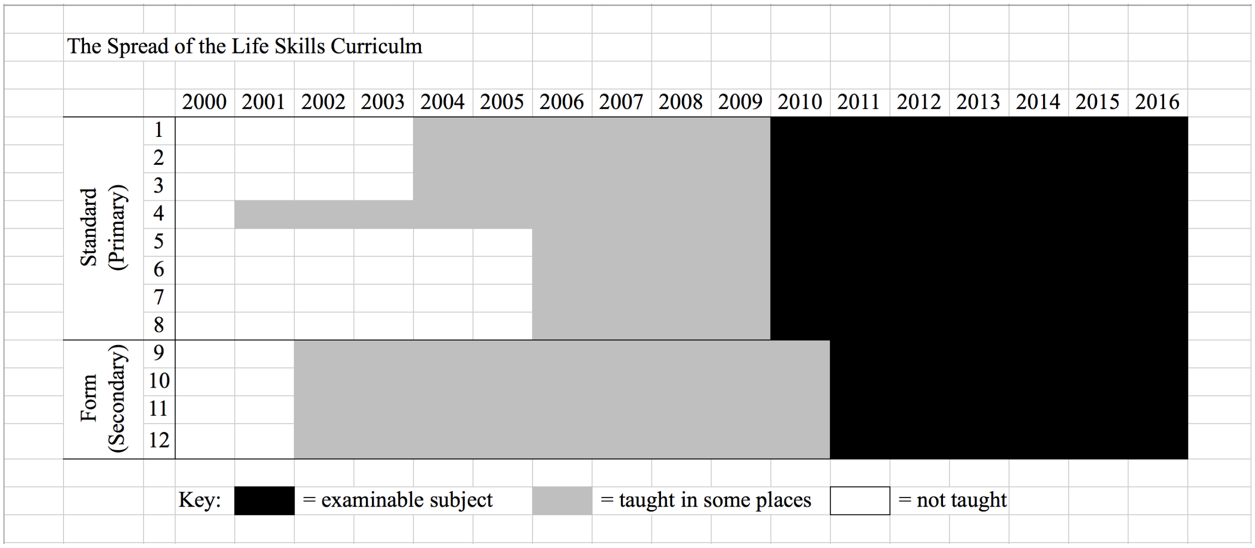
Table 2. Regression Output predicting Malawians' Ideal Family Size

	Model 1: OLS w/ Weights	(2) Mixed w/ Weights	(3) Mixed w/ No Weights
Education	-0.064***	-0.064***	-0.063***
	(0.003)	(0.003)	(0.002)
Social Studies & Life Skills	0.039***	0.049***	0.046***
	(0.006)	(0.010)	(0.006)
Education * Social Studies & Life Skills	-0.002**	-0.003**	-0.002***
	(0.001)	(0.001)	(0.001)
Newspaper Use (weekly)	-0.041*	-0.044*	-0.047**
	(0.018)	(0.019)	(0.016)
Radio Use (Weekly)	0.008	0.016	0.017
	(0.013)	(0.014)	(0.011)
Television Use (Weekly)	-0.053**	-0.066**	-0.055***
	(0.020)	(0.021)	(0.016)
Urban Living	-0.118***	-0.152***	-0.166***
	(0.023)	(0.035)	(0.016)
Family Planning Aid	0.031**	0.022	0.014
	(0.010)	(0.016)	(0.008)
Number of Children Ever Born (2004 District Means)	0.289***	0.243	0.166
	(0.069)	(0.158)	(0.153)
Fam. Plan. Aid * # of Children Ever Born (2004 Dist. Mean)	-0.008*	-0.002	0.001
	(0.004)	(0.007)	(0.003)
Year (Ref: 2004)			
2010	-0.098	-0.348	-0.348***
	(0.088)	(0.199)	(0.077)
2016	-0.432***	-0.765***	-0.764***
	(0.094)	(0.228)	(0.088)
Religious Identity (Ref: Muslim/Other/None)	0.000	0.000	0.000
Catholic	-0.306***	-0.182***	-0.180***
	(0.028)	(0.039)	(0.020)
Other Protestant	-0.307***	-0.202***	-0.199***
	(0.027)	(0.040)	(0.019)
Pentecostal	-0.268***	-0.152***	-0.135***
	(0.027)	(0.044)	(0.018)
Female	-0.116***	-0.145***	-0.150***

	(0.020)	(0.022)	(0.015)
Ever Married	-0.129***	-0.110***	-0.098***
	(0.019)	(0.021)	(0.017)
Polygamy	-0.045*	-0.053**	-0.067***
	(0.021)	(0.019)	(0.016)
Matrilineal ethnicity	-0.317***	-0.126***	-0.137***
	(0.018)	(0.037)	(0.017)
Age	0.025***	0.026***	0.025***
	(0.001)	(0.002)	(0.001)
Wealth	0.000	0.000	0.000
REF=poorest quintile	(.)	(.)	(.)
Poor quintile	0.011	-0.017	-0.022
	(0.022)	(0.021)	(0.016)
Intermediate quintile	-0.014	-0.045	-0.056***
	(0.021)	(0.024)	(0.016)
Rich quintile	-0.069**	-0.102***	-0.100***
	(0.022)	(0.024)	(0.017)
Richest quintile	-0.167***	-0.193***	-0.191***
	(0.026)	(0.026)	(0.020)
District Mean of Females	-0.001*	0.004	0.003*
Working Outside their Home	(0.001)	(0.003)	(0.001)
Number of Living Children	0.239***	0.241***	0.240***
	(0.006)	(0.010)	(0.004)
_cons	3.043***	2.889***	3.134***
	(0.215)	(0.492)	(0.472)
lns1_1_1			
_cons		-1.566***	-1.632***
		(0.144)	(0.143)
lnsig_e			
_cons		0.278***	0.277***
		(0.018)	(0.003)
N	74691	74691	74691
AIC	.	275302.3	253471.5
BIC	.	275551.2	253738.9

Figure 1.

A.


The Spread of the Life Skills Curriculm
2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Standard (Primary)
1 2 3 4 5 6 7 8
Form (Secondary)
9 10 11 12
Key:
= examinable subject
= taught in some places
= not taught

B.

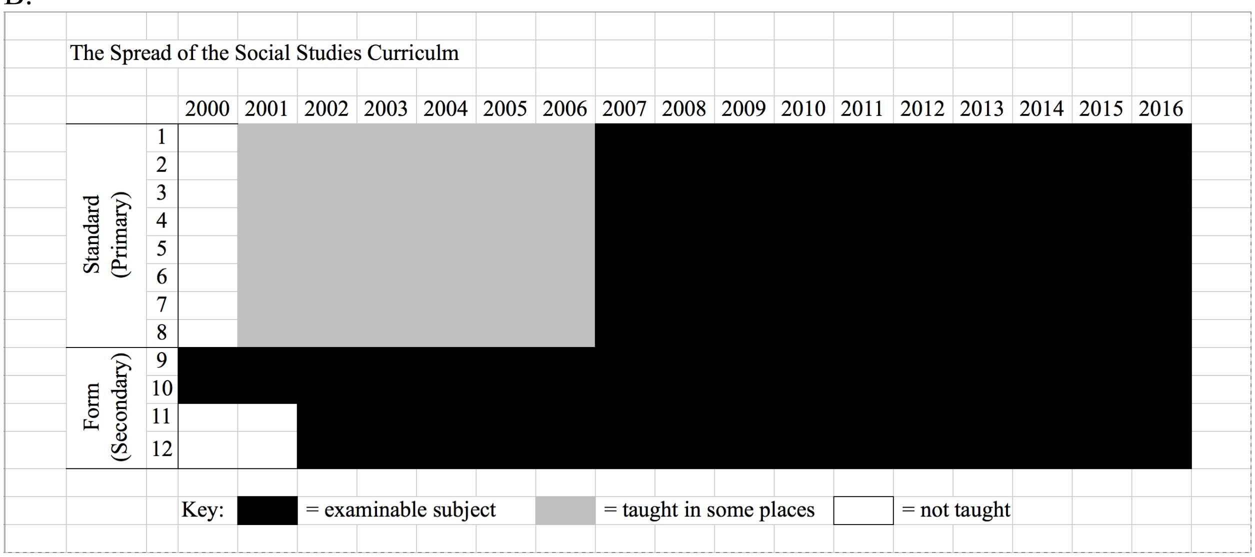

The Spread of the Social Studies Curriculm
2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016
Standard (Primary)
1 2 3 4 5 6 7 8
Form (Secondary)
9 10 11 12
Key:
= examinable subject
= taught in some places
= not taught

Figure 2. Average Marginal Effects of Education on Ideal Family Size with 95% CI

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