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Individualism, Collectivism, Values of Children, and Ideal number of Children: Patterns of Associations in a Period of Intense Social Change in Nigeria

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## Abstract

Based on demographers' suggestions of fertility transition in African, the present study focuses on the most populous African country undergoing intense social change and compares the ideal number of children reported by secondary school adolescents and their mothers. The study also adopts Caldwell's intergenerational wealth flow theory in comparing adolescents' and mothers' structural equation models linking socioeconomic status and individualism and collectivism (I-C) values to social, psychological, and economic values of children (VOC) and then to their ideal number of children. Although results revealed significant associations between I-C and VOCs, no association was found between social and economic VOC and the ideal number of children reported by mothers. Only adolescents' economic VOC and ideal number of children were marginally linked as expected. However, psychological VOC was not significantly linked to adolescents and mothers' ideal number of children as expected. In addition, the results revealed that adolescents' ideal number of children is lower but not significantly different from mothers'. The paper explores the implications of these findings for Nigeria's population growth, fertility transition, and ability to reach replacement fertility levels.

The great optimism displayed toward Africa's demographic transition in the 1990s (Caldwell *et al.*, 1992) is eroding; the transition has been drawn out in most of sub-Saharan Africa and current fertility rates are nowhere near replacement levels. Africa has recorded only around 10% fertility decline in the four decades beginning in 1955 whereas other world regions show declines of 28% to 63% in the same period (Caldwell, 2001).

The persistently high fertility in Africa deserves utmost research attention. Nigeria, the most populous African country and the seventh largest country worldwide, is a good research setting for such a study. Nigeria's total fertility declined only by 5.2% between 1990 and 2003 (National Population Commission (NPC) and ORC Macro, 2004). Fertility rates in southern Nigeria, an identified leader in the African fertility decline (Caldwell *et al.*, 1992), decreased by only 5.7% in the same period (National Population Commission (NPC) and ORC Macro, 2004). Together with reduction in child mortality due to better hygiene and improved medical technology, this slow fertility decline has contributed to the population growth recorded in the country. The country has an annual rate of natural increase between 2.6% to 2.9% (National Population Commission (NPC) and ORC Macro, 2000; United Nations, 1999) and currently is estimated to have a population of 140 million people (Udofia, 2007). Researchers argue that such high population growth rates put pressure on countries' limited natural resources, impinge negatively on their carrying capacity, and hence result in declining standards of living (Jolly, 1994; Kalipeni, 1994; Mott & Mott, 1980; Shapiro, 1995). Already with a gross national income per capita of \$640 in 2006 (The World Bank, 2007), Nigeria can barely sustain its current population. Thus, it is important to

understand variables linked to fertility in Nigeria; such knowledge will contribute to any effort to decelerate population growth.

Research has linked several variables to fertility in Nigeria. Nigeria Demographic and Health Surveys (Federal Office of Statistics and ORC Macro, 1992; National Population Commission (NPC) and ORC Macro, 2004) show significant differences in fertility outcomes by educational attainment, region/ethnicity, age, and urban-rural residence. However, the least fertile group in Nigeria has fertility rate that is well above the average in all the other world regions (Caldwell, 2001). This suggests that socioeconomic factors may not be the sole explanation for Nigeria's high fertility. Values have been advanced as a key but under-researched variable (Caldwell, 1976; Caldwell et al., 1992; Lesthaeghe, 1989; Thornton *et al.*, 2004). Values of individualism-collectivism (I-C), relating to prioritizing self versus in-group's needs, and values of children (VOC), relating to the types of costs (negative VOC) and benefits (positive VOC) associated with having children, are particularly critical to understanding fertility outcomes during era of social change (Arnold *et al.*, 1975; Caldwell, 1976). To understand generational differences in fertility trends, the present study focuses on positive VOC and compares structural equation models in which they link I-C values to the ideal number of children reported by Nigerian adolescents and their mothers. Mothers' values are particularly important since mothers bear the cost of having children in Nigeria (Wusu & Isiugo-Abanihe, 2006).

### **Value of Children**

Values serve as guiding criteria for the selection of behavior, events, or people (Kluckhohn, 1951; Rokeach, 1973, 1979; Williams, 1968). Therefore, values are highly

relevant for demographic outcomes such as the ideal and actual number of children (Arnold *et al.*, 1975; Arnold & Fawcett, 1975; Trommsdorff *et al.*, 2005). In particular, ‘value of children’ (VOC) often has been employed in this research domain.

Hoffman and Hoffman (1973) first introduced the term ‘value of children’ to social and psychological research. They conceptualize VOC as the “functions children serve or the needs they fulfill for parents” (Hoffman & Hoffman, 1973, p.19-20). In 1972, Arnold, Fawcett, Nauck, and colleagues expanded VOC to capture both the benefits and costs of having children and employed this measure to understand individuals’ impetus to have or not have children. Their study was prompted by a need to understand the prevalence of high fertility in several areas of the world and its implication for future population size. The study involved more than 20,000 nationally representative samples of married respondents in nine countries - Indonesia (Sundanese and Javanese samples), Korea, the Philippines, Singapore, Taiwan, Thailand, Turkey, and the United States, and a women’s sample from Munich, Germany (Bulatao, 1979; Darroch *et al.*, 1981; Fawcett, 1983; Hoffman, 1987; Kagitcibasi, 1982). It is surprising that no African country was included in the original study. A series of follow up studies recently was conducted in Germany, France, Turkey, Israel, Indonesia, Korea, China, India, Ghana, and South Africa. Nigeria, with a fifth of the continent’s population and the seventh largest population worldwide, remains conspicuously missing from the most recent series of studies. The present study thus addresses an urgent but often-neglected research need.

***Theoretical Models.*** Two theories and one model lay the foundation for VOC studies. The first theory supports the three-dimensional structure that has been identified

by most VOC studies whereas the other theory and model support the rational choice implied by VOC studies. The two theories and one model are examined next.

First, the general theory of social production function (TSPF) provides theoretical justification for the commonly found three-dimensional VOC structure. The theory suggests that “human beings strive for two major goods: physical well-being and social approval” (Lindenberg, 1996, p. 169). Physical well-being demands the production of comfort and stimulation whereas social approval is obtained from status, affect, and behavioral confirmation (Lindenberg, 1996; Nauck & Klaus, 2007). TSPF thus provides a blueprint for VOC which focuses on *how* and *under what circumstances* children feature in their parents’ production function. However, the five factors leading to physical well-being and social approval are confounded when extended to VOC. From these five factors, Nauck and Klaus (2007) identified three distinct factors – social esteem, affect, and comfort - related to the production of children. That is, parents gain social esteem, affect, and comfort from having children. Social esteem is captured by social/normative VOC which is based on the approval and status that comes with fulfilling expectations to have children. Affect is captured by psychological/emotional VOC which reflects the positive emotions, such as joy, happiness, fulfillment, that accompany having children. Finally, comfort is captured by economic/utilitarian VOC which is based on expectations that children will help parents in old age. Kagitcibasi (1982) first discovered this three-dimensional structure in the 1975 Turkey data. Kim, Park, Kwon, and Koon (2005) and Nauck and Klaus (2007) also have recently confirmed this three-dimensional structure in the recent series of studies.

Not all VOC studies reveal a three-dimensional structure. Sam et al. (2005) found a two-dimensional structure in South Africa involving: (1) the economic/utilitarian and (2) the psychological/social VOC. The conflicting finding could be due to Sam et al.'s elimination of a third factor which they could not interpret. However, tremendous information was lost by eliminating this factor which explained 6.4% of the variance. In addition, Sam et al. (2005) focused solely on South Africa's data whereas Nauck and Klaus (2007) desired a cross-culturally validated model and therefore searched for a model that represented data from 11 countries. The three-dimensional structure was supported by data from South Korea, China, Indonesia, India, Palestine, Israel, Turkey, Ghana, Germany, the Czech Republic, and even South Africa (Nauck & Klaus, 2007). Because the three-dimensional structure is theoretically and empirically supported, Nauck and Klaus' (2007) 12-item three-dimensional structure was adopted in this study.

Second, VOC research is based on the subjectively expected utility (SEU) model (Friedrichs, 1988; Nauck, 1989a; Opp, 1984) which suggests that individuals choose actions that will yield the relatively highest benefits. As such, the model suggests that fertility choices are made to maximize parents' benefits and minimize their costs. Two steps are involved in this bid. Parents consider several outcomes and determine the probability that their action of choice will lead to specific consequences. Parents also evaluate the costs and benefits of the specific consequences. Fertility choices are based on the product of the probabilities and evaluations. One flaw of the model is that it does not account for unplanned pregnancies although one could argue that this rational choice occurs when individuals decide whether to keep or terminate such pregnancies.

Finally, on the premise of the rational choice implied in SEU, Caldwell's (1976) intergenerational wealth flow theory links I-C values, VOC, and fertility outcomes on the societal level; this theory is central to the hypotheses explored in the present study. The theory suggests that social change, involving the transmission of western individualistic family values into developing countries, transforms children from economic assets to liabilities. Fertility trends on the societal level thus reflect individuals' economically rational responses to parent-child wealth flows. The theory proposes that when wealth is transferred upward from children to parents, fertility will be high. However, when the flow is downward, fertility will be low.

Social change is critical to the reversal of wealth flow in this theory. Caldwell (1976) argues that the importation of individualism values from education and related social change forces alters wealth flow from upward to downward, leading to a decline in economic VOC and thus fertility. Although Caldwell (1976) limits his focus to economic VOC, the present paper examines individual-level linkages between I-C values, the three VOCs, and fertility in an era of intense social change in Nigeria.

***Social Change and VOC.*** Traditional demographic theories suggest that social change brings about economic development, which first results in declining child mortality and then declining fertility (Cleland & Wilson, 1987; Coale, 1973). There is evidence that such social change is underway in Nigeria. Child mortality has declined over time (United Nations, 1999), although the current HIV/AIDS epidemic is threatening gains in this arena. In addition, significant transformation is occurring in area such as school enrollment and female labor force participation (LeVine, 2003; Therborn, 2006). As a result, children now spend more time in school and have less opportunity to



contribute to the household income. Females who are employed in the formal sector also have higher opportunity cost for childbearing (Feyisetan & Bankole, 2002). In addition, parents now receive pensions from formal employment and rely less on financial assistance from their children. Some of these changes have been associated with fertility decline in other societies (Bulatao & Lee, 1983; Caldwell, 1976; Cochrane, 1979; Feyisetan & Bankole, 2002; Oladosu, 2001). These changes have implications not only for fertility directly but for the values individuals attach to having children.

Based on data from European countries, the demographic transition theory suggests that the value of the child decreases (and its cost increases) with economic development, resulting in reduced fertility (Coale, 1973; Notestein, 1945). This theory has not been validated in non-western settings. Asia's and Latin America's fertility transitions occurred under a wide variety of socioeconomic conditions (Cleland, 1994). More importantly, VOC studies revealed different findings regarding the value of children. The studies found psychological VOC actually increased with socioeconomic development resulting from social change; only economic VOC declined (Kagitcibasi, 1982; Kagitcibasi & Ataca, 2005). These findings have been validated in more recent VOC studies (Kim et al., 2005). Further, on the individual level, economic VOC was negatively associated with socioeconomic status (SES) whereas psychological VOC did not change with SES (Fawcett, 1983; Lee & Kim, 1975).

Social change also has important implications for different societies based on their cultural values. With social change, particularly increased education, economic and social VOC declined but psychological VOC became more salient in collectivistic societies (Kagitcibasi & Ataca, 2005). In fact, Caldwell (1976) suggests that increasing

individualism and declining collectivism that are associated with such social change forces drive VOC trends in ways that have significant implications for fertility.

***VOC and Individualism-collectivism.*** Individualism is the focus on rights above duties, concern for oneself and one's immediate family, emphasis on independence and self-fulfillment, and the basing of identity on personal accomplishments (Markus & Kitayama, 1991; Triandis, 1995). Oyserman, Coon, and Kimmelmeier (2002) described individualism as a "worldview that centralizes the personal – goals, interests, and control – and peripheralizes the social" (p. 5). Individualism (I) thus can be expected to result in individuals reporting more psychological benefits for having children. By contrast, collectivism is prioritizing the interests of the in-group over personal interests. Collectivists are oriented towards their in-groups – family, ethnic, and religious (Oyserman et al., 2002; Triandis, 1995). Collectivism (C) therefore can be expected to result in respondents reporting more social benefits for having children. Although individualism and collectivism often are used in reference to cultural values, they are used in this study instead of idiocentrism or independence and allocentrism or interdependence (Markus & Kitayama, 1991; Triandis, 1994) which are suggested as their individual-level counterparts because they are more commonly understood concepts.

Triandis (1995) and colleagues identified vertical and horizontal dimensions, relating to hierarchy and equality in social relationships, respectively, in individualism and collectivism. The resulting four orthogonal unipolar constructs are: (1) vertical individualism which stresses independence and hierarchy or inequality, (2) vertical collectivism which emphasizes interdependence and hierarchy, (3) horizontal individualism which emphasizes independence and equality, and (4) horizontal

collectivism which involves interdependence and equality. Although the hypotheses in this study relate only to I-C, this four-construct-scale is used because the vertical and horizontal dimensions are relevant for other outcomes examined in the wider study for which the data was collected. However, both vertical and horizontal dimensions of I-C are explored in each stated hypothesis, as seen next, because it is unclear how the vertical and horizontal dimensions are associated with VOC.

**Hypothesis 1:** Collectivism (vertical and horizontal), because of its emphasis on the in-group's interest, is expected to be positively associated with social VOC.

On the other hand, individualism (vertical and horizontal) is focused on personal fulfillment and satisfaction and is expected to be positively associated with psychological VOC.

However, I-C values do not appear relevant for economic VOC. Instead, VOC research suggests education and other social status variables have more critical implications for economic VOC on the individual level.

***VOC and Social Status.*** Both Hoffman and Hoffman (1973) and later VOC studies suggest sociodemographic and socioeconomic variables are associated with economic VOC (Arnold et al., 1975; Hoffman & Hoffman, 1973; Kagitcibasi & Ataca, 2005; Kim et al., 2005). On the macro level, socioeconomic development was linked to lower prevalence of economic VOC (Caldwell, 1976; Kagitcibasi, 1982). On the individual level, recent research revealed negative associations between education and economic VOC (Kim et al., 2005) and no association between SES and psychological VOC (Fawcett, 1983). This is extended to a social status variable in the Nigerian context in the next hypothesis.

**Hypothesis 2:** Individuals' SES will be negatively related to their economic VOC.

Not only is VOC suggested to be dependent on sociodemographic and socioeconomic variables, research argues that VOC is a central intervening variable that links these variables to fertility outcomes such as the ideal number of children (Arnold et al., 1975; Hoffman & Hoffman, 1973; Kagitcibasi & Ataca, 2005; Kim et al., 2005).

### **Ideal Number of Children**

This is the number of children that respondents think is desirable for Nigerian families to have. This number differs from the number of children that the respondents desire for themselves. Rather this ideal reflects general views rather than respondents' idiosyncratic situations (Coombs & Sun, 1981). The concept is thus more attitudinal in nature since individuals may not necessarily have the number of children they regard as ideal. Since adolescents in this study have not yet started childbearing, this attitudinal construct provides insight into how their fertility preferences compares to their mothers'.

Group differences in the ideal number of children reported can shed light on knowledge, attitudes, and behavior associated with fertility and the expected changes in these (Kagitcibasi & Ataca, 2005). Because adolescents are active participants in, and often the most affected by, social change (Ryder, 1965), they are expected to report lower ideal number of children compared to their mothers. However, a competing hypothesis is that adolescents generally are not familiar with the cost of having children and may be more optimistic than mothers; that is, mothers' ideal number of children may be more tapered because they have more realistic knowledge of the cost of having children. This competing hypothesis is less persuasive in Nigeria where adolescents are intimately

involved in contributing to family income and in making family purchase (Alimi *et al.*, 2004). Thus, the next hypothesis reflects the more persuasive assumption.

**Hypothesis 3:** The ideal number of children reported by adolescents will be significantly lower than mothers.

Values, because of their key role in guiding choices, are expected to be most relevant for people's stated ideal. Indeed VOC has been shown to be relevant to whether individuals have children, the number of children they have, and their ideal family size (Kagitcibasi & Ataca, 2005; Sam *et al.*, 2005). Thus, VOC has important implications for individuals' ideal number of children. Kagitcibasi (1982) suggests that economic VOC should be positively related to fertility measures whereas psychological VOC should be negatively related to these indicators. That is, because of children's expected financial contributions, respondents who focus on economic VOC will report higher ideal number of children since each child is a potential source of additional income. Further, because large families are preferred and parenthood is central to adult status in Nigeria (Caldwell *et al.*, 1992), respondents with high endorsement of social VOC are expected to report higher ideal number of children. More children will result in more societal and extended family's approval. By contrast, individuals who derive joy from having children will have the same amount of joy regardless of the number of children they have (Kagitcibasi & Ataca, 2005; Nauck, 1989b). Hence, no significant association is expected between psychological VOC and the ideal number of children. The negative association hypothesized by Kagitcibasi (1982) can be expected only for a binary variable indicating preference for parenthood or childlessness. Because children are central to both manhood and womanhood in Nigeria (Caldwell *et al.*, 1992), it was not expected that respondents

would report a desire to be childless. This assumption was validated by survey findings. Hence, the following is expected for both adolescents and their mothers:

**Hypothesis 4:** Economic and social VOC will be positively linked to the ideal number of children whereas psychological VOC will not be significantly linked to respondents' ideal number of children.

Research also suggests that VOC is a socio-psychological construct intervening between antecedent background factors (such as age, family structure, and basic values) and fertility outcome such as the ideal number of children (Sam et al., 2005). Thus, VOC values are expected to link I-C values and SES to respondents' ideal number of children.

**Hypothesis 5:** Psychological VOC will link individualism value systems (vertical and horizontal) to the ideal number of children. However, because adolescents are expected to report higher individualism value scores, their model is expected to have better fit indices than mothers'. In both models, the psychological VOC coefficient is not expected to be significant.

**Hypothesis 6:** Social VOC will be positively associated with the ideal number of children and will link collectivism value systems (vertical and horizontal) to the ideal number of children. Because mothers are expected to report higher collectivism scores, which have been hypothesized to be positively linked to social/normative VOC, their model is expected to have better fit indices than adolescents'.

**Hypothesis 7:** Economic VOC will be positively associated with the ideal number of children and will link SES to the ideal number of children for adolescents and

their mothers. A competing model in which SES is directly linked to respondents' ideal number of children will not yield better fit indices.

## **Method**

### **Setting**

Abuja, the location for this study, stands to have an even higher experience of social change than the rest of Nigeria. As the federal capital territory, it is the economic and cultural hub of the country. Therefore, it may have more connections with foreigners who travel for business, government-related, and personal reasons. In addition, because one of the three Nigerian international airports is located in Abuja, there is a higher likelihood of international presence. In general, contact with the West is more pronounced in such urban settings (Sam *et al.*, 2005). Female labor force participation also is likely to be slightly higher in Abuja because of the presence of federal government offices which tend to have a lot of traditional female careers such as secretaries and clerks. Indeed, 60% of formally employed mothers in the pilot study worked in such positions.

The participants in this study are students of Government Secondary School (GSS), Kubwa, and their mothers. Because of the high rate of child fosterage in Nigeria (Goody, 1982; Isiugo-Abanihe, 1985), both biological mothers and other female guardians are included as “*mothers*” in this study. In the same vein, their husbands are referred to as “*fathers*” in this study. Information and summary statistics on this sample are presented in Table 5.1.

Kubwa, the location of the school, is a suburb of the federal capital territory (FCT) in Abuja. The cost and standard of living in Kubwa is lower than that of the FCT and, as expected, the social infrastructures are also not as good as in the FCT. Residences

were built in Kubwa for lower SES government workers at the initial creation of the FCT. However, Kubwa has now attracted some middle class families who have built private residences there because of its more affordable cost of living. Thus, people of low to middle socioeconomic status live in Kubwa. At least one person in most Kubwa families works in a government office in the FCT. The driving distance between the FCT and Kubwa is approximately 15 miles.

Government Secondary School (GSS), Kubwa, with over 99% Nigerian non-boarding students, was chosen from 35 secondary schools in Abuja and its suburbs. The school was chosen because of the willingness of the principal to allow students to participate in the survey and because it is one of the largest (over 2,500 students) mixed-sex public schools in Abuja with students in 7<sup>th</sup> to 12<sup>th</sup> grades; about 95% of Nigerian public schools are mixed-sex whereas 5% are same-sex schools. In Nigeria, students are selected into schools based on their performance in the Primary School Leaving Certificate Examination and on their residence in the school area. To remain in school, students have to perform at the required academic level and also be able to pay their school fees. Although some Nigerian states provide free education to secondary school students, Abuja does not. In GSS Kubwa, the school fee is 3000 Naira per term, which is equivalent to around \$75 per school year. Because of such high school fees, less than a third of Nigerian youth aged 10 to 19 years are enrolled in secondary schools (ORC Macro, 2007). In urban areas, about half of the youth are enrolled in secondary schools. Although there is still significant diversity among in-school adolescents, out-of-school adolescents tend to be generally of lower economic status and/or less academically inclined or gifted. Although this could possibly result in more conservative findings



regarding the implications of SES for adolescents, it is also possible that social capital is more relevant for adolescents' ability to pay their school fees since it is common for wealthier extended family members to pay for the education expenses of children of lower income family members (Aldous, 1962; Wusu & Isiugo-Abanihe, 2006). Indeed, employed older siblings, extended family members, and churches paid the school fees of some adolescent respondents.

### **Participants**

Two groups of individuals participated in this study; one group participated in the pilot study whereas the other group participated in the final survey. A classroom of 10th-grade students and their mothers were asked to participate in the pilot study which was conducted in summer 2007. The 10th-grade class had 66 students with an average age of 15.6 years; 34 of these students and 30 of their mothers participated in the pilot study. The pilot study's results were used to refine the final survey instruments and procedures. In October 2007, 11th- and 12th-grade students in this school were asked to participate in the final survey. The mean age of respondents in the final survey was 16.5 years.

### **Procedure**

To determine eligibility to participate in the study, adolescents were asked whether they have lived with their mother or a female guardian for at least four years and whether this social or biological mother speaks and understands English. These two requirements were to ensure sufficient time for value acquisition and ease in administering the English questionnaires, respectively. Although speaking English language may be positively related to SES in rural settings, it was not expected to have much relevance for SES in an urban area like Abuja. It was expected that most parents would speak English since most of Abuja residents are government workers and from

parts of the country in which different languages are spoken. As such, these migrants often find speaking English is vital to communication in such urban areas.

Two hundred and forty-two of the 300 students in the 11<sup>th</sup> and 12<sup>th</sup> grades were present in school to complete the screening forms (see appendix) and 237 of them were eligible. After eligibility was determined, consent letters were sent to the mothers through the students. In the consent letters, mothers were asked to indicate whether they were willing to participate, and whether they would allow their adolescent child to participate; interested mothers also were asked to provide phone numbers and possible days for the interviews. The investigator collected the letters from the students in the following week and followed up with students who did not return their mothers' consent letters.

In all, 213 adolescents returned their mothers' consent forms; 202 mothers agreed to participate and allow their adolescent child to participate. One hundred and ninety-six adolescents, whose mothers consented to their participation, also signed an assent form before completing their questionnaire; six adolescents were absent for the survey even though their mothers had been interviewed. One hundred and fifty-four mothers were interviewed; 44 mothers were not interviewed because they were unavailable or provided addresses that could not be located. No significant difference was found in the responses of adolescent children of interviewed and non-interviewed mothers. Initial power analysis had revealed that 118 adolescent-mother dyads would be needed for an effect size of 0.15 and power of 0.80. This suggests that analyses of the identified 148 mother-child dyads from the mothers' and adolescents' surveys should have sufficient power.

Assenting adolescents whose mothers consented to their participation in the study completed their survey questionnaires in school during their 45-minute school break. A

small token prize that costs less than a dollar was given to students who participated; finger food and candies also were provided to all students in 11<sup>th</sup> and 12<sup>th</sup> grades since the survey took place during their break period. Non-participating adolescents were asked to leave the classroom once they received their snacks to allow participating adolescents some privacy while completing their questionnaires. By contrast, interviewers administered mothers' surveys at home and this provided interviewers opportunity to assess and record mothers' living conditions. Interviewers were trained using Pennsylvania State University Institutional Review Board's (IRB) ethic training on the protection of human participant and had to score at least 80% in the IRB quiz.

## **Measures**

*Adolescents and mothers value of children scale.* Twelve of the twenty-seven items used in the original VOC studies assessed the values that adolescents and their mothers attach to having children. This 12-items scale has been shown to have cross-cultural validity (Nauck & Klaus, 2007). Adolescents and mothers were asked to choose, on a five-point scale, the importance they assigned to social/normative VOC by indicating how critical it is for them to have a child "*to carry on the family name.*" Similarly, for psychological/emotional VOC, they indicated the importance of having a child because of "*the pleasure of watching children grow.*" Finally, economic/utilitarian VOC was assessed by items like you would like to have a child to "*have one more person to help your family financially.*" The alphas have been found to range from 0.78 to 0.95, 0.48 to 0.83, and 0.76 to 0.85, respectively, for social, psychological, and economic VOC subscales. In the present study, alphas of 0.54, 0.52, and 0.64, and 0.76, 0.78, and 0.75, respectively, were obtained for adolescents and mothers, respectively.

***Adolescents and mothers individualism/collectivism scale.*** The Singelis et al. (1995) scale assessed adolescents' and mothers' values. This scale has demonstrated good reliability and validity in several cultural settings (Nelson & Shavitt, 2002; Soh & Leong, 2002; Triandis & Gelfand, 1998). It has been used mostly with college students in the US, Denmark, South Korea, Hong Kong, and Cameroon. A total of 32 attitude items was included. Eight items such as “*when another person does better than I do, I get angry*” captured vertical individualism; Singelis et al. (1995) reported an alpha of 0.67 for this scale. Eight items, including “*it is important to me that I respect the decisions made by my family*”, measured vertical collectivism which has an alpha of 0.68 (Singelis et al., 1995). Eight items, such as “*I often do my own thing*”, assessed horizontal individualism which has an alpha of 0.74 (Singelis et al., 1995). Eight items, including “*the well-being of my fellow students is important to me*”, measured horizontal collectivism which has an alpha of 0.74 (Singelis et al., 1995). Adolescents and mothers used a 5-point scale to indicate whether they “*strongly disagree*” (1) to “*strongly agree*” (5) with each of the 32 statements. Responses were averaged for each of the four constructs to give the mean scores. High mean scores indicate higher levels of each orientation. Summary statistics of the subscales are included in Table 5.1.

***Mothers' social status.*** This was captured by the following socioeconomic status (SES)-related variables: parents' education and employment status, family structure, religion, ethnicity, and marital status, and family's wealth and living conditions. Fathers' education and employment were included because research suggests that these are integral for mothers' SES in settings where female school enrollment and labor force participation are low (Kohn *et al.*, 1986). Family income was not included because the

pilot study revealed that Nigerian mothers often did not know their total family income and how much their husband earned. A latent SES variable including education, employment, living condition, and wealth was created.

Mothers' and fathers' education was captured by their educational attainment which had values ranging from one to seven for no education to post bachelor's degree. Employment status indicated whether they had paid or formal versus informal or no employment. Paid employment was awarded one point whereas informal and no employment were awarded zero. Living conditions were assessed by the number of persons per bedroom, the fuel used for cooking – electricity or gas versus kerosene, charcoal/firewood, dung, and others, the flooring material in their residence – carpet or rug versus cement, earth, dung, and others. Access to electric or gas cooking stoves and carpet/tile/rug flooring was awarded one point each, and using charcoal/firewood, dung, other as cooking fuel, and earth, dung, and other flooring was awarded zero. Overcrowded houses were those with more than two people per bedroom and were awarded zero, houses that were not overcrowded were awarded one. These indices of living conditions were summed together.

Household wealth was assessed by asking mothers whether they, their husband, or someone in their household has a motorcycle, car/truck, radio, television, cell phone, gas cooker, iron, or fan. The presence of each indicator was awarded one point and summed together to obtain a wealth index. The wealth and living conditions indicators are used in Demographic and Health Surveys and have high predictive power (Rustein & Johnson, 2004).

In addition to the latent SES variable, it is generally agreed that the following variables have some relevance for individuals' location in the social structure and, hence, were included as control variables in preliminary models. Family structure was measured by a binary variable indicating whether the family is nuclear versus polygamous or extended. Dummy variables, indicating whether mothers are Muslim, Catholic, or Protestant (the dummy for "Traditionalist/no religion" will be excluded) and whether mothers are married, divorced/separated, or widowed (the dummy for never married will be excluded), also were included in preliminary analyses. These additional variables were retained only if their estimated coefficients were significant or if the model fit indices indicated that they provided additional explanation in the model.

***Additional variables.*** Previous analyses revealed that adolescents' age and sex have relevance for their values; hence, both variables were included as exogenous variables of I-C values. Because mothers' gender is constant, only age was included as the exogenous variable for mothers' I-C values. Respondents' current household size also was linked to their ideal number of children. Sam et al. (2005) found that respondents with more children reported higher number of ideal children.

## **Analyses**

All but one of the hypotheses in this study was tested with structural equation modeling (SEM) using AMOS (7.0.0) software. AMOS maximum likelihood estimation was used because about 1% of the data was missing and AMOS provides estimates in the presence of missing variables. Using SEM, the associations between I-C values, VOC, and the ideal number of children reported by mothers and adolescents were examined. The fit of the models were evaluated by the root mean square error of approximation

(RMSEA) (Brown & Cudeck, 1993), Tucker-Lewis coefficient (TLI) (Bollen, 1989), and comparative fit index (CFI) (Bentler, 1990). For TLI and CFI, values of .90 or higher are generally considered acceptable whereas RMSEA values of .05 and below suggest very good fit. The chi-square statistics also are reported although these statistics have been criticized for being very sensitive to sample sizes (Schumacker & Lomax, 2004). Because the models are theory- and research-driven, the analyses in this study are confirmatory. That is, the models are accepted even when their pattern of fit indices suggest they could be improved further. Modification is only made in the SES-economic VOC-ideal number of children variable because the SES model is exploratory in nature.

Ten final SEM models were specified in AMOS, five each for adolescents and mothers. The first two models for both groups of respondents linked horizontal, and then vertical collectivism, to social VOC, and social VOC to the ideal number of children. The next two models replaced collectivism with individualism and social VOC with psychological VOC. The last model for the two groups linked SES to economic VOC and then linked economic VOC to the ideal number of children. Because adolescents' and mothers' models are similar, only adolescents' figures are presented in the appendix.

For the last economic VOC-SES model, an exploratory analysis of the latent variable of mothers' SES was first conducted in AMOS using parents' education and employment status, and family's living condition, and wealth index as indicator variables. To obtain the most parsimonious representation of mothers' SES, a specification search was conducted in AMOS. In AMOS, optional paths are distinguished from definite paths. AMOS specification search determines which optional paths, if any, are vital to the model. AMOS then fits models using every subset of the optional paths. Among these

models, the program selects the best models for each number of parameter based on the chi-square (C), chi-square – df (C – df), zero-based Akaike Information Criteria (AIC), zero-based Browne-Cudeck criterion (BCC), Bayes Information Criterion (BIC), chi-square divided by the degrees of freedom (C/df), and significance level (p). Burnham and Anderson (2002) suggested that models with zero-based AIC and BCC values of zero to two should not be ruled out as the best models for the sample. The models with the best fit indices are compared using a scree plot. In the scree plot, an elbow at k parameter provides support for the best (k-1) parameter model. A specification search also was conducted for the SES-economic VOC model.

The only non-SEM analysis was conducted using SPSS 15.0. It was a paired sample t-test comparing adolescents' and mothers' ideal number of children. The descriptive analysis of the variables included in this t-test is reported in Table 5.1, along with the summary statistics discussed next.

### **Descriptive Results**

Table 5.1 and Table 5.2. present the descriptive statistics and correlations for the data. Most respondents were in mid to late adolescence. Adolescent respondents' ages ranged from 14 to 19 years, with a mean of 16.5 years. Most are female, and over half are Yoruba or Ibo. At least 72% of the adolescents live with their biological mothers who were nearly all married.

Compared to adolescents, mothers' age showed more diversity, ranging from 21 to 58 (not shown). The mean age was 40.6 years (Table 5.1). Around 40% of adolescents' mothers have more than secondary school education and are employed in the formal sector whereas about 55% and 73% of their husbands have more than high school



education and are employed in the formal sector, respectively. The significant diversity in the socioeconomic status of the group is also reflected in the number of assets reported which ranged from 1 to 17, with mean of 8.53.

Table 5.1 also presents similar patterns for adolescents' and mothers' VOC, with psychological VOC having the highest value and social VOC having the lowest (Table 5.1). For mothers, economic and social VOC were not significantly different. However, mothers' psychological VOC was significantly higher than their social VOC. For adolescents, only psychological and economic VOC were not significantly different; both were significantly higher than social VOC. All three adolescents' VOC were significantly higher than mothers' (Table 5.3). Adolescents' psychological VOC was 0.32 points higher than mothers' whereas adolescents' economic VOC which was 0.21 points higher than mothers' was least different. Their social VOC was 0.24 higher than mothers'. Age, cohort, and period effects are confounded in these VOC differences.

Table 5.1 also shows mothers' and adolescents' mean ideal number of children. Mothers' mean ideal number of children was 4.00 whereas their current fertility was 4.44 (not shown). This 0.44 difference between mothers' ideal and current number of children was significant at 0.01 level (not shown). Given that some mothers had not completed childbearing at the time of the interview and two social mothers had not even started childbearing, this 0.44 difference is quite conservative.

### **Mothers' and adolescents' ideal number of children**

In this study, it was expected that the ideal number of children reported by mothers and adolescents will be significantly different, with adolescents reporting lower ideal number of children because of their exposure to social change forces promoting

individualism. Adolescents' mean ideal number of children was 3.95 whereas mothers' was 4.00. The average difference is 0.05 and the paired sample t-test reported in Table 5.3 shows the difference was not significant. The t-value is -.35 and the calculated p-value is 0.73, which is higher than 0.05 significance level. Thus, although adolescents indeed reported lower ideal number of children as expected, adolescent-mother difference was not significant at any alpha level. No gender difference was found either (not shown); both sons and daughters reported ideal number of children that were not significantly different from their mothers'.

### **SEM Models of Social/Normative VOC**

Two models, one for vertical collectivism (VC) and the other for horizontal collectivism (HC), were specified in AMOS for both adolescents and mothers. Adolescents' VC model (Figure 5.1) showed an acceptable pattern of fit indices ( $\chi^2 = 6.00$ ,  $df = 10$ ,  $\rho = .82$ ,  $RMSEA = .00$ ,  $CFI = 1.00$ ,  $TLI = 1.41$ ). For mothers, the pattern of the fit indices indicate data-to-model fit is approaching a reasonable level ( $\chi^2 = 11.7$ ,  $df = 6$ ,  $\rho = .07$ ,  $RMSEA = .08$ ,  $CFI = .93$ ,  $TLI = .81$ ); only RMSEA and TLI values suggest that the model could be further improved. Although results from both models supported hypothesis one, hypothesis 4 was not supported. VC was positively associated with social VOC for both adolescents and mothers at 0.001 significance level. A unit increase in VC was associated with 0.58 and 0.72 increases in social VOC for adolescents and mothers, respectively. However, social VOC was not significantly associated with the ideal number of children reported by adolescents and mothers. Family size was positively associated with the ideal number of children reported by adolescents and mothers at 0.05 and 0.001 significance levels, respectively. A unit increase in family size was associated

with 0.10 increase in both mothers' and adolescents' ideal number of children (Table 5.4). In addition, age was marginally associated with mothers' VC values at 0.1 significance level; older mothers reported lower VC.

The horizontal collectivism models for both adolescents and mothers revealed similar patterns as the vertical collectivism models. Adolescents' model is shown in Figure 5.2. Adolescents' HC model had a better pattern of fit indices ( $\chi^2 = 10.3$ ,  $df = 10$ ,  $\rho = .41$ ,  $RMSEA = .02$ ,  $CFI = .96$ ,  $TLI = .91$ ) than mothers' ( $\chi^2 = 14.18$ ,  $df = 6$ ,  $\rho = .03$ ,  $RMSEA = .10$ ,  $CFI = .89$ ,  $TLI = .72$ ). Mothers' model did not show an acceptable pattern of fit indices, suggesting the model could be further improved. Thus, hypothesis 6 was not supported by the findings in Tables 5.4 and 5.5, as adolescents' models showed better fit indices. There was also support for hypothesis one but not for hypothesis 4 in both models. Adolescents' and mothers' HC were positively associated with their social VOC at 0.01 and 0.001 significance levels, respectively. A unit increase in HC was associated with 0.30 and 0.71 increases in social VOC for adolescents and mothers, respectively (Table 5.5). By contrast, the association between social VOC and the ideal number of children was not significant for both groups. Although the level of significance for the family size variable differed for both groups, similar coefficient was reported. One unit increase in adolescents and mothers' family size was linked to 0.10 increase in their reported ideal number of children. Gender was marginally associated with adolescents' HC values at 0.1 significance level; boys reported 0.16 higher HC values. Age also was marginally associated with mothers' HC values at 0.1 significance level; older mothers reported .02 lower HC values.

## SEM Models of Psychological VOC

One model for vertical individualism (VI) and the other for horizontal individualism (HI) were specified in AMOS for both adolescents and mothers. For adolescents (Figure 5.3), the VI model showed conflicting fit indices pattern ( $\chi^2 = 4.90$ ,  $df = 10$ ,  $\rho = .90$ ,  $RMSEA = .00$ ,  $CFI = .99$ ,  $TLI = .99$ ). Although CFI was not reported for the model and TLI's was not close to one, RMSEA and chi-square statistics suggest a good fit. Mothers' model showed considerable need for further improvement. The four fit indices revealed the model has a poor fit ( $\chi^2 = 14.00$ ,  $df = 6$ ,  $\rho = .03$ ,  $RMSEA = .10$ ,  $CFI = .75$ ,  $TLI = .39$ ). In both adolescents' and mothers' models, both hypotheses one and four were confirmed. Significant association existed between VI and psychological VOC at 0.001 level in both models. A unit increase in VI was associated with 0.17 and 0.42 increases in the psychological VOC reported by adolescents and mothers, respectively, (Table 5.6). In favor of hypothesis 4, no association existed between adolescents' and mothers' psychological VOC and their ideal number of children. Both gender and age were not significantly linked to adolescents' VI. Age also was not significantly linked to mothers' VI. However, family size was positively associated with both adolescents' and mothers' ideal number of children at 0.05 and 0.01 significance levels, respectively. A unit increase in their family size was associated with a 0.10 increase in both of their ideal number of children.

Apart from showing better fit indices, the findings were similar for VI and HI models for both adolescents and mothers. The pattern of the fit indices for adolescents' HI model ( $\chi^2 = 9.94$ ,  $df = 10$ ,  $\rho = .45$ ,  $RMSEA = .00$ ,  $CFI = 1.00$ ,  $TLI = 1.00$ ) suggests the model is acceptable. This model is shown in Figure 5.7. For mothers, the pattern of

the fit indices indicate data-to-model fit is approaching a reasonable level ( $\chi^2 = 9.40$ ,  $df = 6$ ,  $\rho = .15$ ,  $RMSEA = .06$ ,  $CFI = .91$ ,  $TLI = .77$ ); only  $RMSEA$  and  $TLI$  values suggest that the model could be improved further. As shown in Table 5.7, the analyses also provided evidence in support of hypothesis one and four. Horizontal individualism was positively associated with psychological VOC for both adolescents and mothers. A unit increase in HI was linked to 0.28 and 0.45 increases in adolescents' and mothers' psychological VOC, respectively; both associations were significant at 0.001 level. That is, adolescents and mothers with higher HI attached more psychological benefits to having children. Hypothesis 4 also was supported. No significant association existed between psychological VOC and the ideal number of children that adolescents and mothers reported. Family size showed significant association with adolescents' and mothers' ideal number of children at 0.05 and 0.01 levels, respectively. A unit increase in adolescents' and mothers' current family size was associated with a 0.10 increase in their reported ideal number of children. Hypothesis 5 was supported by the results presented in Tables 5.6 and 5.7, as adolescents' models showed better fit indices than mothers'.

### **SEM Models of Economic VOC**

First, based on the works of Kohn (1986), Olsen (1974), Wright and Wright (1976), and Xiao (2000), a measurement model of socioeconomic status was specified in AMOS. To explore mothers' SES as a co-associate of adolescents' values, confirmatory analysis of a latent SES variable was conducted in AMOS. A SEM model with wealth, living condition, mothers' and fathers' work and educational attainment contributing to a latent SES variable was specified.

For identification, the regression weight of living condition was fixed at one. There were 27 distinct values in the sample matrix. 18 distinct parameters were estimated leaving nine degrees of freedom. Thus, both the order and rank conditions were met. All but fathers' work variable contributed significantly to the latent SES variable, suggesting fathers' work status tapped into another dimensionality of SES. The standardized regression weight of fathers' work status was  $-0.01$ . The fit indices ( $\chi^2 = 16.7$ ,  $df = 9$ ,  $\rho = .05$ , RMSEA = 0.05, TLI = 0.85, CFI = 0.93) of the model also suggested that a better fitting model could be obtained.

A specification search was conducted using AMOS. All but the living condition paths were included as optional. The best fitting model suggested by AMOS, based on BIC and p-value, included all but fathers' work status path. Thus, fathers' work status was excluded from the final measurement model. This model is shown in Figure 5.8. There were 20 distinct values in the sample matrix of the final model. Fifteen distinct parameters were estimated leaving five degrees of freedom. Thus, both the order and rank conditions were also met in this model. This model without the fathers' work status variable provided a better fit for the data (Table 2.3). Given the overall pattern of the indices ( $\chi^2 = 6.1$ ,  $df = 5$ ,  $\rho = .29$ , RMSEA = 0.04, TLI = 0.99, CFI = 0.97), the fit of the model was judged to be acceptable.

Finally, the latent SES variable was linked to economic VOC which was then linked to the ideal number of children reported by adolescents and mothers; family size was also included as an exogenous variable of ideal number of children in both adolescents' and mothers' models. The model including ethnicity, religion, and mothers' marital status, together with SES, as exogenous variables of economic VOC did not

provide a better fit. For example, for adolescents, the fit of the model was ( $\chi^2 = 358$ ,  $df = 77$ ,  $\rho = .00$ ,  $RMSEA = .16$ ,  $CFI = .28$ ,  $TLI = .02$ ) compared to the ( $\chi^2 = 26.15$ ,  $df = 20$ ,  $\rho = .16$ ,  $RMSEA = .05$ ,  $CFI = .95$ ,  $TLI = .91$ ) for the model excluding the dummy variables and including only the latent SES variable (Figure 5.6). Specification search in AMOS also provided support for excluding the variables.

In addition, a competing model in which SES was linked to both economic VOC and the ideal number of children was compared to one in which SES was only linked to economic VOC. The model with SES linked to only economic VOC had better fit indices pattern; for example, adolescents' competing model showed ( $\chi^2 = 29.58$ ,  $df = 19$ ,  $\rho = .06$ ,  $RMSEA = .06$ ,  $CFI = .91$ ,  $TLI = .84$ ). Specification search in AMOS also confirmed limiting SES' association to only economic VOC. This result provides partial support for hypothesis 7.

Neither results from adolescents' nor those from mothers' model provided strong support for hypothesis 2 and hypothesis 4. For both adolescents and mothers (Table 5.8), SES was not significantly associated with economic VOC. Mothers' economic VOC also was not significantly associated with their ideal number of children. And, adolescents' economic VOC was only marginally associated with their ideal number of children at 0.1 significance level. At this significance level, adolescents who reported higher economic benefits for having children reported higher ideal number of children. One unit increase in economic VOC was associated with 0.18 increase in adolescents' ideal number of children. Finally, as observed in previous models, family size was significantly associated with adolescents' and mothers' ideal number of children.

## Discussion

The purpose of this study was to compare adolescents' and mothers' SEM models linking I-C values, VOC, and ideal number of children. Differences in adolescents' and mothers' models could contribute to knowledge on future fertility trends in Nigeria. In this study, adolescents' models were different from mothers' models in two major ways.

Adolescents' models had better fit indices than mothers' models in the present study. This suggests the specified models fit adolescents' data better than mothers' data and the theory-driven linkages were stronger for adolescents than for mothers. However, the coefficients of mothers' I-C variables suggest that individualism and collectivism, both vertical and horizontal, have stronger relevance for mothers' VOC than for adolescents'. Of the two, collectivism appears to be more relevant to VOC in this study. The magnitudes of the coefficient for vertical and horizontal collectivism variables are nearly twice those for vertical and horizontal individualism for both adolescents and mothers. Compared to other settings, the individualism introduced by Nigeria's social change may be less associated with fertility. This may explain why adolescents' and mothers' ideal number of children may not be significantly different even though adolescents are more exposed to social change as reflected in their VI and HI scores.

Apart from adolescents' models having better fit indices and different coefficient values from mothers', the patterns of association between the variables in adolescents' and mothers' models were similar. The coefficients were in the same directions for adolescents and mothers. In fact, the coefficients for the family size variable were the same for all adolescents' and mothers' models.



This lack of significant difference between adolescents' and mothers' models douses demographers' optimism about the completion of demographic transition in Africa in the next generation. The narrow and insignificant difference between adolescents' and mothers' ideal number of children also provides a cause for pessimism. Although the United Nations (2000) projects that Nigeria will attain replacement fertility levels latest by 2050, both mothers' and adolescents' four children ideal suggests that replacement fertility level may not be observed in the next generation. However, it is important to mention that mothers' ideal number of children was significantly lower than their actual number of children; the difference will be even greater if all mothers had completed childbearing. In the next generation, a reduction in the gap between ideal and actual fertility may be one avenue for realizing fertility decline.

Two hypotheses were fully supported in this study; three were partially supported and no support was found for hypothesis two and three. Although adolescents' reported higher ideal number of children than mothers, the difference was not significant as expected. In addition, no support was found for the hypothesis of significant associations between social and economic VOC and the ideal number of children reported by mothers. Possible explanations for this lack of association are the high child fosterage in Nigeria and customs of non-biological filial piety. Filial piety often extends beyond individuals' parents in the Nigerian society; elderly people are often adopted and cared for by fictive kin (Van Der Geest, 2002). And, childless women still act as social mothers (Isiugo-Abanihe, 1985) and thus gain economic and social benefits from non-biological children who lived with them. In contrast to findings of no associations in mothers' models, adolescents' economic VOC was marginally associated with their ideal number of

children at 0.1 significance level. The coefficient of this association provides some support for the hypothesis of positive association between economic VOC and ideal number of children. As social change increases the cost of children in Nigeria, this finding offers a glimmer of hope.

Results from this study support the hypothesis of no significant association between psychological VOC and adolescents' and mothers' ideal number of children. That is, respondents don't derive more joy from lower or higher number of children. In addition, results from this study support the hypothesis that individualism and collectivism values have important implications for social, psychological, and economic VOC. Although several studies have examined VOC as exogenous variables of fertility outcomes, few examine factors associated with VOC. And even fewer, such as Kim et al. (2005), examine the implications of sociocultural variables for VOC. Results from the present study suggests that sociocultural variables have important implications for VOC by confirming a positive association between collectivism values (vertical and horizontal) and social VOC and between individualism values (vertical and horizontal) and psychological VOC for both adolescents and mothers. However, the association between SES and economic VOC was not significant as expected for both groups.

Another important finding was that respondents living in larger families preferred their status quo; they reported higher ideal number of children. For mothers, this finding is expected as research suggests that respondents justify their current number of children as their ideal (Kim et al., 2005; Sam et al., 2005). However, for adolescents, some positive experience must accrue from living in large families for them to report higher ideal number of children compared to adolescents in smaller families. It also could be

that their threshold for ideal number of children may be influenced by what they see in their homes.

Results from this study compares favorably with findings from other VOC studies. Kim et al. (2005) also found positive associations between individualism and psychological VOC for older mothers in South Korea. However, their study also found positive association between collectivism and psychological VOC and negative association between collectivism and social VOC, some of which is contrary to findings from the present study. The difference in results is likely due to cultural differences and differences in Nigeria's and South Korea's social change experiences.

However, results from the present study also confirm some findings from Sam et al.'s (2005) study in South Africa. Sam et al. (2005) found positive association between family size and the ideal number of children reported by mothers with a young child. In addition, neither of their two VOCs was significantly associated with the ideal number of children reported by mothers with an adolescent child. However, they found that the social/psychological VOC of mothers with a young child was marginally associated with their ideal number of children at 0.1 level. They also found VOC was significantly associated with the number of children that mothers reported constituted small and large families.

This study not only confirms some of the results from previous VOC studies, it also contributes significantly to methodological advancement in this research field. Analyses in previous studies were limited to correlations, analyses of variance, and multiple regression analyses. Only, Sam et al. (2005) performed hierarchical multiple regressions in which they entered their two VOCs in the second stage after entering

sociodemographic variables in the first stage. However, even their attempt does not capture the intervening link that VOC is hypothesized to represent between sociodemographic, socioeconomic, and sociocultural values, and fertility outcomes. The present study offers some methodological improvements. First, it uses SEM which is better suited for capturing the indirect linkage that researchers postulate between ideal number of children and sociodemographic, socioeconomic, and sociocultural variables. As a result, this is the first study that has examined both the linkage between I-C and VOC and VOC and the ideal number of children simultaneously in the same model; a similar examination was made for SES and VOC and VOC and the ideal number of children. Second, by including one VOC at a time in the models, the present study is able to examine the unique association between each VOC and the ideal number of children. Previous studies included all VOCs in their models. This study therefore makes important contribution to VOC and fertility research.

Although this study presents an interesting pattern of results, it has some limitations. The study used a convenience sample; hence, these findings can only be generalized to samples with similar characteristics. The cross-sectional and non-experimental nature of the data also hinders the study from reaching any causal conclusions. Further, mother-daughter model comparisons may be illuminating than the present mother-adolescent comparison. Finally, the different ages and cohort experiences of adolescents and mothers weaken this study's ability to make any direct comparisons.

Future studies should examine different cohorts and different time periods to disentangle the age-cohort-period effects. This will require a mix of longitudinal and panel studies. Other studies should examine SEM of other fertility outcomes, as VOC

may link I-C and other fertility outcomes. For example, Sam et al. (2005) found social/emotional VOC was negatively associated with the number of children that respondents believed constituted small and large families whereas economic VOC was positively associated with the number of children that respondents believed constituted small and large families. SEM analyses, in which VOC links I-C values to such fertility outcomes, will contribute to knowledge in this research area. In addition, examining fathers' VOC may also be informative in the Nigeria where males control fertility decision making but females bear the cost of children (Isiugo-Abanihe, 1994, 2003). Both same-sex and cross-sex comparisons will contribute to research knowledge in the field.

Results from this study have several implications. First, they offer both a glimmer of hope and a dash of pessimism. If Nigerian adolescents' ideal fertility can be achieved, total fertility rate will decline by about 20%. On the other hand, preference for replacement fertility level is not apparent from respondents in this study. The about four-child ideal reported by adolescents and their mothers is nearly twice replacement level.

With ideological and technological social change, having a child, previously seen as a natural product of marriage and family life, becomes more driven by individual choices. Medical technology affords individuals the ability to determine both whether they want to have children and the number of children they want. Further, the expansion of formal education has reversed wealth flow downward from parents to children. In addition, the espousal of individualistic values, resulting from education and similar social change forces, may increase adolescents' likelihood to pursue individual-driven fertility choices rather than submitting to the desires of the society or extended family. In such situations, adolescents' ideal number of children may be closer to what their actual

number of children will be and greater fertility decline may be obtained than what is suggested from comparing adolescents' and mothers' ideal number of children in the present study. However, the four-child ideal that was pervasive in this study is troubling and does not bode well for limiting population growth in Nigeria. Although adolescents' mean ideal number of children is 0.05 points lower than mothers', it is still significantly higher than what is obtained in other countries that have undergone demographic transition. Thus, either the final stages of Nigeria's demographic transition is at least two generations away or Nigeria's demographic transition will not result in replacement fertility level as projected by the United Nations (2000) and other demographers.

Indeed, demographers have argued that Africa's fertility transition may be unlike what was recorded in other countries (Caldwell, 1982, 2001; Cohen, 1998). Cohen (1998) proposes two main reasons why fertility rates in Africa may never reach replacement levels. First, the absence of financial and legal institutions which provide financial security to parents in old age will stall declines in economic VOC; children will thus continue to be viewed as old age security by African parents. Second, there are several cultural incentives for having a large family in African societies (see Caldwell et al., 1992 for a review of these reasons). As a result, achieving adolescents' ideal in Nigeria may be the best possible scenario in such a context.

To achieve Nigerian adolescents' ideal, increased awareness and access to family planning are vital. Increased acceptance and access to family planning will narrow the gap between ideal and actual fertility in adolescents' generation. Female education, which has been found to be associated with higher contraceptive use and lower fertility in Africa (Ainsworth & Nyamete, 1992), also should be expanded. In addition, public

campaign programs need to be designed to reduce adolescents' and future generations' ideal number of children; such propaganda should be made through schools and the media. Research has shown the effectiveness of public campaign programs in changing individuals' fertility outcomes (Church, 1989; Gilluly & Moore, 1986; Meeker, 1991). This study also provides some support for the efficacy of such public campaign since both adolescents and mothers reported around four children ideal, as promoted in previous public campaigns in the late 1980s in Nigeria (Caldwell et al., 1992).

The interventions suggested by this study should be implemented with utmost urgency if fertility and population growth are to be limited in Nigeria. The present study's comparisons of mothers' and adolescents' SEM models have provided some insights into what the future would hold without such interventions. This study thus proffers important contribution to African fertility research.

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Table 5.1

*Summary Statistics for Adolescents and Mothers (n = 131- 148)*

	<u>M</u> / %	<i>SD</i>	<u><math>\alpha</math></u>
Adolescents' age	16.50	1.20	-
Mothers' age	40.56	6.87	-
Adolescents who are female	63.10	0.54	
Adolescents' vertical individualism values	3.71	0.56	0.61
Adolescents' vertical collectivism values	4.36	0.41	0.59
Adolescents' horizontal individualism values	4.23	0.55	0.76
Adolescents' horizontal collectivism values	4.29	0.41	0.62
Adolescents' social value of children	4.15	0.54	0.54
Adolescents' psychological value of children	4.36	0.45	0.52
Adolescents' economic value of children	4.22	0.57	0.64
Adolescents' ideal number of children	3.95	1.25	
Mothers' vertical individualism values	3.33	0.70	0.72
Mothers' vertical collectivism values	4.20	0.66	0.82
Mothers' horizontal individualism values	4.03	0.74	0.86
Mothers' horizontal collectivism values	4.29	0.65	0.86
Mothers' social value of children	3.92	0.81	0.76
Mothers' psychological value of children	4.04	0.77	0.78
Mothers' economic value of children	4.00	0.79	0.75
Mothers' ideal number of children	4.00	0.98	
Family size	7.01	2.77	

	<u>M</u> / %	<i>SD</i>	<u>α</u>
Married Mothers	93.60	0.71	-
Yoruba	23.23	1.22	-
Ibo	31.82		-
Hausa	5.56		-
Others	39.39		-
Number of assets	8.53	2.60	-
In overcrowded housing	81.70	0.39	-
In nuclear family	45.30	0.50	-
Living with mother	72.73	0.80	-
Cooking with gas/ electricity	40.90	0.49	-
With rug/carpet/tiles	80.10	0.40	-
Mothers with paid employment	41.20	0.84	-
Mothers with more than high school education	39.80	1.68	-
Fathers with paid employment	72.80	0.56	-
Father with more than high school education	54.50	1.97	-

Note: - indicates the value was not calculated.

Table 5.2

*Intercorrelations between of Adolescents' and Mothers' Subscales*

	1	2	3	4	5	6	7	8	9
Adolescents (n=141-148)									
Adolescents' vertical									
individualism	--	0.40**	0.39**	0.35**	0.33**	0.21*	0.26**	-0.04	-0.04
Adolescents' vertical									
collectivism		--	0.43**	0.53**	0.42**	0.41**	0.36**	-0.09	-0.01
Adolescents' horizontal									
individualism			--	0.42**	0.28**	0.34**	0.21*	-0.12	0.06
Adolescents' horizontal									
collectivism				--	0.23**	0.29**	0.17*	-0.12	0.03
Adolescents' social									
value of children					--	0.53**	0.51**	-0.06	0.05
Adolescents'									
psychological value of									
children						--	0.32**	0.08	0.06
Adolescents' economic									
value of children							--	0.00	-0.13
Adolescents' ideal									
number of children								--	0.20*
Family size									--

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Mothers (n=136 -148)

Mothers' vertical									
individualism	--	0.41**	0.59**	0.41**	0.47**	0.38**	0.43**	-0.08	-0.15
Mothers' vertical									
collectivism		--	0.50**	0.85**	0.59**	0.47**	0.59**	0.04	-0.05
Mothers' horizontal									
individualism			--	0.47**	0.42**	0.44**	0.37**	0.04	-0.14
Mothers' horizontal									
collectivism				--	0.58**	0.48**	0.58**	-0.07	-0.07
Mothers' social value of									
children					--	0.66**	0.70**	0.06	-0.24**
Mothers' psychological									
value of children						--	0.58**	0.01	-0.19
Mothers' economic									
value of children							--	0.12	-0.09
Mothers' ideal number									
of children								--	0.26**
Family size									--

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<sup>+</sup>  $p < 0.1$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

Table 5.3

*T-test Comparing Adolescents' and Mothers' VOC and Ideal Number of Children*

Adolescents' – mothers' scales	Mean	SD	T-test	Sig (2 tailed)
Ideal number of children (n = 131)	-0.05	1.51	-0.35	0.73
Psychological value of children (n=146)	0.32***	0.88	4.40	0.00
Economic value of children (n=146)	0.21**	0.21	2.82	0.01
Social value of children (n=146)	0.24***	0.93	3.13	0.00

<sup>+</sup>  $p < 0.1$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

Table 5.4

*SEM Analysis of Vertical Collectivism, Social VOC, and Ideal Number of Children for Adolescents and their Mothers (n =131)*

	Adolescents			Mothers		
	Beta	SE	$\beta$	Beta	SE	$\beta$
Vertical collectivism						
Gender	0.10	0.08				
Age	-0.02	0.03		-0.01 <sup>+</sup>	0.01	
Social value of children						
Vertical collectivism	0.58 ***	0.11		0.72***	0.08	
Ideal number of children						
Social value of children	-0.22	0.21		0.16	0.10	
Family size	0.10*	0.04		0.10***	0.03	
Chi-square ( <i>df</i> ; $\rho$ )	6.00 (10; .82)			11.7 (6; .07)		
RMSEA (CI)	.00 (.00; .06)			.08 (.00; .15)		
CFI; TLI	1.00; 1.41			.93; .81		

<sup>+</sup>  $p < 0.1$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

Table 5.5

*SEM Analysis of Horizontal Collectivism, Social VOC, and Ideal Number of Children for Adolescents and their Mothers (n =131)*

	Adolescents			Mothers		
	Beta	SE	$\beta$	Beta	SE	$\beta$
Horizontal collectivism						
Gender	0.16 <sup>+</sup>	0.09				
Age	-0.02	0.03		-0.02 <sup>+</sup>	0.01	
Social value of children						
Horizontal collectivism	0.30 **	0.10		0.71***	0.08	
Ideal number of children						
Social value of children	-0.18	0.21		0.16	0.10	
Family size	0.10*	0.04		0.10***	0.03	
Chi-square ( <i>df</i> ; $\rho$ )	10.3 (10; .41)			14.18 (6; .03)		
RMSEA (CI)	.02 (.00; .09)			.10 (.03; .16)		
CFI; TLI	.96; .91			.89; .72		

<sup>+</sup>  $p < 0.1$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

Table 5.6

*SEM Analysis of Vertical Individualism, Psychological VOC, and Ideal Number of Children for Adolescents and their Mothers (n =131)*

	Adolescents			Mothers		
	Beta	SE	$\beta$	Beta	SE	$\beta$
Vertical individualism						
Gender	0.03	0.07				
Age	-0.04	0.03		0.00	0.01	
Psychological value of children						
Vertical individualism	0.17**	0.06		0.42***	0.08	
Ideal number of children						
Psychological value of children	0.19	0.25		0.08	0.10	
Family size	0.10*	0.04		0.10**	0.03	
Chi-square ( <i>df</i> ; $\rho$ )	4.90 (10; .90)			14.00 (6; .03)		
RMSEA (CI)	.00(.00; .04)			.10 (.03; .16)		
CFI; TLI	-- ; -9.29			.75; .39		

<sup>+</sup>  $p < 0.1$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .



Table 5.7

*SEM Analysis of Horizontal Individualism, Psychological VOC, and Ideal Number of Children for Adolescents and their Mothers (n=131)*

	Adolescents			Mothers		
	Beta	SE	$\beta$	Beta	SE	$\beta$
Horizontal individualism						
Gender	0.08	0.07				
Age	-0.04	0.03		-0.00	0.01	
Psychological value of children						
Horizontal individualism	0.29***	0.06		0.45***	0.08	
Ideal number of children						
Psychological value of children	0.21	0.25		0.08	0.11	
Family size	0.10*	0.04		0.10**	0.03	
Chi-square ( <i>df; <math>\rho</math></i> )	9.94 (10; .45)			9.40 (6; .15)		
RMSEA (CI)	.00(.00; .09)			.06 (.00; .13)		
CFI; TLI	1.00; 1.00			.91; .77		

<sup>+</sup> p<0.1; \* p<0.05; \*\* p<0.01; \*\*\* p<0.001.

Table 5.8

*SEM Analysis of SES, Economic VOC, and Ideal Number of Children for Adolescents and their Mothers (n =131)*

	Adolescents			Mothers		
	Beta	SE	$\beta$	Beta	SE	$\beta$
<b>SES</b>						
Wealth	1.00	--		1.00	--	
Mothers' education	1.70***	0.47		1.72***	0.47	
Fathers' education	1.18***	0.33		1.16***	0.34	
Living condition	0.36**	0.12		0.36**	0.12	
Mothers' work	0.32***	0.09		0.32***	0.09	
<b>Economic value of children</b>						
SES	-0.05	0.08		-0.04	0.06	
<b>Ideal number of children</b>						
Economic value of children	0.18 <sup>+</sup>	0.10		0.07	0.20	
Family size	0.10***	0.03		0.10*	0.04	
Chi-square ( <i>df</i> ; $\rho$ )	26.15 (20; .16)			30.01 (20; 07)		
RMSEA (CI)	.05 (.00; .09)			.06 (.00; .10)		
CFI; TLI	.95; .91			.92; .85		

<sup>+</sup>  $p < 0.1$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

Figure 5.1

*SEM model of adolescents' VC, social VOC, and ideal number of children*

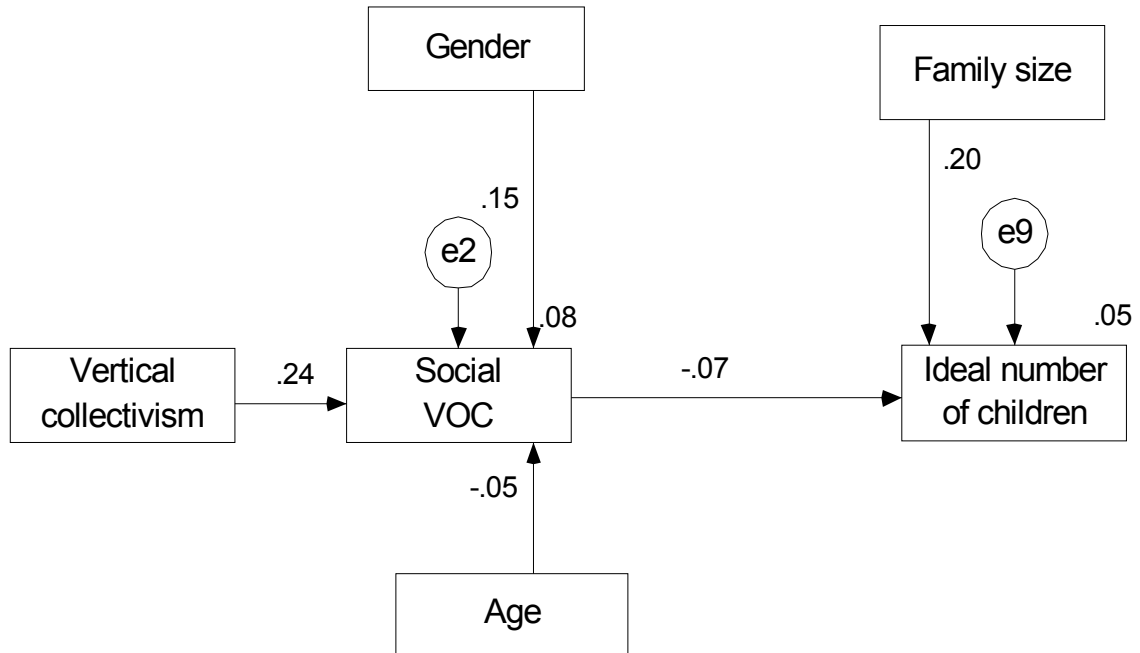


Figure 5.2

*SEM model of adolescents' HC, social VOC, and ideal number of children*

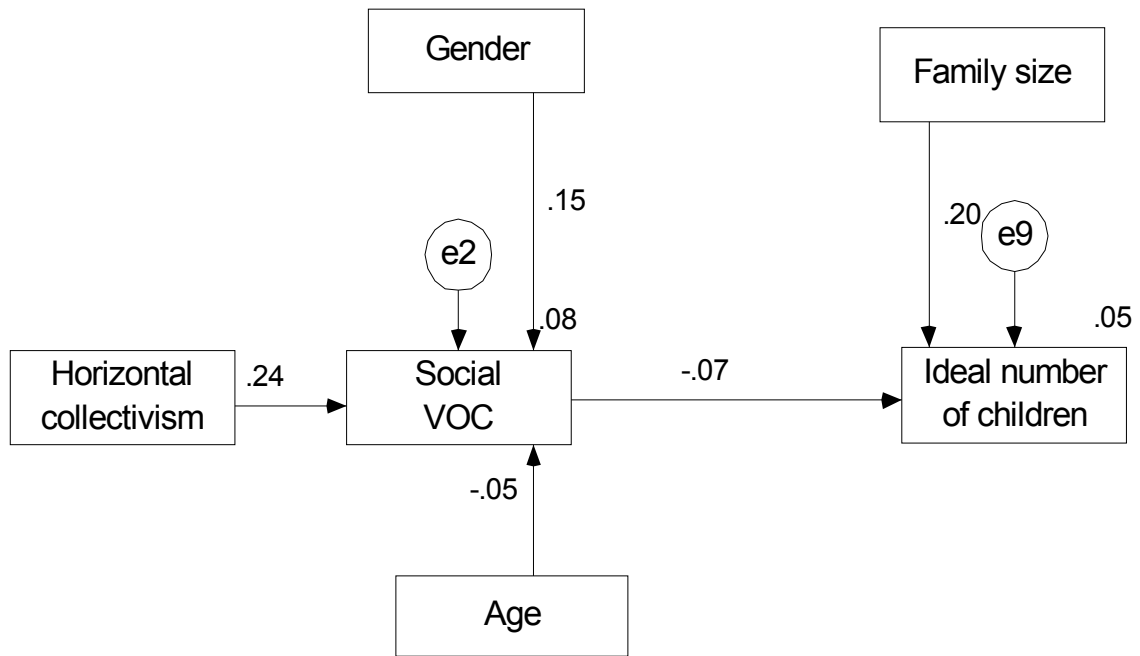


Figure 5.3

*SEM model of adolescents' VI, psychological VOC, and ideal number of children*

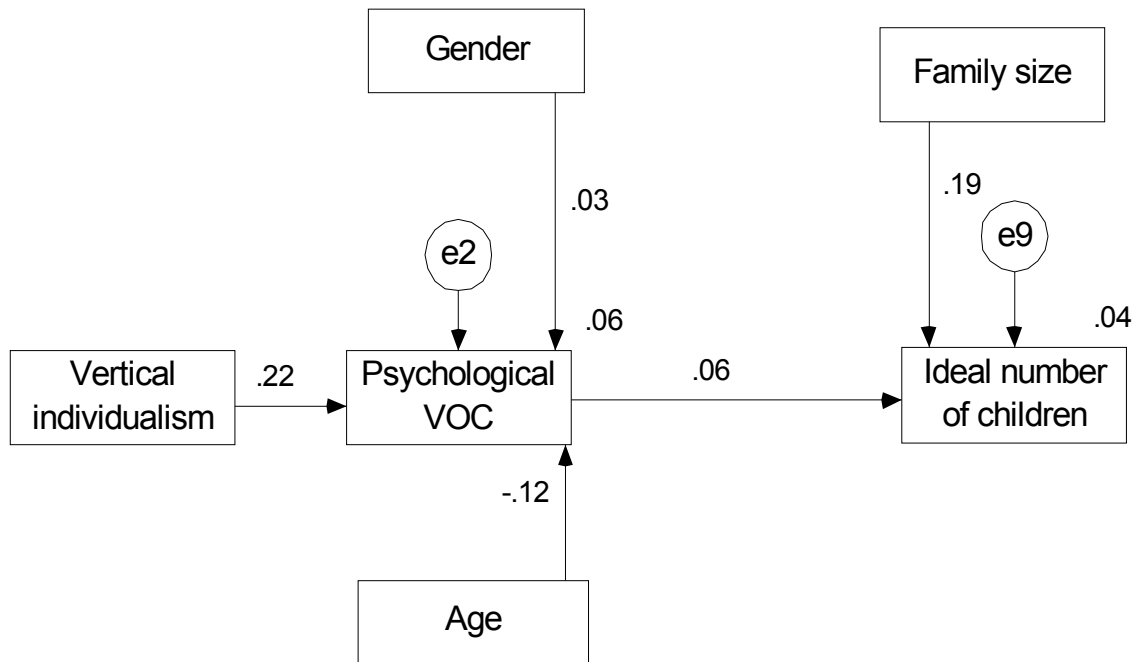


Figure 5.4

*SEM model of adolescents' HI, psychological VOC, and ideal number of children*

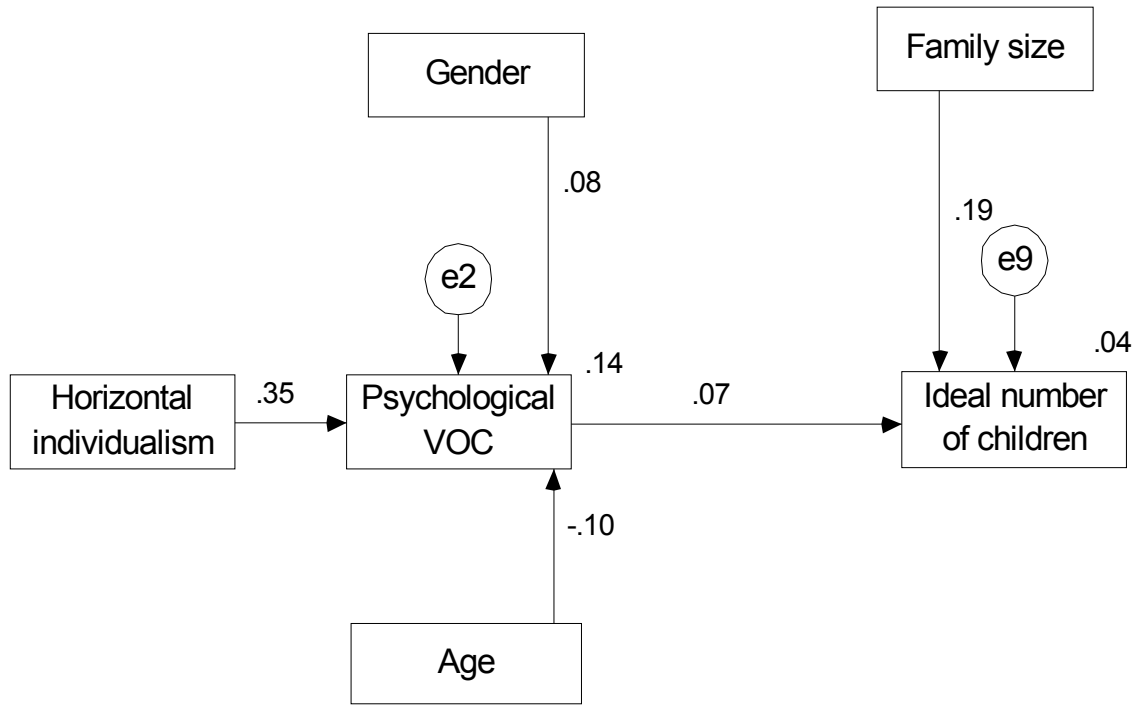


Figure 5.5.

*Measurement Model of SES*

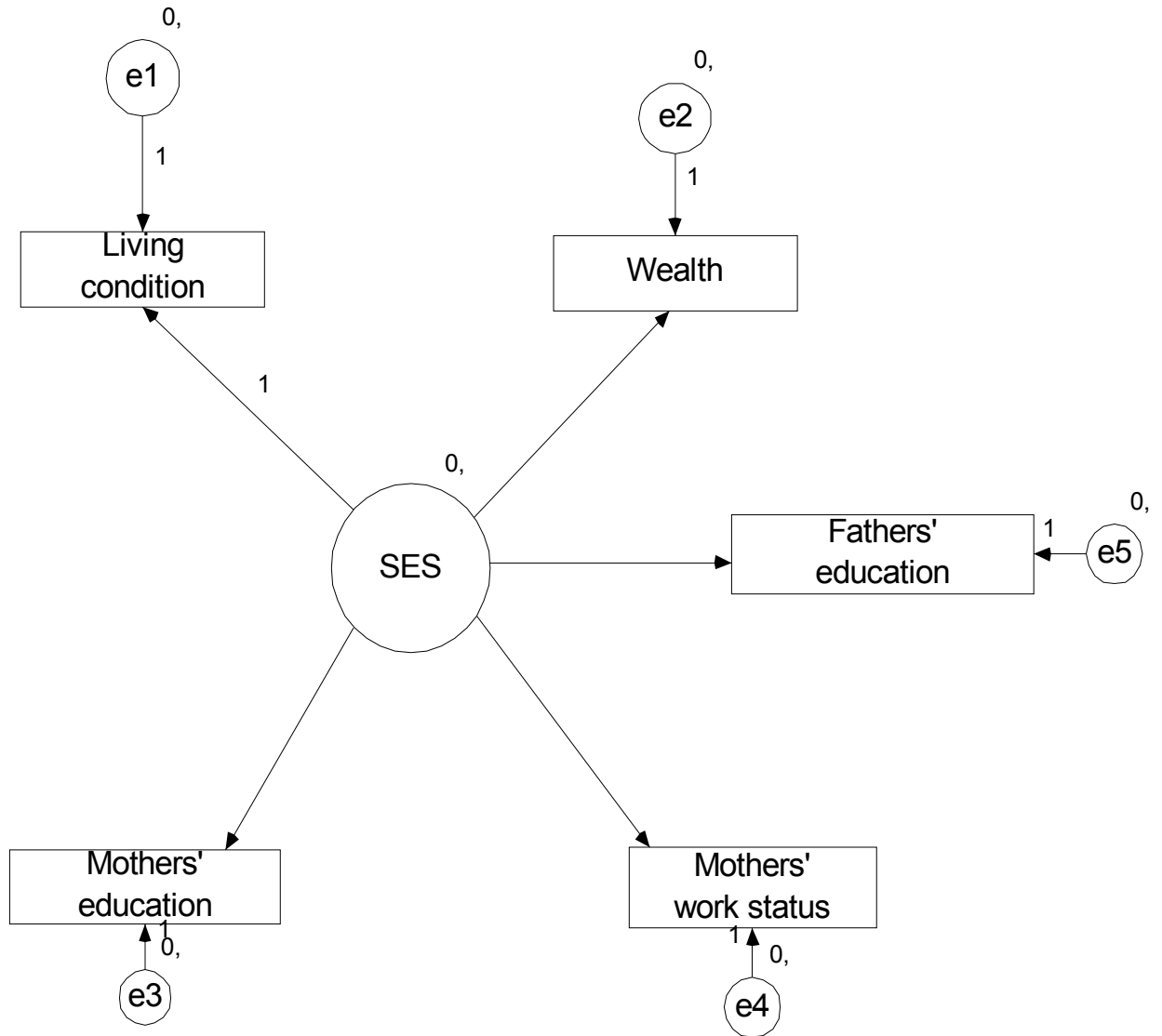


Figure 5.6

*SEM model of SES, economic VOC, and ideal number of children*

