

The Implications of Ethnicity, Gender, Urban–Rural Residence, and Socioeconomic Status for Progress Through School among Children in Nigeria

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Abstract This study examines the role of ethnicity, gender, urban–rural residence, and socioeconomic status on children’s progress through school. It also investigates other correlates of progress through school within the categories of ethnicity, gender, urban–rural residence, and socioeconomic status. The study finds ethnic and income gaps in progress through school. In particular, the results show that Hausa–Fulani children and poor children are less likely on average to progress through school than Yoruba children and non-poor children. The preceding results have numerous policy implications. To address the lack of progress through school that arises from late entry, policies must implement early childhood nutrition and food programs. To reduce lack of progress through school among poor children, policy makers must focus on poverty eradication, learning enhancement, and remedial education programs. To address the problem of lack of progress through school among Hausa–Fulani children, it is vital for policies to establish mobile schools, visiting female teachers, and separate school facilities, especially for Hausa–Fulani girls. Results also indicate that work interferes with children’s progress through school; particularly among poor children, rural children, and Hausa–Fulani children. To address this problem, policies need to implement educational stipends that are given to the households in which these children belong on the condition that they are released from work-related distractions during school time.

Keywords School progression · Education · Gender · Ethnicity · Sub-Saharan Africa

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1 Introduction

Grade repetition is an impediment to the realization of Universal Primary Education (UPE) in sub-Saharan Africa (Ndaruhutse et al. 2008; Marshall 2003). Statistics on grade repetition indicate that sub-Saharan African countries have the highest percentage of children who are repeaters at both the primary and secondary school levels (Manacorda 2012; UNESCO 2012; Ndaruhutse et al. 2008; Brophy 2006). In 2010, in some countries in the region, close to 16 % of primary school students are repeaters¹ (UNESCO 2010, 2012).

The high grade repetition rate in the region complicates the achievement of goals in several multilateral policy statements including the Universal Declaration of Human Rights, the Millennium Development Goals, and Education For All. Article 26 of the Universal Declaration of Human Rights states every human being has a right to an education, at least at the elementary and other basic levels, that is free and compulsory (2011). The same idea is echoed in the second objective of the Millennium Development Goals (MDGs) which states that by 2015, every child, irrespective of gender, must have obtained at least a primary school education. The MDGs prioritizes the educational needs of children from poor households and rural areas, urging nations to target these vulnerabilities in national education policy agendas. Similarly, Education For All (EFA)'s second objective states that, by no later than 2015, all children—in particular girls, those in difficult circumstances, and those belonging to ethnic minorities—must have access to and must complete government—sponsored, mandatory primary education of good quality (UNDP 2012). The achievement of these goals is challenged by grade repetition since repeaters are less likely than non-repeaters to complete the full course of primary or secondary education (Ndaruhutse et al. 2008; UNESCO 2005; Naschold 2002). Indeed, repeaters often dropout of school without acquiring the literacy necessary to function in society (Ndaruhutse et al. 2008).

What we know about grade repetition in developing countries has mainly been research conducted in the context of some Latin American and a few sub-Saharan African countries. Knowledge is still missing on the issue in other developing countries, including Nigeria. Specifically, the literature holds that children who belong to the ethnic group(s) that was historically excluded from their nations' educational system face higher risk of repeating than non-excluded children (Psarcharopoulos 1997; Psarcharopoulos and Yang 1991). It is unclear whether this premise holds across all developing countries. Moreover, the reasons for why excluded or indigenous children face higher risk of repeating may vary by nations' educational histories and economic and socio-cultural factors.

Prior research also finds that repetition is more common among rural children and children living in poverty than children who lack the preceding attributes (Psarcharopoulos 1997; Psarcharopoulos and Yang 1991). The results of the gender gap in repetition at the primary school stage are mixed. Given this, the current research adds to the existing body of research on repetition in the developing world by documenting the Nigerian experience. It seeks to examine the associations of gender, ethnicity, urban–rural residence, and socio-economic status on children's school progress by analyzing the 2004 Nigeria Demographic and Health Survey EdData Survey (NDES 2004). It also seeks to identify the other correlates of progress through school within the categories of ethnicity, gender, urban–rural residence, and socioeconomic status. This research further adds to the knowledge gap by providing the economic and socio-cultural explanations for why Hausa–Fulani children,

¹ At the same time, however, it should be noted that reliable grade repetition data are often unavailable due to inadequate reporting by education ministries, schools, and teachers (Marshall 2003).

the ethnic group that was resistant to Western style education in Nigerian history, are less likely to progress through school than children of the dominant ethnic group.

2 Theoretical Framework

A theoretical model used to understand the link between children's educational outcomes and work is Becker's (1965) allocation of time and its connection to household behavior. The theory states that households are the primary decision maker on how many children to have, and how to use each household member's time (Psacharopoulos 1997; Becker 1965). Specifically, households distribute the time of members to market work, household production, and/or schooling (Psacharopoulos 1997; Becker 1965). The theory stresses that time is one of the major educational inputs, and that the time available for pursuing formal education will decrease sharply when children enter the labor market at an early age and when their work days are lengthy (Becker 1965). Work-related obligations can lead families to withdraw children from school, thereby forcing them to repeat because they have not learned the previous academic year's material (Patrinos and Psacharopoulos 1996). The theory also assumes that a division of labor exists in households where members allocate their time differently depending on whether they are effective in market work in comparison to consumption activities (Becker 1965).

A major argument against Becker's (1965) theory is its failure to account for the role that gender plays in shaping children's educational attainment and performance (Britt and Roy 2014). Feminist theory contends that the time devoted to work is not the only factor that produces educational inequality among children; rather, socially constructed ideas differentiating children by their gender, and cultural norms specify the type of work they will undertake, create educational gaps (Britt and Roy 2014). Feminist theory also proposes that from an early age, children are socialized to perform specific duties that are culturally thought to be appropriate for their gender (Britt and Roy 2014).

Cultural values in sub-Saharan Africa further provide insight on the importance of work in the lives of children. African cultural values stipulate that work is an integral part of children's socialization, and it is considered to be a type of informal or vocational education (Bass 2004; White 1999). In the African context, children are considered to be economically useful to their parents and extended family members, and parents have many children in order to meet this objective, particularly in rural areas given the reliance on children's labor in agriculture (Bass 2004). Working alongside their parents, many children participate in household production and in the labor market as a survival strategy, especially when they belong to economically constrained households (Buchmann and Hannum 2001; White 1999). Parents also believe that children's work can instill knowledge of a trade or a way of life beyond the skills that formal schooling bestows; this perspective is common in rural areas of the developing world (Bass 2004). African cultural values also promote a gender-based division of labor, which specifies what work children undertake based on their gender. In the African context, children are sorted to gender-specific roles as they move beyond age five (Bass 2004). More importantly, parents teach their children about the societal norms on the kind of work that they should perform based on their gender (Bass 2004).

There is no universal view on children's work, even within a national boundary. In a given country in sub-Saharan Africa, cultural values on the relevance of work in children's lives vary by age, gender, ethnicity, social class, urban–rural residence, and religion (Bass

2004; White 1999). In Nigeria, for example, the three major ethnic groups are the Yoruba, Igbo, and Hausa–Fulani. These ethnic groups hold different beliefs on children’s work, and their beliefs are driven by the ethnic group’s economic way of life and children’s critical contributions to it. The Hausa–Fulani ethnic group, for instance, sees children as an integral part of the families’ economic survival, given that women of reproductive age observe *purdah* and seclusion, which prevent participation in the public domain (Bass 2004). Children are used as intermediaries between secluded married women, and the market in an attempt for secluded women to have economic independence (Abebe 2007; Bass 2004; Robson 2004). When universal primary education was being established in Nigerian history, the Hausa–Fulani people were particularly resistant to it because children’s labor would no longer be available to fulfill that intermediary role between secluded women and the market (Bass 2004). More importantly, it required that children’s time be diverted to formal education rather than informal education (Bass 2004).

The thinking on the rightfulness of children’s work in Africa is influenced by Islamic ideology. Islam contends that children’s work is an integral part of furthering seclusion as they act as intermediary between secluded women/girls and the outside world (Abebe 2007; Robson 2004). Islam supports the use of children’s labor in exchange for learning the Quran from religious leaders (Abebe 2007; Bass 2004). The children who are most likely to be living with Quranic teachers in order to learn the Quran and who have to beg for their daily upkeep are children from poor families (Bass 2004). As part of this endeavor, children beg in urban areas or work on farms in rural areas on behalf of their Quranic teachers to raise the funds to cover the costs of their Islamic education and daily upkeep; often these children do not have the chance to obtain formal education (Bass 2004).

Becker’s (1965) allocation of time theory and African cultural values on children’s work complement each other. Both theories state that children are instrumental for families’ economic existence given that their time can be used in household production and/or in the labor market. In fact, both theories suggest that the household’s need for children’s time in domestic and market work can diminish the time available for other activities including formal education and leisure. The Africa view of the value of children’s work departs from the allocation-of-time theory by seeing children’s work as a type of informal or vocational education, which can impart skills beyond formal schooling. However, both theories note the importance of division of labor in children’s lives and work. The allocation-of-time theory discusses the division of labor from the perspective that household members are gifted at different tasks, and they are directed to execute duties based on whether they are effective at them or not (Becker 1965). Alternatively, African cultural values on children’s work and feminist theory suggest that, from an early age, children are sorted to duties based on their gender (Bass 2004). Given the premises in these theories, this research examines the influence of work on children’s progress through school beyond gender, ethnic, urban–rural residence and socioeconomic status.

3 Previous Research

The motivation to reduce grade repetition is based on the argument that it affects both the education system and repeaters in negative ways (Ndaruhutse et al. 2008; Patrinos and Psacharopoulos 1995). Since the education systems in developing countries are notoriously under-resourced, repetition is seen as financially wasteful (Manacorda 2012; Patrinos and Psacharopoulos 1996). It wastes resources that could otherwise be used to improve the

quality of education for all children in the school system (UNESCO 1998). It leads to overcrowding in the classroom, and it interferes with the quality of education that other children obtain because teachers have to teach more students of varying age groups (Goos et al. 2013; Marshall 2003; UNESCO 1998; Gomes-Neto and Hanushek 1994).

In Latin America and other developing countries, research indicates that children who are repeaters have a higher likelihood of dropping out of school than non-repeaters (Manacorda 2012; Glick and Sahn 2010; Marshall 2003; UNESCO 1998; Eisenmon 1997). Reasons cited are the age difference between repeaters and their classmates, social stigma, and teasing associated with being too old for their grade (Manacorda 2012; Brophy 2006; Jimerson et al. 2002). There is also a psychological cost to repeating, such as feeling ashamed, low self-esteem, and sadness due to separation from friends in their peer groups (Manacorda 2012; Ndaruhutse et al. 2008; Brophy 2006; Jimerson et al. 2002; UNESCO 1998; Gomes-Neto and Hanushek 1994).

While conventional wisdom holds that nothing good comes from repeating, other researchers suggest it has its benefits. Repeating a grade can provide children who are behind academically the chance to re-learn the material before moving forward to the next grade level (Goos et al. 2013; Manacorda 2012; Brophy 2006; Patrinos and Psacharopoulos 1996). Research in Brazil suggests that, while repeaters were below average academic performance before repeating, their performance rose to above average after repeating a grade (Gomes-Neto and Hanushek 1994). From the preceding finding, Gomes-Neto and Hanushek (1994) concludes, although repetition is an expensive type of educational corrective tool, it is not a complete financial waste. Repeating can also offer children who are young and immature an extra year to develop maturity and feel secure before moving to the next grade (Ndaruhutse et al. 2008).

In South Africa, research shows that it is during the first and last years of primary education that children in developing countries repeat school the most (Liddell and Rae 2001). In Nigeria, among children in the first year of primary school, 4 % are repeaters (Nigeria DHS EdData 1990, 2003 and 2008). Due to lack of preschools, some children who are underage are enrolled in the first year of primary school even though they have not reached the age of official entry (Liddell and Rae 2001). These children are often held back because they do not have the competence to perform in the first year of schooling and the subsequent grade (Liddell and Rae 2001). Moreover, in Nigeria, at primary school levels second through sixth, between 2–4 % of male and female children are repeaters (Nigeria DHS EdData 1990, 2003 and 2008). Adeyemi (2012)'s research in a single state, Ondo State, in Nigeria finds that repetition rate among secondary school children is between 4.2 % in 2002 and 2.8 % in 2007. The study further emphasizes that even though the repetition rate in Ondo State, Nigeria is low among secondary school children, some students still spend more than the normal 6 years in secondary schools (Adeyemi 2012), thus, implying that repetition still exist among secondary school children in Ondo State, Nigeria.

Repetition is common in the last year of primary school because some children fail the national end-of-primary-school exam needed to progress to secondary school (UNESCO 1998). Scholars affirm that there are cases in developing countries where high achieving students repeat a grade. Studies in Burundi and Kenya find that some high achieving students in the upper years of primary school repeat at the upper grades in order to prepare for examinations for the limited spaces in secondary school (Brophy 2006; Eisenmon and Schwille 1991). In other words, not all children repeat a grade because of less-than-perfect academic performance. They do so in order to re-learn the material necessary for better results on their entrance exam.

In developing countries, research also indicates the decision to repeat a grade is often voluntary and it is initiated by the students themselves or their parents (Brophy 2006). Voluntary repetition occurs when students cannot proceed to the next grade level because their schools do not provide the next grade. Under this circumstance, they repeat the previous grade that they had already completed (Brophy 2006); this occurs frequently in rural places of the developing world (Brophy 2006). Secondly, voluntary repetition can happen when parents perceive that their children have not learned the academic material of the previous year. This type of repetition occurs in developing countries when a child does not attend school regularly because of work obligations (Brophy 2006; Patrinos and Psacharopoulos 1996). Voluntary repetition also happens when the language of instruction differs from the one that the child speaks at home. In this situation, parents may want their children to be held back in the early grade in order to become fluent in the language of instruction before moving to the subsequent grade levels (Brophy 2006). Parents also initiate a child's repetition in cases where they believe that a child is still too small and/or immature to move to the next grade (Marshall 2003).

In developing countries, teachers are in support of low performing students repeating because they often observe the progress that repeaters make during the retention year (Goos et al. 2013; Brophy 2006; Schiefelbein 1975). However, the progress made in the year of repetition usually diminishes as students move to higher grade levels and are introduced to new material (Brophy 2006). In addition, research indicates that the process of selecting students to repeat a grade can be discriminatory because teachers can pick students who will repeat on the basis of their social status (UNESCO 1998). Earlier research in developing countries shows that repeaters are disproportionately girls, indigenous children, children who belong to ethnic minorities, rural children, poor children, orphans, and children with disabilities or special needs (Goos et al. 2013; Ndaruhutse et al. 2008). A closer examination finds that the evidence for gender differences is mixed. In some Latin American countries (e.g., Brazil), research finds no disadvantage for girls (Goos et al. 2013; Ndaruhutse et al. 2008; Gomes-Neto and Hanushek 1994; Patrinos and Psacharopoulos 1995). However, in Honduras, research indicates that boys are more likely to repeat a grade than girls (Marshall 2003). Likewise in sub-Saharan Africa, some work reports that girls are more likely to repeat a grade than boys (UNESCO 2005) while the opposite is found elsewhere (Ndaruhutse et al. 2008). Discrimination and/or the legacy of exclusion of indigenous groups from the education system in their countries explain the greater repetition rate of indigenous children in contrast to children of dominant ethnicity (Aturupane et al. 2013; Patrinos and Psacharopoulos 1995). Indigenous girls face an even greater chance of repeating than their male counterparts (Patrinos and Psacharopoulos 1995).

Research in Latin America, Senegal, and Southern Africa indicates that children from poor or low income households are more likely to be repeaters than those from non-poor or high income households (Aturupane et al. 2013; Goos et al. 2013; Glick and Sahn 2010; Ndaruhutse et al. 2008; Marshall 2003; Bernard 2001; Liddell and Rae 2001; Gomes-Neto and Hanushek 1994; Patrinos and Psacharopoulos 1995; Schiefelbein 1975). Children from wealthy households have lower repetition rate than those from poor households because their parents may use their monetary means to bribe teachers in order to allow their children to avoid repetition (Glick and Sahn 2010). Wealthy parents are also more likely than non-wealthy parents to challenge the decision that their child has to repeat (Glick and Sahn 2010). An alternative explanation for the higher grade repetition among poor children holds that poor parents have a greater demand for their children's labor and have little or no resources to dedicate to their children's education (Marshall 2003). The poor may not

perceive education as the top priority given that it competes with their family's immediate economic needs (Ndaruhutse et al. 2008). Poor children are also more likely than non-poor children to be in schools that employ unqualified and less effective teachers (UNESCO 1998). Poor children's repetition may be due to poor instruction from their teachers. Researchers have found that girls who belong to poor households face a higher risk of repeating than boys from poor households. Poor girls are also more likely than poor boys to be prevented or delayed from entering school in a timely fashion (Patrinos and Psacharopoulos 1996). In this instance, boys are favored over girls with regard to schooling when families lack the financial resources to educate all their children (Glick and Sahn 2010; Huisman and Smits 2009; Lewis and Lockheed 2006). This action is often justified on the grounds that the labor market is more receptive to males than females (UNESCO 1998).

Earlier research conducted in Brazil and Honduras finds a higher risk of grade repetition among children of illiterate or low-educated parents than children of high educated parents (Aturupane et al. 2013; Goos et al. 2013; Marshall 2003; Gomes-Neto and Hanushek 1994; Patrinos and Psacharopoulos 1995). Children from illiterate or low-educated parents may be less prepared academically when entering and as they progress through school (Eisenmon 1997). However, in Senegal, earlier research does not find that parental education has a significant impact on children's chances of repeating (Glick and Sahn 2010).

In Brazil, Bolivia, Guatemala, Indonesia, Lebanon, Pakistan, Togo, and Zimbabwe research indicates that rural children have a higher probability of repeating a grade than urban children (Ndaruhutse et al. 2008; UNESCO 2005; El-Hassan 1998; King et al. 1999; Gomes-Neto and Hanushek 1994; Patrinos and Psacharopoulos 1995). In rural areas, schools with grade levels for all age groups of children are not available (Gomes-Neto and Hanushek 1994). An alternative explanation for the greater repetition level in rural areas is that rural schools have a set of limitations—such as scarcity of teaching supplies, low teacher attendance, and/or poorly qualified teachers—that make repetition more likely (Eisenmon 1997). Demand for child labor within the home may also be a factor. Children in rural settings miss many days of school or leave school all together during planting and harvest seasons (UNESCO 1998). Girls who reside in rural communities particularly face greater risk of repeating because their parents may choose to cut the costs of educating their children by removing their daughters from school first during difficult economic times (UNESCO 1998). This action can leave many girls in rural areas to miss months of school, and if they return, they may be forced to repeat the grades that they previously did not complete.

The forthcoming multivariate analysis controls for other correlates of progress through school including the sex of household head in the household that the child resides, number of children below the age of five residing in the household with the child, the child's sibling composition, the child's parents' attitude on gender equality in education and child labor, and the region of the country that the child resides.

4 The Nigerian Context

In Nigeria there has been an imbalance in education by region that cuts through ethnic groups. This educational inequality dates back to the introduction of Western style education introduced by missionaries in 1843 (Fafunwa 1974). The southern region of the country, mostly populated by the Yoruba and Ibo ethnic groups, was the first area that benefited from Western education (Bray 1981; Fafunwa 1974). The south of Nigeria was

suitable for evangelical mission work and educational activities because Islam was not dominant there. The northern region, where the Hausa–Fulani ethnic group is mostly populated, was resistant to the introduction of Western style education. Islam and Koranic education predate Western education in the north. Western education is believed to pose a threat to the established religion and power structure in region, Islam and emirs respectively, (Bray 1981; Fafunwa 1974). When Western education was finally introduced in the northern region in 1869 (Bray 1981), the evangelical and educational work of missionaries were highly supervised and restricted by emirs (Bray 1981). The regional inequality in education that cuts across ethnic lines is still alive today. The northern part is still behind in enrolling children, especially girls, in Western-style schools in comparison to other regions. Islamic ideology promotes the seclusion of women and girls of reproductive age. Hausa–Fulani girls’ adherence to seclusion poses an educational disadvantage. In observing seclusion, girls are prohibited from sharing schools and classrooms with boys.

This research examines the associations of gender, ethnicity, urban–rural residence, and socio-economic status on children’s school progress by analyzing the 2004 Nigeria Demographic and Health Survey EdData Survey (NDES 2004). It also seeks to identify the other correlates of progress through school within the categories of ethnicity, gender, urban–rural residence, and socioeconomic status.

5 Methods

5.1 Data

This research analyzes the 2004 Nigeria Demographic and Health Survey EdData Survey (NDES 2004). The primary objective of the NDES is to provide information about the education of primary and secondary school age children in Nigeria. The survey contains data on numerous factors that influence children’s school attendance and other education outcomes. The 2004 NDES also has variables data on the costs of schooling (both monetary and non-monetary) and on parents and/or guardians’ attitudes about schooling. The sampling of the households in the 2004 NDES is drawn from the 2003 Nigeria Demographic and Health Survey (DHS 2003). In the 2003 DHS, a total of 365 clusters are chosen. Among these clusters are 165 urban and 200 rural. The 2003 DHS survey is conducted on 362 clusters² consisting of 7864 households. The 2004 NDES selected 4563 households from the 7864 households in the 2003 DHS among which 4268 households are successfully interviewed. The disparity between selected households and those interviewed reflects the fact that some households had relocated in the interim. To be selected as one of the 4268 households in the 2004 NDES, there must be at least one child between the ages of four and sixteen in the household. In total, the sample of eligible children on whose behalf parents/guardians answered survey questions is 9695. The response rate in the 2004 NDES is 98 %. The sample is not self-weighting. The weight provided in the eligible child questionnaire is divided by its mean to yield a weighted N approximately equal to the sample size.

The 2004 NDES consists of four separate questionnaires, which are the household, the parent/guardian, the eligible child and the independent child. This research utilizes the eligible child questionnaire. To be interviewed, a parent must have a child in the age range

² There is a difference in the number of original clusters chosen and those that surveys were conducted on. Three less clusters were interviewed due to communal conflicts, which made acquiring data impossible.

of four to sixteen living in the household. This research uses the eligible child questionnaire. It has variables about children's schooling status, including whether they attended school during the 2003 to 2004 school year, whether they have dropped out of school, or never attended school. The questionnaire also ask the children's parent or guardian about their household expenditures on schooling, the reasons why children may have missed school for a long period, reasons for school dropout, and attendance and other questions.

5.2 Dependent Variable

Following Psarcharopoulos and Yang (1991), an age-grade-distortion variable is used to operationalize progress through school. The variable is comprised of children whose age is above the standard for the grade they may have just completed or are currently attending. The variable includes repeaters, children who are too old for their current grade level, and those who are late entrants. The age-grade distortion is a measure of children's educational attainment relative to their age.

The formula for the age-grade-distortion variable, also called schooling-for-age variable, (SAGE) by Psarcharopoulos and Yang (1991) is as follows³:

$$\text{SAGE} = (\text{years of completed schooling} / (\text{child's current age} - \text{age of entry into primary school in the country, age six in Nigeria})) \times 100.$$

In the coding stage, the children with years of completed schooling of either zero or one and whose current age is six get 100 for their SAGE value. This indicates that these children are on normal track for progression through school. Children with years of completed schooling of zero and who are ages seven or older are given the value "0" for their SAGE value. This indicates that these children are below the normal progression through school based on their age. All the other children adhere to the SAGE formula stated above if their years of completed schooling is greater than or equal to one and their age is greater than or equal to seven. Children with a SAGE score that is less than 100 are below normal progression through school. This is due to one of the following reasons, repeating a grade, late entry or dropping out and then re-enrolling in school (Psarcharopoulos and Yang 1991). Those children with scores of 100 or greater are considered as on-track or ahead in normal progression through school. SAGE as the dependent variable in the forthcoming analysis remains in continuous form.

5.3 Independent Variables

In Table 1, the definitions and descriptive statistics of variables of interest are provided. The sex of the child is coded one for males and zero for females. The place of residence is coded one for urban and zero for rural. The child's ethnicity is divided into four categories: Yoruba, Igbo, Hausa–Fulani (the reference group), and other ethnicities. A household wealth index is created by NDES based on ownership of a radio, television, paraffin lamp, bicycle, motorcycle/scooter, and car/truck this index also, includes items related to lighting, water, and fuel sources, sanitation facilities and floor material. These items are combined into an asset score. During coding, they are divided into quintiles of economic

³ The years of completed schooling variable was derived by subtracting the variable, age when a child first entered grade 1 from the variable his/her current age in years.

Table 1 Definitions of variables and means (SD)

Variable name	Definition	Mean
<i>Individual characteristics</i>		
Male	Child is male	0.55 (0.49)
Female (ref.)	Child is female	0.45 (0.49)
Urban	Child lives in an urban area	0.39 (0.48)
Rural (ref.)	Child lives in a rural area	0.61 (0.48)
Yoruba	Child's ethnicity is yoruba	0.11 (0.31)
Igbo	Child's ethnicity is igbo	0.14 (0.34)
Other ethnicity	Child's ethnicity is other than yoruba, igbo, and hausa	0.45 (0.49)
Hausa-Fulani	Child's ethnicity if hausa	0.31 (0.46)
Age 6–8 (ref.)	Child is between age 6–8 years old	0.32 (0.46)
Age 9–12	Child is between age 9–12 years old	0.42 (0.49)
Age 13–16	Child is between age 13–16 years old	0.26 (0.43)
<i>Individual characteristics</i>		
Working	Child is missed school because of care work, domestic duties, farm work/family enterprise and work for an employer	0.09 (0.28)
Not working	Child did not perform any type of work	90.92 (0.28)
<i>Household characteristics mother's education</i>		
Zero education (ref.)	The child's mother has never attended school	0.46 (0.49)
Incomplete primary	The child's mother has not completed primary school	0.09 (0.28)
Complete primary	The child's mother has completed primary school education	0.18 (0.38)
Incomplete secondary	The child's mother has not completed secondary school	0.14 (0.35)
Complete secondary and higher	The child's mother has completed secondary school or higher	0.12 (0.32)
<i>Father's education</i>		
Zero education (ref.)	The child's father has never attended school	0.33 (0.47)
Incomplete primary	The child's father has not completed primary school	0.13 (0.33)
<i>Individual characteristics</i>		
Complete primary	The child's father has completed primary school education	0.17 (0.37)

Table 1 continued

Variable name	Definition	Mean
Incomplete secondary	The child's father has not completed secondary school	0.15 (0.35)
Complete secondary and higher	The child's father has completed secondary school or higher	0.21 (0.40)
<i>Wealth index</i>		
Poorest (ref.)	Household ranked in the first quintile of wealth	0.15 (0.36)
Poorer	Household ranked in the second quintile of wealth	0.18 (0.38)
Middle	Household ranked in the three quintile of wealth	0.20 (0.40)
Richer	Household in the fourth quintile of wealth	0.24 (0.42)
Richest	Household in the fifth quintile of wealth	0.23 (0.42)
<i>Distance to school</i>		
Walking time to the nearest primary school in community		
<20 min (ref.)	Child lives less than 20 min from the nearest primary school	0.80 (0.40)
≥20 min	Child lives at least 20 min or more from the nearest primary school	0.20 (0.40)
Walking time to the nearest secondary school in community		
<20 min (ref.)	Child lives less than 20 min from the nearest secondary school	0.36 (0.48)
≥20 min	Child lives at least 20 min or more minutes from the nearest secondary school	0.64 (0.48)
<i>Sibling composition</i>		
Zero older brothers (ref.)		
	Child has no older brothers	0.40 (0.48)
One older brother	Child has one older brother	0.29 (0.45)
Two older brothers	Child has two or more older brother	0.31 (0.46)
Zero younger brothers (ref.)		
	Child has no younger brothers	0.20 (0.40)
One younger brother	Child has one younger brother	0.33 (0.47)
Two younger brothers	Child has two or more younger brothers	0.47 (0.49)
Zero older sister (ref.)		
	Child has no older sisters	0.40 (0.49)
One older sister	Child has one older sister	0.28 (0.44)
Two older sisters	Child has two or more older sisters	0.32 (0.46)
Zero younger sister (ref.)		
	Child has no younger sisters	0.23 (0.41)
One younger sister	Child has one younger sister	0.31 (0.46)

Table 1 continued

Variable name	Definition	Mean
Two younger sister	Child has two or more younger sister	0.46 (0.49)
<i>Household structure variables</i>		
Presence of infants and toddlers	Number of individuals in the household who are below age five	1.36 (1.15)
Male headed household (ref.)	Child's household head is male	0.98 (0.13)
Female headed household	Child's household head is female	0.01 (0.07)
Household without headship	Child's household head is missing	0.06 (0.11)
<i>Family structure variables</i>		
Polygamous	Child's resides in a polygamous household	0.33 (0.47)
Monogamous	Child's resides in a monogamous household	0.65 (0.47)
Missing family structure	Child's resides in a household with missing family structure type	0.01 (0.08)
<i>Religion</i>		
Muslim (ref.)	Child's religion is Islam	0.49 (0.50)
Christian	Child's religion is Christianity	0.50 (0.50)
Traditional and other	Child's religion is traditional and other	0.01 (0.06)
<i>Parent/guardian's attitude</i>		
Agrees children should be kept home for work/help, if necessary	The parent or guardian of a child agrees that children should be kept home for work or housework, whenever necessary	0.21 (0.40)
Disagrees (ref.)	The parent or guardian of a child disagrees that children should be kept home for work or housework, whenever necessary	0.79 (0.40)
Agrees boys schooling more important	The parent or guardian of a child agrees that it is more important for a boy to attend school than a girl	0.27 (0.44)
Disagrees (ref.)	The parent or guardian of a child disagrees that it is more important for a boy to attend school than a girl	0.72 (0.44)
<i>Region of country child lives</i>		
North west	Child resides in north west	0.28 (0.45)
North central	Child resides in north central region	0.18 (0.38)
North east	Child resides in north east region	0.16 (0.36)
South east	Child resides in south east region	0.10 (0.30)
South south	Child resides in south south region	0.16 (0.36)
South west	Child resides in south west region	0.10 (0.30)

Table 1 continued

Variable name	Definition	Mean
<i>Dependent variable</i>		
Age-grade distortion	Indicator for progress in school	96.28 (40.56)

N = 3165

status. Households in the lowest quintile serve as the reference group. The work variable is coded one if a child missed school either because of caring for sick relatives, performing domestic duties, working on family farms or businesses or working for an employer and zero otherwise. The coding procedures and definitions of control variables used in the analyses are available upon request.

5.4 Model Estimation Technique

The age-grade distortion or the schooling-for-age (SAGE), variable is continuous in form. Due to this, the ordinary least squares (OLS) regression is employed as the model estimation technique. The equation for the multiple OLS regression model is:

$$y = B_0 + B_1x_1 + B_2x_2 + B_3x_3 \cdots + B_kx_k + u$$

In the equation, y denotes a child's progress through school. B_0 is the intercept. It is the predicted value of y when each of the independent variables are zero. The B s are coefficients corresponding to the change in y in respect to each of the independent variables (the X 's), while holding other factors constant. The variable u is the error term and it represents all the other factors other than the independent variables in the regression model that explain the dependent variable of interest.

The OLS regression for progress through school that is specified above may suffer from omitted variable bias because of the inability to control for teacher and school quality variables in the regression. If the problem is left untreated, the coefficient estimates will be biased and inconsistent (Wooldridge 2000). One can address the issue by estimating a fixed effect regression model that assumes that the omitted variables do not change overtime (Wooldridge 2000). In the analyses presented below, an OLS regression with fixed effects is estimated where grade-level does not change overtime. The OLS regression using grade-level⁴ fixed effect eliminates the problem of omitted variable bias by regressing the dependent variable, progress through school, on various independent variables in addition to the dummy variables for different grade-levels. In STATA, this objective is executed by using the prefix `xi: regress i`. The `i.` prefix is followed by grade-level. This informs STATA to generate dummy variables for each grade-level. For example, in Model 1, the following OLS regression is specified; `xi: regress sage male urban yoruba igbo other ethnicity, i. grade-level`. The `i. grade-level` part of the preceding regression automatically creates twelve dummy variables, which are added to the regression model. The first grade-level is omitted to serve as reference group. By adding the dummy variable for each grade-level to the regression, one controls for average differences across grade-levels that are both observed and unobserved, which in turn rules out the problem of omitted variable bias.

⁴ The grade-level fixed effect represents all factors affecting progress in school that does not change overtime.

6 Results

Table 1⁵ represents the definitions and descriptive statistics of variables of interest used in the analyses. Briefly, the means of demographic and dependent variables are highlighted. The data indicate that 45 % of children in Nigeria are girls. As for urban–rural residence, 61 % of children reside in rural areas. For ethnicity, 11 % of children are Yoruba, 14 % Igbo, 31 % Hausa–Fulani and 45 % of children belong to other ethnic groups. The wealth variable shows that 23 % of children belong to the wealth quintile categorized as richest, 24 % to the richer quintile, 20 % to the middle, 18 % to the poorer and 15 % poorest wealth quintile. Although quintile should reflect an even split, the process of excluding some children from the sample gave way to the wealth variable being unevenly distributed. Nine percent of children missed school because of work related activities. The mean value of 96.28 on the SAGE value means that, on average, children in Nigeria are below normal progress through school.

The forward step-wise model building technique is used in the regression results presented below. In the forward step-wise process, an initial regression model is stated that includes the intercept and a set of independent variables. In subsequent models after the initial model, blocks of variables are added to the previous model. The independent variables in the initial model cannot be removed from the model as sets of variables are included in the later steps. At each step after the initial step, statistics are calculated for each variable that is entered into the model. The stepping process is terminated when the variables being added lack statistical significance or the maximum number of steps is attained.

Table 2 shows the ordinary least squares regression for progress through school with grade level fixed effects. In Model 1, upon controlling for place of residence, the child's ethnicity, the child's current age, and the child's working status, boys have 3.60 points lower schooling-for-age score than girls. This result is significant at the 0.05 level. Further in Model 1, the coefficients of 18.50, 10.31 and 5.08 with significance at the 0.001 on the Yoruba and Igbo ethnicities and 0.01 on the other ethnicities, respectively, means that after controlling for the other covariates, Yoruba, Igbo, and other ethnic groups children have a schooling-for-age scores that are 18.50 points, 10.31 points and 5.08 points, higher than Hausa–Fulani children. This finding supports Lewis and Lockheed (2006)'s research in Bolivia and Patrinos and Psacharopolous (1996) research in Bolivia and Guatemala which shows that the children of the ethnic group that has been excluded from the education system in their respective countries have a high likelihood of repeating/falling behind in school.

Hausa–Fulani⁶ children face obstacles to their progression through Western-style primary and secondary schools because of religion, culture, the need for child labor as part of familial economic survival and the legacy of educational imbalance bestowed upon northern Nigeria during colonialism (Csapo 1981). Hausa–Fulani parents have been resistant to western-style education for their children because they believe it is a facet of Christianity (Niles 1989). They presume that sending their children to Western-style schools will introduce them to Christianity. It is believed that this religion poses a threat to their Islamic faith (Niles 1989; Csapo 1981; Fafunwa 1974). The Yoruba ethnic group has an educational advantage over the Hausa–Fulani because they were open to missionary evangelical work and to Western-style education. As a result, schools were built in the

⁵ An extended version of Table 1 is available upon request.

⁶ This ethnic group is mostly populated in northern Nigeria.

Table 2 Ordinary least squares regression analysis of progress in school (with gradelevel fixed effect) of Nigerian children, aged 6–16 on selected independent variables, 2003–2004

Variable	Model (1) OLS Coefficient	Model (2) OLS Coefficient	Model (3) OLS Coefficient	Model (4) OLS Coefficient
<i>Sex of the child</i>				
Male	−3.60* (1.62)	−2.08 (1.64)	−2.05 (1.62)	−2.08 (1.62)
Female (ref.)				
<i>Place of residence</i>				
Urban	7.26*** (1.68)	1.78 (2.11)	1.80 (2.07)	0.73 (2.05)
Rural (ref.)				
<i>Child's ethnicity</i>				
Yoruba	18.50*** (2.83)	12.23*** (3.19)	11.38** (3.37)	10.15* (5.06)
Igbo	10.31*** (2.43)	4.95! (2.64)	4.00 (2.73)	8.06 (4.94)
Other_ethnic	5.08* (2.04)	1.85 (2.12)	1.69 (2.18)	2.34 (3.32)
Hausa–Fulani (ref.)				
<i>Child's work status</i>				
Working	−9.33*** (2.36)	−6.26** (2.34)	−5.80** (2.36)	−8.06** (2.42)
Not working (ref.)				
<i>Mother's education</i>				
Zero education (ref.)				
Incomplete primary		1.40 (2.83)	0.50 (2.79)	0.23 (2.84)
Complete primary		3.68 (2.37)	1.73 (2.38)	1.07 (2.50)
Incomplete secondary		6.13* (2.87)	3.70 (2.84)	1.78 (2.82)
Complete secondary or higher		7.43* (3.20)	4.46 (3.23)	3.77 (3.21)
<i>Father's education</i>				
Zero education (ref.)				
Incomplete primary		3.02 (2.64)	2.99 (2.64)	2.37 (2.61)
Complete primary		7.09** (2.64)	5.37* (2.59)	3.66 (2.60)
Incomplete secondary		10.20*** (2.91)	8.80** (2.88)	8.88** (2.88)
Complete secondary or higher		11.23*** (2.82)	9.80*** (2.83)	10.10*** (2.81)
<i>Walking time to the nearest primary school in community</i>				
<20 min (ref.)				
≥20 min		−2.19 (1.85)	−1.72 (1.83)	−1.88 (1.83)

Table 2 continued

Variable	Model (1) OLS Coefficient	Model (2) OLS Coefficient	Model (3) OLS Coefficient	Model (4) OLS Coefficient
<i>Walking time to the nearest secondary school in community</i>				
<20 min (ref.)				
≥20 min		-4.58* (1.81)	-4.20* (1.79)	-3.31! (1.78)
<i>Wealth index</i>				
Poorest (ref.)				
Poorer		6.77* (2.84)	6.88* (2.82)	6.27* (2.77)
Middle		6.12* (2.65)	6.21* (2.66)	6.52** (2.65)
Richer		9.08** (2.96)	9.21** (2.95)	8.35** (2.98)
Richest		8.50** (3.34)	7.06* (3.35)	5.47 (3.40)
<i>Sibling composition</i>				
Zero older brothers (ref.)				
One older brother			1.38 (1.94)	1.44 (1.91)
Two older brothers			-0.36 (1.99)	-0.66 (1.97)
Zero younger brother (ref.)				
One younger brothers			-4.94* (2.34)	-4.32! (2.32)
Two younger brothers			-7.56** (2.34)	-7.46** (2.32)
Zero older sisters (ref.)				
One older sister			0.39 (2.06)	0.06 (2.03)
Two older sisters			-2.77 (1.87)	-3.20! (1.86)
Zero younger sisters (ref.)				
One younger sister			-4.34! (2.25)	-4.51* (2.23)
Two younger sisters			-9.28*** (2.26)	-9.29*** (2.23)
<i>Household structure variables</i>				
Presence of infants and toddlers			2.37** (0.81)	2.25** (0.81)
Male headed households (ref.)				
Female headed household			-2.66 (9.26)	-0.16 (9.64)
Household without headship			-2.12 (4.84)	-2.77 (4.93)

Table 2 continued

Variable	Model (1) OLS Coefficient	Model (2) OLS Coefficient	Model (3) OLS Coefficient	Model (4) OLS Coefficient
<i>Family structure variables</i>				
Polygamous (ref.)				
Monogamous			6.40** (1.84)	6.23** (1.88)
Missing family structure			0.01 (8.30)	0.92 (7.85)
<i>Religion</i>				
Christian				−3.95 (2.55)
Traditional and other				−10.93 (7.91)
Muslim (ref.)				
<i>Parent/guardian's attitude</i>				
Agree child should be kept home for work/help, if necessary				−0.19 (1.92)
Agrees boys schooling more important				−0.79 (2.01)
Disagree (ref.)				
<i>Region of country child resides</i>				
North west (ref.)				
North central				−5.85! (3.24)
North east				6.27* (3.17)
South east				0.62 (5.07)
South south				10.66** (3.68)
South west				8.16 (5.19)
Constant	65.29	59.11	63.07	63.81
Model F-ratio	17.02	12.65	9.71	9.22
Overall R ²	0.12	0.16	0.17	0.19
No of obs.	3165	3165	3165	3165

Source: Nigeria Demographic and Health Survey EdData Survey (2004)

Robust standard errors are in parentheses

The analyses from Model 1 to Model 4 control for grade-level fixed effects. An extended table with the different grade-level indicators are available upon request

! $P \leq .10$; * $P \leq .05$; ** $P \leq .01$; *** $P \leq .001$

southern region, where the Yoruba ethnicity mostly resides. The legacy of this educational imbalance is still alive today in Nigeria. The southern region has more Western-style schools than the northern region.

Hausa–Fulani girls face additional obstacles in progressing through school because of cultural ideology (Niles 1989; Csapo 1981). Western schooling is considered to be

unnecessary for them because they are expected to be mothers and wives rather than to pursue an occupation (Niles 1989; Csapo 1981; Fafunwa 1974). Upon marriage, even as early as age twelve, Hausa–Fulani girls have to observe seclusion (Niles 1989; Csapo 1981). The observance of seclusion calls for restricted mobility away from public places, including Western style schools and classrooms where women and girls can be exposed to the opposite sex (Niles 1989; Csapo 1981). In addition, Western-style education has a lengthy duration and the Hausa–Fulani ideas argue that it interferes with early marriage for girls (Niles 1989; Csapo 1981). In addition, the limited school spaces that are available in the north of the country are often reserved for boys (Csapo 1981).

Economic reasons also explain why Hausa–Fulani children are less likely to progress through school than children of other ethnicities. Before the joining of the Hausa and Fulani ethnic groups as one, the Fulani people live a nomadic lifestyle. The north of Nigeria does not have a favorable agricultural setting; they are always on the move to gain grazing rights for their cattle (Csapo 1981). The Hausa people gave the Fulani grazing rights to their land on the condition the latter embrace their religion, Islam. In an attempt to show solidarity to the Hausa for giving them grazing rights, the Fulani concur (Csapo 1981). This is the start of the joining and calling of these two ethnicities as Hausa–Fulani. Children are an integral part of the Fulani people's economic survival. From an early age, Fulani boys herd cattle and the girls are responsible for selling the milk products (Csapo 1981). Formal schooling is considered a major hindrance to the economic life of the Fulani people because children's labor is necessary for the families' economic survival (Csapo 1981).

Also, in Model 1, the coefficient of 7.26, with significance at the 0.001 level indicates that after controlling for other covariates, urban children have a schooling-for-age score that is 7.26 points higher than rural children. The coefficient of -9.33 with significance at the 0.001 level shows that net of other covariates, working children have a schooling-for-age score that is 9.33 points lower than non-working children.

Next, Model 2 includes variables for mother's education, father's education, distance to the nearest primary and secondary school, and household wealth index. The coefficient estimate of 7.43, with statistical significance at the 0.05 level, on a mother's complete secondary or higher education indicates that, after controlling for other covariates, children whose mothers have a complete secondary or higher education have a schooling-for-age score that is 7.43 points higher than children whose mothers have no education. The coefficient estimate of 11.23, with statistical significance at the 0.001 level, on a father's complete secondary or higher education indicates that, after controlling for other covariates, children whose fathers have a complete secondary or higher education have a schooling-for-age score that is 11.23 points higher than children whose fathers have no education.

For the wealth variable in Model 2, the coefficients of 6.77, 6.12, 9.08 and 8.50 on the poorer, middle, richer and richest wealth quintiles, suggests that, after controlling for other covariates, children belonging to the poorer, middle, richer and richest household wealth quintiles have schooling-for-age scores that are 6.77 points, 6.12 points, 9.08 points and 8.50 points higher than children from the poorest households. These findings are statistically significant.

Further in Model 2, the coefficient of -4.58 with statistical significant at the 0.05 level means that after controlling for the other covariates, children who live twenty or more minutes to the nearest secondary school have a schooling-for-age score that is 4.58 points lower than those who live closer. Model 2 also shows that the inclusion of a mother's education, a father's education, distance to the nearest primary and secondary school, and

household wealth index variables led to substantial decline in coefficients on ethnicity and child's working status variables; these variables remain in their expected direction and are statistically significant except in the case of dummy variables for other ethnic groups. While, the sex of the child and place of residence variable indicate negative associations with schooling-for-age scores; they are no longer statistically significant. This implies that it is inconclusive that a gender gap and urban–rural gap exists in progress through school among children in Nigeria.

Model 3 includes variables for sibling composition, household structure and family structure. The coefficients of -4.94 and -7.56 on one younger brothers and two younger brothers, suggest that, after controlling for other covariates, the schooling-for-age score decrease by 4.94 points and 7.56 points for children who have one younger brother or two younger brothers than for those without younger brothers. This finding is statistically significant. The coefficients of -4.34 and -9.28 on one younger sister or two younger sisters, suggest that, after controlling for other covariates, the schooling-for-age score decreases by 4.34 points and 9.28 points for children who have one younger sister or two younger sisters, than for those without younger sisters. This finding is statistically significant. The coefficient of 2.37 on presence of infants and toddlers suggests that, after controlling for other covariates, the schooling-for-age score increases by 2.37 points for every one additional increase in the number of infants and toddlers in a household. This finding is significant at the 0.01 level. The coefficient of 6.40, with a statistical significance of 0.001 on the monogamous family structure variable, suggests that, after controlling for other covariates, children who belong to monogamous households have a schooling-for-age score that is 6.40 points higher than children in polygamous households. Upon the inclusion of the preceding variables into Model 3, along with the coefficients on the Yoruba ethnic group, shows that a father's education at the complete primary level and above and household wealth at the poorer to richest level has a statistically significant positive associations on schooling-for-age score. In addition, the coefficient of -2.05 on gender indicates a negative association to schooling-for-age scores but it remains statistically insignificant. However, the coefficient of -5.80 on working shows a negative and statistically significant association on schooling-for-age scores.

Model 4 adds religion, parental attitude, and regional variables. Upon controlling for the preceding variables, the coefficient on gender shows a statistically insignificant negative association on schooling-for-age scores. Among all the ethnicity categories, it is only the coefficient on the Yoruba ethnic group that remains significant at the 0.05 level. Model 4 also indicates that working has a negative and statistically significant association on schooling-for-age scores. Further in Model 4, a father's education at the incomplete secondary education and above and household wealth at the poorer to richer wealth quintiles have statistically significant positive associations on schooling-for-age score from Model 3 to Model 4. The coefficient of -5.85 on north-central indicates a negative association on schooling-for-age scores and is marginally significant. The coefficients on 6.27 and 10.66 on north-east and south-south regions, suggests that after controlling for other covariates, children who live in the north-east and south-south regions have a schooling-for-age score that is 6.27 points and 10.66 points, higher than children in the north-west region.

In summary, the results in Table 2 illustrate that there is an ethnic difference in progress through school in Nigeria that disadvantages Hausa–Fulani children. The association of ethnicity on progress through school is more pronounced among the Yoruba ethnicity as compared to the Hausa–Fulani. The results also indicate that a socioeconomic gap exists in progress through school that privileges children whose fathers have high levels of education and those from wealthy households. As household wealth increases the chances of

progressing in school rises. However, it is inconclusive whether children from the richest households are more likely to progress through school than children from the poorest households. The findings show that work interferes with children's school progress.

6.1 Ethnicity, Gender, Residence, and Socioeconomic Specific Models

Because there is an interest in understanding progress through school by ethnicity, gender, residence and socioeconomic status, models are estimated separately for Hausa–Fulani versus non-Hausa–Fulani, boys versus girls, urban versus rural residents and poor versus nonpoor children.⁷ The objective is to find out differences in the associations of other variables on children's schooling-for-age scores. The statistical significance of these differences is tested by running full interaction models between ethnicity, gender, urban–rural residence, and socioeconomic status, respectively with other variables in the model.

For the estimated models by gender, among girls, the coefficient estimates on the Igbo ethnic group (versus Hausa–Fulani), father's education at the complete secondary and higher education (versus no education), household wealth quintiles categorized as middle to the richer (versus poorest), having a toddler in the household, belonging to a monogamous household (versus polygamous), and residing in the north-east, south-south and south-west regions of Nigeria (in contrast to north-west) show statistically significant positive associations on schooling-for-age scores. On the other hand, among girls, the coefficient estimates on being traditional or other religion (versus being Muslim), having two or more younger brothers (versus no younger brother), having at least two older sisters and at least two younger sisters (versus no older sister or younger sister) indicate statistically significant negative associations on schooling-for-age scores.

The estimated models by ethnicity show that among Hausa–Fulani children, the coefficient estimates on having a father with an incomplete secondary education (versus none), belonging to a monogamous household (versus polygamous), having a toddler in the household, north-east region (versus north-west region) indicate a statistically significant positive association on schooling-for-age scores. However, among Hausa–Fulani children, the coefficient estimates on working (versus not working), living twenty or more minutes from the nearest secondary school (versus closer), and having two or more younger sisters or brothers (versus none) show statistically significant negative associations on schooling-for-age score.

To investigate differences in the determinants of progress through school by socioeconomic status, children in the first and second wealth quintiles (denoted as "poor") are compared to the third and higher quintiles (designated as "non-poor"). Among poor children, the coefficient estimates for a mother's education at the complete primary education and at the complete secondary education and above (versus no education), father's education at the complete primary education and above (versus no education) and living in the north-east, south-south and south-west regions (versus north-west region) show statistically significant positive associations on schooling-for-age score. However, among poor children, the coefficient estimates on working (versus not working), being Christian (versus Muslim), and having at least two younger sisters (versus none) indicate statistically significant negative association on schooling-for-age score.

For the estimated models by urban–rural residence among rural children the coefficient estimates on a father's education at the incomplete secondary education and above (versus no education), belonging to a middle and richer wealth quintiles (versus poorest), belonging to a monogamous households (versus polygamous), and residing in the south-

⁷ The tables of results from the group specific models are available upon request.

south region (versus north-west region) show statistically significant positive associations on schooling-for-age scores. On the other hand, among rural children, the coefficient estimates on working (versus not working), residing twenty or more minutes from the nearest secondary school (versus closer), having at least two younger sibling of either gender (versus none), having two older sisters (versus none), and residing in the north-central region of the country (versus north west) show statistically significant negative associations on schooling-for-age scores.

7 Discussion and Conclusion

This research does not find that a gender and urban–rural inequality exist in progress through school in Nigeria. It also does not find that mother’s education at any level enhances children’s progress through school. However, a father’s education at the incomplete secondary education or above increases progress through school. Moreover, residing in monogamous household increases progress in school among children in Nigeria, particularly for girls.

It also shows that Hausa–Fulani children and poor children are at risk of not progressing normally through school. Policies must be targeted in nature in order to deal with these groups’ lack of progress through school, which may be as a result of repetition, a child being too old for his/her current grade level, or late entry. The cause of lack of normal progress through school should be understood. If repetition is the reason, then the policy for addressing repetition is not simple. The appropriate policy that would be employed must first understand the reasons for repetition among the targeted group(s). To address the lack of progress through school among the Hausa–Fulani children, Western-style education must be mindful of the group’s religious beliefs. Policy should consider having a mobile school that travels with Fulani-Hausa children because of their nomadic lifestyle. To provide for the educational needs of girls in seclusion, it may be necessary to have visiting female teachers and separate school facilities (Banerjee et al. 2013; Csapo 1981).

To address the problem of lack of normal progress through school, which may be due to either repetition, children being too old for their grade, or late entry among poor children, the appropriate policy should focus on poverty eradication, learning enhancement programs, and/or remedial help (Manacorda 2012; Glick and Sahn 2010; Patrinos and Psacharopoulos 1995). When policies choose automatic promotion, it must be complemented with learning enhancement programs. Repetition can be utilized as a policy tool if it is clear that the targeted group(s) can learn previously unlearned material. However, one must be mindful of the connection between repetition and dropping out. Researchers such as Gomes-Neto and Hanushek (1994) find that learning takes place during repetition. So, repetition should not be excluded completely as a viable option. However, this policy has to be used with care. The most important policy is one that focuses on enhancing children’s learning (Patrinos and Psacharopoulos 1995). In Latin American countries and Ghana, Aturupane et al. (2013) Manacorda (2012), and Glewwe and Jacoby (1995) find strong evidence that delayed primary school enrollment is due to nutritional deficiencies in early childhood. To address the problem of delayed entry, policy must focus on addressing early childhood malnutrition by establishing food and nutrition intervention programs, which are targeted towards infants and very young children.

The results indicate that work interferes with children’s ability to progress normally in school. In particular, work is an obstacle to the successful progression through school of

children living in poverty, rural children, and children whose ethnicity is Hausa–Fulani. To address this problem, educational stipends, partial or full exemptions from paying school fees, and food programs policies should be implemented; the allowances should be given to the households in which these children belong under the condition that poor, rural, and Hausa–Fulani children are released from work-related activities, during school time, to promote increased time in school through regular attendance and limiting repeating grades (Banerjee et al. 2013; Manacorda 2012). Policymakers must recognize that there is a tension between the need for children to contribute to families' economic and lifestyle capability and the government mandate for formal education. The African cultural values on children's work should be taken into consideration when making policies. Policies should not overlook the skill sets that a child can learn through vocational education. However, parents must realize the need for formal education. Depending on the context, vocational skill may be more marketable than formal education. This is what the African cultural value endorses.

This research has beneficial implications for an international audience beyond Nigeria. Across nations, when education policies and programs are being constructed, policymakers must be mindful of various ethnic groups' economic way of life, cultural norms, and religious beliefs whereby, implementing policies that complement these attributes. Likewise, across developing societies, policies may be implemented that expand access to education to the excluded/disadvantaged groups through reservation of a certain percentage of school admissions slots for them. Work by Robles and Krishna (2012) has documented the success of access education policies that were implemented in India for its historically disadvantaged groups: scheduled tribes, scheduled castes, and other backward castes. Moreover, this research presents an international perspective beyond Nigeria for the relevance of vocational education, which can be taught alongside formal education for children in various countries in sub-Saharan Africa. The heightened unemployment rate in sub-Saharan African countries, in addition to the inability of universities and college graduates to secure white collar employment upon graduation, suggests that vocational education should be encouraged as well. The skill sets from both types of education can be useful for securing a livelihood at different times in individuals' lives. In fact, work in Uganda shows that vocational training paired with funds for capital acquisition led to substantial increase in skilled employment, income, and consumption among young men and women ages 16–35 (see Banerjee et al. 2013; Blattman et al. 2011).

Future research should investigate how vocational education can be delivered alongside formal education curriculum to children in sub-Saharan Africa. There may not be a need to choose between the two educational tracks. Rather, the skills from both types of education can be taught to all children, and given the economic circumstances can use the skill necessary for securing a livelihood. This research has limitations. The data analyzed is cross-sectional in nature and only permits the chance to observe children's progress through school at a given point in time. The availability of longitudinal data can provide insight on whether repeating a grade poses a benefit or an obstacle to children's education in the long run.

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