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Ecological approach to childhood in South Africa: An analysis of the contextual determinants

Abstract

In South Africa, the educational attainment of African children has been a focal point of policy and research since the end of apartheid in 1994. Individual and policy-level determinants of child development and educational outcomes have been exhaustively investigated. A less researched perspective is the role of community and household composition on educational outcomes. The aim of this paper is to explore the socio-economic and demographic composition of communities and households that influence grade repetition among children in South Africa. The nationally representative South African General Household Survey of 2017 is analysed. The sample is children, 7–14 years old who have repeated a grade (N=529,624). Frequency distributions and multilevel modelling techniques are used to estimate the impact of household and community characteristics on child education outcomes. Results show that males (62.29%) and older children, 10–14 years old (61.27%), have higher grade repetition. In addition, children in female-headed households (54.57%) and poor households (61.13%) also have higher repetition rates. Finally, household poverty (OR: 1.617) and community poverty (OR: 1.944) are associated with increased likelihood of grade repetition. To ensure that South African children progress through school, the households and communities they are nested in require attention and intervention.

1. Introduction

During apartheid, segregation policies ensured that non-White South Africans were not given access to quality education. In fact, a separate education system for non-Whites was established and referred to as Bantu Education (Horrell, 1969). The racist ideology behind Bantu education was based on the national government's argument that education for blacks needed to be based on a separate way of life (Christie & Collins, 1982). Ultimately this meant that Whites and non-Whites would not receive the same education. Further this resulted in not all non-whites receiving education with research showing that in 1930 only 4.9% of the black population received and education and by 1970 this had only increased to 7.7% (Christie & Collins, 1982).

Since 1994, considerable efforts have been made to reduce educational inequalities and prioritise the education

of African children. In 1996, the South African Schools Act was passed and this sought to decentralise and abolish segregated education in the country (Sayed, 1999). Efforts to increase the educational status of previously disadvantaged adults were also introduced, namely the Adult-Based Education Training (ABET) which accommodates adults who were unable to get primary and secondary education during Apartheid (Lomofsky & Lazarus, 2001). Progress was made, and by 2011, 97% of children aged six and seven had been enrolled in primary education (Statistics SA, 2012). Between 1996 and 2016, the number of the population aged 15 years and older who completed matric increased from 3,7 million in 1996 to 11,6 million in (Statistics SA, 2017).

However, there have also been challenges and failures. Under-staffing has resulted in high teacher to pupil ratios at 32:1 (Onwu & Sehoole, 2015). Data from a 2007 study shows that many South African mathematics teachers have below-basic levels of content knowledge, with high proportions of teachers being unable to answer questions aimed at their pupils (Spaull, 2013). In addition, decentralised education and having two public school systems (Model C schools), resulted in the smaller, better performing system accommodating the wealthiest 20-25% of pupils who achieved much higher scores than the larger system which caters to the poorest 75-80% of pupils (Spaull, 2013). More recently, issues around violence and safety at schools, teacher related issues including payment, motivation and adequate training, poverty and school infrastructures have led to poor schooling outcomes in the country (Mncube & Madikizela-Madiya, 2014, Donohue & Bornman, 2014, Ono & Ferreira, 2010, Gibberd, 2007). In postcolonial South Africa, while segregation policies have been dismantled, there remains vast inequality by race. These inequalities in access to healthcare, education and employment, among others, have contributed to poverty and literature in the country sees a confounding relationship between class and race (Matsinhe, 2016, Burger *et al.,* 2016).

And while these structural challenges are currently being addressed, research has discovered the individual-level constraints experienced by children in their pursuit of education. These include learning and physical disabilities, food insecurity, and language barriers. An estimated 14.5% of South African children have who have difficulty in concentrating and remembering information are not attending school (Statistics SA, 2014). Further, a reported 20% children live in households that ran out of money to buy food in 2016 and about half a million live in households where they are expected to contribute to income through engagement in work (Statistics SA, 2018, Statistics SA, 2016). In addition, between 4% and 5.4% of children have mild or severe sight disabilities and, about 2% have physical disabilities which impairs their abilities to walk or write (Statistics SA, 2014).

These constraints have contributed to the less than ideal progression of children through school. Recent statistics show that only 73% of 20-24 year olds in the country have a completed secondary education (Statistics SA, 2017). Approximately 60% of first grade pupils are estimated to drop out of school rather than complete secondary education (Department of Basic Education, 2012). Reasons for drop out include illness (20.47 per 10,000), pregnancy (42.14 per 10,000) and no interest in school (32.51 per 10,000) (Mkwananzi & De Wet, 2014).

This study examines the role of household and community composition on grade repetition among children in South Africa. These constructs refer to the social, familial and physical environments of children. More importantly, these are environments children and youth are born into and have no autonomous power over. Therefore if these are not conducive and supportive environments, children, and to a large extent youth, cannot leave or recreate better

environments for themselves until they are much older. Households and communities are a neglected area of research yet are fundamental to our understanding of school progression. While the quality of education and school infrastructures are key to our understanding of individual children's progression, household and community characteristics give insight into the environmental layers that enhance or prohibit learning. This is because while formal learning happens in schools, households and communities provide environments of support, encouragement and safety, which are key to childhood and development. Research has found that in households where parents are presents and supportive, male- children have less anger (Simons *et al.,* 2006). Furthermore, a study using the Family Stress Model, found that households where stress is mediated, children have more positive physical and emotional health outcomes which enables learning and development (Masarik & Conger, 2017). Therefore identifying the household and community characteristics that contribute to negative educational outcomes, we are better able to redirect resources and implement additional programmes of assistance to children who are at risk. Burman (2016: 9) reminds us thus: "childhoods are constructed; we therefore have to study not only 'the child' but also the context… that produces her" (Burman, 2016).

2. Data and methods

Data are from the 2017 General Household Survey by Statistics South Africa. This nationally representative survey is cross-sectional and includes data on person and household demographic and socioeconomic characteristics (Statistics SA, 2018). The survey covers households in all nine provinces of South Africa and the annual survey is used to measure levels of development as well monitoring of service utilization and quality (Statistics SA, 2018).

The study population is children (7–14 years old) from all nine provinces, both sexes and all identifiable racial groups. A weighted total of 8,408,746 children, residing in 5,329,947 households, who are currently in school, are analysed. Of these children 9.94% (N=529,624) repeated a grade at school and these are the children who are examined here.

The outcome of interest in this study is 'grade repetition'. In the survey, respondents are asked various questions pertaining to the education of each of their resident children. In particular, respondents are asked if their child(ren) ever repeated a grade at school. The responses to this question are 'yes' (1) or 'no' (0). Various demographic characteristics of the children including their age, sex, race and relationship to the household head, are used as to describe the population by grade repetition at the individual level. However, since previous research has already identified these individual-level characteristics to be associated with grade repetition and other negative education outcomes, this study does not include the children's characteristics in the predictive modelling. The second reason why children, or individual-level, characteristics are not included in the inferential statistics is because households and communities are hypothesized to be of more importance to education outcomes than the characteristics of children.

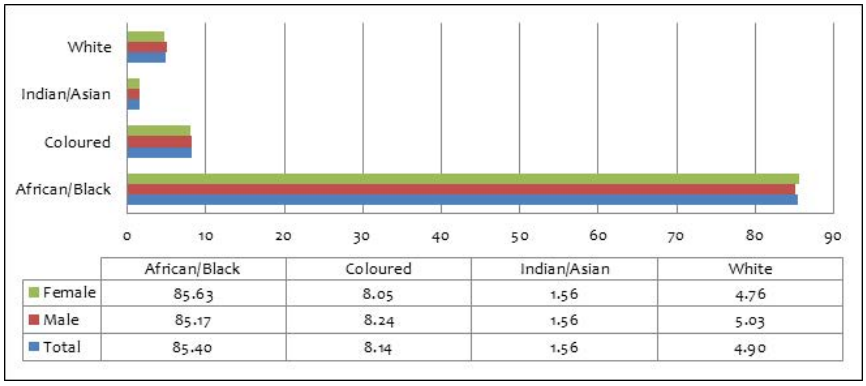
At the household level, race (African/Black, Coloured, Indian/Asian or White), sex (male or female) and age of the household head (12–19 years – "child headed", 20–64 years – "adult headed" or 65+ years – "elderly headed"), household size (number of resident members), number of economically active persons in the household (none, one, two, three or more) and wealth status of the household (wealthy, average or poor) are used. The latter variable is from a question that asked household respondents what the wealth/poverty status of the

household at present is. The responses were re-coded into 'wealthy', 'average' and 'poor' from the original responses of (1) wealthy,(2) very comfortable, (3) reasonably comfortable, (4) just getting along, (5) poor and (6) very poor. Responses 1 and 2 are considered 'wealthy', 3 and 4 are 'average' and 5 and 6 are 'poor' in this study.

Responses from the household surveys pertaining to race of the household head, wealth status of the household and food security were aggregated and proportions for specific geographical locations at the level of primary sampling units (PSUs), were attained for the purpose of multilevel analysis. Community racial diversity was the proportion of racial diversity in a community (low, medium or high). Using the race of the household head and geographic indicator, these estimates were determined based on the racial mix of households. Community poverty is the proportion of households in the communities that are "poor" and is coded as low, medium or high; and community food security (proportion of households in the district that did not run out of money to buy food in the last week) are also estimated as low, medium or high. These community-level variables were generated from the household variables and PSU data available in the survey.

Descriptive and analytical statistics were used. To describe the children who have repeated a grade and the characteristics of the households where these children are situated, chi-square cross-tabulations were done. To identify the impact of household and community characteristics on grade repetition among children, three binary multilevel logistic regression models were run showing odds ratios (Snijders, 2011) . Odds that are 1.00 refer to even odds of the outcome occurring, while odds ratios less than 1 indicate that the outcome is less likely to occur and odds ratios more than 1 refer to the outcome being more likely to occur. Multilevel models were selected for the robust capabilities of this method to produce the likelihood of an individual- level outcome, child's grade repetition, at the larger macro-levels of households and communities. This suits the purpose of this study because our aim is to situate educational progression of the child within household and community structures in South Africa. The first model identifies the probability of grade repetition by characteristics of the household alone. The second model identifies the probability of grade repetition by community characteristics alone and the final model estimate the odds or probability of repetition when households are nested within communities. The reason why three models were done is to see the separate effects of households and communities on grade repetitions and then to identify the combined effects. The separate and combined effects did not produce very different results suggesting that methodological approach is sound.

3. Results

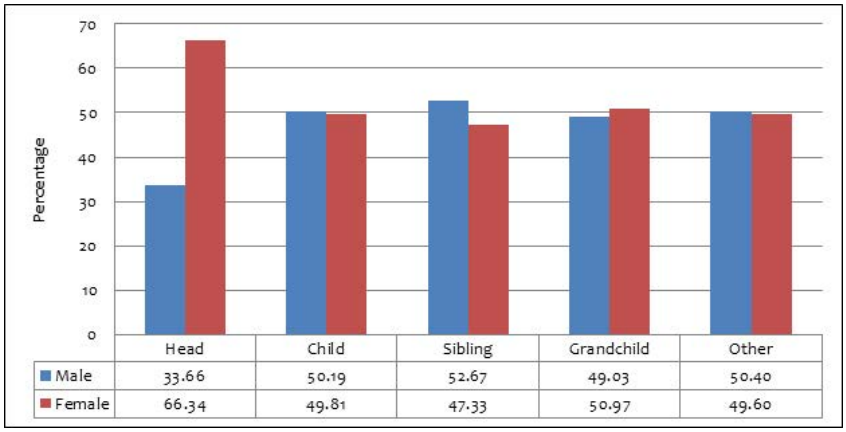


	African/Black	Coloured	Indian/Asian	White
Female	85.63	8.05	1.56	4.76
Male	85.17	8.24	1.56	5.03
Total	85.40	8.14	1.56	4.90

Fig. 1. Percentage distribution of sex and race of children (7-14 years old) South Africa, 2017

Most of the children in South Africa are African/Black. Figure 1 shows that 85.40% of the total population is African/Black followed by 8.14% who are Coloured, then 4.90% who are White and 1.56% who are Indian/Asian. There are more males in the Coloured and White population groups and more females in the African/Black and Indian/Asian groups.

In all households where children are heads, 66.34% are female heads (Figure 2). In households where the child respondents are the biological, step or adopted child of the head (child) 50.19% are male and 49.81% are female. Where children are the sibling to the head of the household, the majority is males (52.67%) and where the child is the grandchild of the head of the household, just more than half (50.97%) are females. In other types of households, the distribution of male and female children is almost even.



	Head	Child	Sibling	Grandchild	Other
Male	33.66	50.19	52.67	49.03	50.40
Female	66.34	49.81	47.33	50.97	49.60

Fig. 2. Percentage distribution of the relationship to the household head by sex of children (7-14 years old) in South Africa, 2017

Less than 1% of South African children are not attending school. Among those who have discontinued education, Figure 3 shows the reasons given in the survey. Almost half of the respondents (48.17%) are not attending due to illness or disability. This is followed by 18.9%

who do not want to continue and 16.24% who cite failure of exams, unable to perform at school and not accepted for enrolment (school performance challenges) as reasons for non-attendance. Pregnancy (0.68%) and school violence (0.63%) were the least reported reasons.

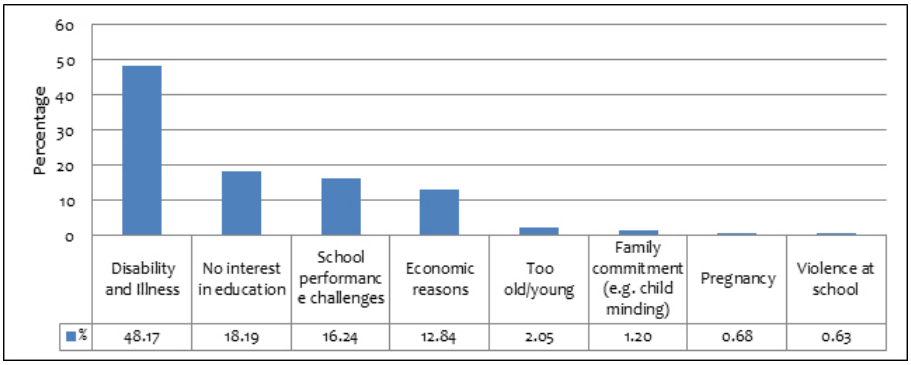


Fig. 3. Percentage distribution of the reasons for school discontinuation among children (7-14 years old) in South Africa, 2017

Grade repetition is highest among children in urban areas at 53.26% (Figure 4). In traditional or rural areas, 41.93% of children have repeated at least one grade and in farm areas, 4.82% of children have repeated.

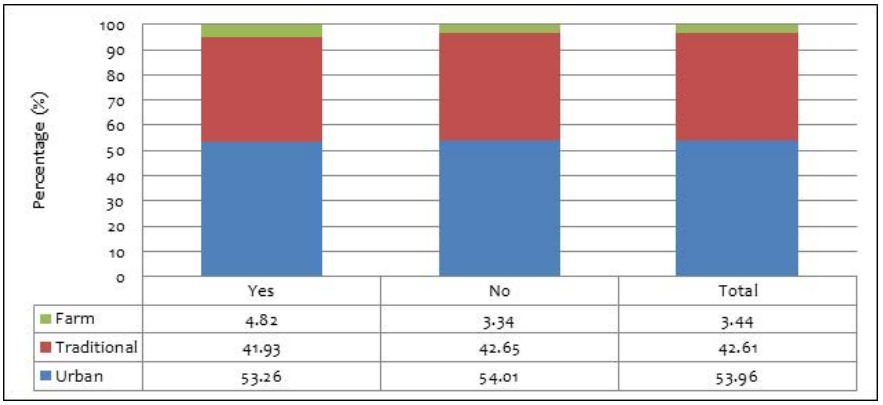


Fig. 4. Percentage distribution of grade repetition by type of place of residence of children (7-14 years old) in South Africa, 2017

Table 1. Percentage distribution of child's demographic characteristics by grade repetition status in South Africa, 2017

Child's demographic characteristics	Repeated Grade		Total (N=8,408,746)
	Yes (N=529,624)	No (N=7,879,122)	
Sex*			
Male	62.29	48.98	49.82
Female	37.71	51.02	50.18
Age Group*			
7-9 years old	38.73	41.22	41.07
10-14 years old	61.27	58.78	58.93
Race*			
African/Black	90.56	85.32	85.65
Coloured	7.35	8.11	8.06
Indian/Asian	1.00	1.59	1.56
White	1.09	4.97	4.73
Relationship to Household Head*			
Head of household	0.00	0.04	0.03
Child of head	51.79	55.43	55.20
Sibling of head	1.78	1.40	1.43
Grandchild of head	36.38	33.82	33.98
Other	10.05	9.31	9.36

*denotes statistical significance (p-value<0.05)

Table 1 shows the distribution of children by whether or not they have ever repeated a grade at school. Among those who have repeated 62.69% (N= 329,093) are males and 61.27% (N= 324,501) are between the ages of 10 and 14 years old. The majority of children who repeat grades are African/Black (90.56%, N= 479,627), followed by Coloureds (7.35%, N= 38,927). In households where the children are biological or stepchildren of the head of the household, grade repetition is 51.79% (N= 274,292) and where the child is the grandchild of the head, grade repetition is 36.38% (N= 192,677).

Table 2 shows the household characteristics of children by whether or not they have repeated a grade at school. Grade repetition of children is highest in households where the head of the household is African/Black (88.91%, N= 295,038) and in female headed households (54.57%, N= 181,084). In households where the age of the head is 20-64 years old or adult-headed households, grade repetition is 86.47% (N=286,941) followed by households where the head is elderly (65+ years old) at 13.28% (N=44,068). Households with six or fewer members account for 77.36% (N= 256,711) of grade repetitions and where there is only one economically active person, grade repetition is 88.24% (N= 292,815). Finally, in households with average wealth status, grade repetition is 61.13% (N= 202,853).

Table 2. Percentage distribution of household characteristics by grade repetition status of children in South Africa, 2017

Household Characteristics	Repeat Grade		Total (N=5,329,947*)
	Yes (N= 331,839)	No (N=4,998,107)	
Head: Race**			
African/Black	88.91	84.94	85.19
Coloured	9.03	8.67	8.69
Indian/Asian	0.91	1.61	1.56
White	1.15	4.78	4.55
Head: Sex**			
Male	45.43	46.71	46.63
Female	54.57	53.29	53.37
Head: Age Group**			
12- 19 years (child headed)	0.25	0.69	0.66
20-64 years (adult headed)	86.47	87.09	87.05
65+ years (elderly headed)	13.28	12.22	12.28
Household Size**			
<=6	77.36	78.66	78.58
>=7	22.64	21.34	21.42
Number of economically active in household**			
None	35.67	29.12	29.53
One	38.24	40.67	40.52
Two	21.11	25.22	24.96
Three/More	4.98	5.00	5.00
Wealth Status of the Household**			
Wealthy	4.25	5.88	5.78
Average	61.13	65.72	65.43
Poor	34.62	28.40	28.79

*total is less than the number of children because some households have more than one child (7-14 years old) present' ** denotes statistical significance (p-value<0.05)

Table 3 shows the results of the three multilevel logistic regression models. Model I shows that the odds or likelihood of grade repetition is lower (odds ratio<1) for children in households where the head is Coloured (0.948, p-value<0.05), Indian/Asian (0.607, p-value>0.05) and White (0.341, p-value<0.05) compared to African/ Black (RC=1). Also, the likelihood of repetition is lower in households headed by females (0.951, p-value<0.05). Age of the household head, household size and number of economically active household members are not statistically significant in Model I, with p-values>0.05. However, households that are of average (1.143, p-value<0.05) and poor (1.562, p-value<0.05) wealth status are both more likely to have children repeat grades than wealthy (RC=1) households.

Model II shows the probability of grade repetition by community characteristics alone (Table 3). In communities where poverty is medium (1.871, p-value<0.05) and high (1.897, p-value<0.05) there are higher odds of grade repetition. Further where racial composition is more heterogeneous (medium or high racial diversity), the odds of grade repetition is lower at 0.690 and 0.636 odds respectively. Finally, in communities where food security is medium (0.533, p-value<0.05) or high (0.085, p-value<0.05) there is a lower probability that children will repeat grades. In the final combined model (Model III), White (0.398, p-value<0.05) and female (0.945, p-value<0.05) heads of households, where there is one or more economically active person in the household (range: 0.865-0.793, p-value<0.05), in communities with racial diversity (medium: 0.846 ; high: 0.777, p-value<0.05) and with food security (medium: 0.240; high: 0.536, p-value<0.05) there are lower odds of grade repetition. Alternatively, households with a Coloured head (1.022, p-value<0.05), are average (1.188, p-value<0.05) or poor (1.617, p-value<0.05) and in communities were poverty is medium (1.850, p-value<0.05) or high (1.944, p-value<0.05) there is a higher likelihood of grade repetition.

Table 3. Logistic regression results showing the relationship between household and community characteristics and grade repetition

Household Characteristics	**Model I**		**Model II**		**Model III**	
Head: Race	**odds ratio**	**p-value**	**odds ratio**	**p-value**	**odds ratio**	**p-value**
African/Black	RC				RC	
Coloured	0.948	0.031			1.022	0.048
Indian/Asian	0.607	0.331			0.760	0.608
White	0.341	0.006			0.398	0.021
Head: Sex						
Male	RC				RC	
Female	0.951	0.026			0.945	0.049
Head: Age Group						
12- 19 years (child headed)	RC				RC	
20-64 years (adult headed)	1.097	0.056			1.115	0.053
65+ years (elderly headed)	1.131	0.059			1.156	0.054
Household Size						
<=6	RC				RC	
>=7	0.942	0.057			0.907	0.057
No. econ active in household						
None	RC				RC	
One	0.852	0.072			0.865	0.01
Two	0.816	0.079			0.844	0.014
Three/More	0.761	0.174			0.793	0.025

Wealth Status of the Household						
Wealthy	RC				RC	
Average	1.143	0.049			1.188	0.042
Poor	1.562	0.028			1.617	0.024
Community Characteristics						
Community Poverty						
Low			RC		RC	
Medium			1.871	0.016	1.850	0.027
High			1.897	0.045	1.944	0.045
Racial Diversity						
Low			RC		RC	
Medium			0.690	0.047	0.846	0.043
High			0.636	0.026	0.777	0.028
Community Food Security						
Low			RC		RC	
Medium			0.533	0.025	0.240	0.03
High			0.085	0.000	0.536	0.07

RC denotes Reference Category, with an odds ratio=1 or even odds of grade repetition occurring

4. Discussion

Grade repetition has been found to result in school drop-out and stigmatisation of children (Guevremont *et al.,* 2007, Marshall, 2003). In addition, grade repetition results in pupils completing school at older ages and delaying their entry into the labour market as adults (Cook & Kang, 2016). A consequence of the latter is that the South African economy, which is dependent on adult workers, will have slow growth rates due to labour activities starting at older ages. This study was done to better understand the ecological determinants of grade repetition among children in South Africa and to contribute to understanding of how household and community structures are influencing this school outcome.

Children are more likely to repeat grades if they reside in poor households and communities. This is important because it is evidence that children need more than schools and school resources in order to progress. A study done in the US also found that pupils from under-privileged backgrounds and in households where poverty is high have higher grade repetition rates at 18% compared to their wealthier counterparts at 7.8% (Chaudry & Wimer, 2016). In South Africa, children living in poverty have suffered in schooling too due to being AIDS orphans or caring for HIV-positive parents; acting as caregivers to younger siblings and elderly guardians; and being unable to afford transport, school uniforms and other schooling necessities (Case & Ardington, 2006, Freeman & Nkomo, 2006, Lemon, 2004).

Literature suggests a myriad of individual reasons as to why pupils might repeat a grade. Among these prolonged absences, learning challenges and illness have been reported (Kabay, 2016, Coudé *et al.,* 2007, De Wet & Frade, 2018). And while these proximate determinants are noted, very little research has examined the environments which perpetuate and influence these individual- level causes. This study has identified that households and community characteristics play a role in increasing the likelihood of grade repetition.

In addition to wealth of the household and community, race plays a role in grade repetition. African/Black children are still more likely to repeat grades than children of other races. Research corroborates this finding and many studies have shown that racial inequality in access to quality education, feeding schemes and enabling learning environments persist *(Spaull, 2015, Faber et al.,* 2014). Past racial inequalities in the country have contributed to an African/Black adult population not being as educated or skilled as the non-African/Black population in the country. And now the children of the previously disadvantaged are inheriting a similar fate because of the state of poverty in households and communities. With the national demographics showing that African/Black population in South Africa is substantially larger than other races, this result is particularly concerning as it suggests that African/Black children's education and knowledge is being constrained by the households and communities they are in.

Surprisingly, results from this study show that more male children repeat grades than female children. Elsewhere in Sub-Saharan Africa and other developing countries, the education of male children is prioritised over that of female children (Blakemore & Cooksey, 2017, Manning *et al.,* 2017). A study of 12 Sub-Saharan African countries found that 79% of female children ever attended school compared to 84% of male children (Kuépié et al., 2015). Cultural preferences and patriarchy are largely driving these gendered disparities in other parts of the developing world (Ashraf *et al.,* 2016, Atta, 2015). However, in South Africa, we are seeing male children perform poorly compared to female children. Within the contexts of household and community poverty, however, research has shown that male children tend to assume more economically active roles which contribute to prolonged school absences (Edmonds, 2006).

This study is not without limitations. First, the highest level of education of the household head could not be determined. This indicator would have given insight into, among others, the household resources available including the ability of the head to assist children with schoolwork. Second, the study is cross-sectional and therefore it cannot be deduced that the relationship between household and community characteristics and grade repetition is causal.

However, a particular strength of this study is the nationally representative nature of the data. This study, compared to others, is not a sample of selected households, but rather a representation of the national profile of household and community characteristics that place children at risk of grade repetition. Second, since grade repetition is an often cited reason for eventual drop-out, this paper addresses an issue that can be rectified to prevent school discontinuation. Finally, the study reinforces the hypothesis that poverty remains a driver of poor school outcomes in the country. While many studies before have found this, the recentness of the data source proves that the issue is far from being addressed in contemporary South Africa. Further to this, the household and community characteristics identified suggest that in addition to structural problems, households and communities are perpetuating grade repetition.

5. Conclusion

The environments that children inhabit play a role in their school progression. When children are not at school, they are nested within households and communities that are not supportive of their development. With national government emphasis being placed on schooling environments, efforts to improve the socioeconomic status of households and entire communities also require attention as these environments are trapping children in a cycle of poverty.

This study contributes to knowledge by offering an ecological explanation for poor schooling outcomes among children that has not been done in South Africa before. Research on child education predominantly focuses on the individual and parent characteristics contribution to succession but none has nested individuals and parents within households and communities. This ecological approach therefore contributes to our understanding that schooling outcomes are reliant on multiple levels of supportive environments and cannot be addressed by treating these levels in silos.

Future research on this topic should include more characteristics of households and communities that are not available in cross-sectional data. A better understanding of how members of the household perceive the benefits of education and how households assist each other in child support is needed. This will strengthen our understanding of the household coping mechanisms under circumstances of abject poverty. Further research that examines the social composition of communities would give insight into the roles of community leaders and peers in educational attainment of children. Finally, programmes in the country that are addressing child education and those addressing community poverty should work together. This will create the environment children need to succeed in school through cooperative work to ensure that poverty and education are addressed simultaneously. The findings from this research suggest that school success in childhood is linked not only to what happens in the school and the classroom, but also the conditions and the context of the community in which the school is located. It calls into question dichotomies between and home and school, and reasserts the importance of home and community more broadly in schooling and schooling outcomes. It calls for weaving the individual and the collective lives of children into integrated and whole realities if school success is a priority in childhood; linking all facets of children's social worlds. Education policy directed toward equalising schooling outcomes would require a deep commitment to bringing school and home as close as possible to ensure school success in childhood.

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