Socioeconomically Disadvantaged Adolescents and Educational Delay in Two Provinces in South Africa: Impacts of Personal, Family and School Characteristics

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Abstract

No quantitative studies to date have specifically focused on the risk and protective factors for the educational resilience of socioeconomically disadvantaged adolescents who are not of compulsory school age in South Africa. This study compares the educational delay of 599 black adolescents aged 16 to 18 from socioeconomically disadvantaged communities in Western Cape and Mpumalanga to nationally and provincially representative estimates in South Africa. The paper also explores predictors for educational delay by comparing out-of-school adolescents (n = 64), and adolescents who are at least one year behind in school (n = 380), with adolescents in the age-appropriate grade or higher (n = 155). Risk factors for being behind included the following: male gender, past grade repetition, rural location and larger school size. Risk factors for being out of school were the following: past grade repetition, previous concentration problems at school, household poverty, and food insecurity. Protective factors for being in the age-appropriate grade included the following: living with biological caregivers, access to school counselling and attending schools in wealthier communities.

Keywords: age-appropriate enrolment; ecological approach; educational delay; multinomial logistic regression; socioeconomic disadvantage

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Introduction

There is substantial evidence of a severe inequality gap in the South African school system as well as on the disparity of educational outcomes amongst South African children. Recent comparative studies using achievement assessments have identified those at risk and have tried to measure national learning deficits (Fleisch, Shindler, and Perry 2012; Lam, Ardington, and Leibbrandt 2011; Spaull and Taylor 2015).

Studies in South Africa have demonstrated the strong correlation between poverty and low-quality education (Branson, Hofmeyr, and Lam 2014; Dieltiens and Meny-Gibert 2012; Fleisch, Shindler, and Perry 2012; Spaull 2015; Strassburg, Meny-Gibert, and Russell 2010b). Although families can choose which school to send their children to, children from poor families are more likely to attend poor-quality schools with a poor educational infrastructure (Branson, Hofmeyr, and Lam 2013; Lam, Ardington, and Leibbrandt 2011; Strassburg, Meny-Gibert, and Russell 2010a). As a result, it has been argued that there are two education systems in South Africa: a functional system for the wealthiest 25 per cent of South African children and a dysfunctional system for the 75 per cent majority of children from poorer families (Spaull 2013). However, further research is still needed in order to design effective policies that can help children to fully participate and succeed in education despite adverse socioeconomic backgrounds.

Risk Factors Associated with Negative Educational Outcomes amongst Adolescents in South Africa

Individual Characteristics

More than 20 years after the end of the apartheid era and its discriminatory policies in education, racial differences in educational outcomes continue to exist (Lam, Ardington, and Leibbrandt 2011). For example, mostly black students in South Africa go to historically black schools (Branson, Hofmeyr, and Lam 2014; Lam, Ardington, and Leibbrandt 2011; Spaull 2015; Spaull and Kotze 2015). Black and mixed-race, or coloured, children—a term used in South Africa to describe an important segment of the population—are at a higher risk of dropping out of school (Fleisch, Shindler, and Perry 2012; UNDP 2010) when compared to other racial population groups, especially at the non-compulsory phase, that is, grades 10–12 (Branson, Hofmeyr, and Lam 2013; Lam, Ardington, and Leibbrandt 2011; Meny-Gibert and Russell 2010; Statistics South Africa 2011). Black South African adolescents are six times more likely to repeat grades than white adolescents (Van der Berg 2008). In a similar vein, they

are more likely to start school late (Lam, Ardington, and Leibbrandt 2011), miss one school year, or be over-aged according to the grade-norm (Meny-Gibert and Russell 2010). Despite evidence of high levels of motivation and perseverance amongst black students (Bray et al. 2010; Ward et al. 2007), rates for those who achieve matric (the main school-leaving certificate in South Africa) remain low, compared to other ethnic groups (Lam, Ardington, and Leibbrandt 2011).

Studies conducted in South Africa have looked at further individual risk factors for negative educational outcomes. Results from cross-sectional and longitudinal analyses suggest that male adolescents in the non-compulsory school age are more likely than their female counterparts to repeat grades, to progress more slowly, to experience more concentration problems in school, or to drop out of school before completing the compulsory phase (Branson, Hofmeyr, and Lam 2013; Lam, Ardington, and Leibbrandt 2011; Orkin et al. 2014). Other studies show that previous negative school experiences (i.e. grade repetition, low achievement levels, absenteeism, or temporary dropout), partly predicted by socioeconomic determinants, are strongly correlated with school dropout rates amongst South African adolescents (Branson, Hofmeyr, and Lam 2014; Lam, Ardington, and Leibbrandt 2011; Meny-Gibert and Russell 2010).

Family Characteristics

The multidimensional impact of family poverty on school attendance and school progression has been investigated extensively in South Africa. Dropouts and over-aged adolescents attending schools are more likely to live in low-income households (Branson, Hofmeyr, and Lam 2013; Fleisch, Shindler, and Perry 2012), informal settlements (Strassburg 2010), overcrowded households (Fleisch, Shindler, and Perry 2012; Strassburg, Meny-Gibert, and Russell 2010b), or households with low parental education attainment (Moyi 2011; Strassburg, Meny-Gibert, and Russell 2010b). Furthermore, they are also more likely to experience food insecurity, financial pressure, and a lack of access to electricity (Branson, Hofmeyr, and Lam 2013; Strassburg, Meny-Gibert, and Russell 2010b).

School Characteristics

State schools in South Africa are classified in a quintile system. These are determined by taking into account the socioeconomic characteristics of the community in which the school is located. The higher the quintile, the wealthier the community is. The quintile system is used for the

allocation of funding to schools. Schools in quintiles one to three are “no-fee schools” and provide free meals to all students (The Republic of South Africa 2006).

School quintile is strongly correlated with school delay and slow progression amongst adolescents (Lam, Ardington, and Leibbrandt 2011; Spaull 2013; Strassburg, Meny-Gibert, and Russell 2010b). Nationally representative studies have shown that the learning gap between the poorest students and the wealthiest students begins to form in the early foundation phase (grades 1 to 3) and continues to grow until the non-compulsory phase (Spaull and Kotze 2015; Spaull and Taylor 2015). By Grade 9, students from quintile one and quintile two schools perform at least three years behind quintile five students (Spaull 2013).

School resources can also be risk factors for poor school enrolment, slow grade progression, and poor academic achievement. Evidence implicates large classroom size, low teacher–learner ratio, poor infrastructure, rural location and the lack of school safety (Branson, Hofmeyr, and Lam 2014; Hunt 2008; Lam, Ardington, and Leibbrandt 2011; Spaull 2013; Strassburg, Meny-Gibert, and Russell 2010b; UNICEF 2009; Winnaar, Frempong, and Blignaut 2015). For instance, two recent studies have shown how poor conditions of school buildings and large class sizes are both negatively associated with mathematical performance amongst Grade 9 adolescents (Visser, Juan, and Feza 2015; Winnaar, Frempong, and Blignaut 2015). Similarly, another study found that Grade 4 students attending schools in rural settings or townships are already between two and three years behind in reading, compared to Grade 4 children attending schools in urban areas (Spaull 2013).

Geographical Characteristics

In various cross-sectional studies in South Africa, adolescents who lived in rural or traditional areas were found to be less likely to attend school than children living in urban settings, regardless of the type of household (i.e. formal or informal; Fleisch et al. 2012; Strassburg, Meny-Gibert, and Russell 2010b; Strassburg 2010). Furthermore, differences in adolescents’ educational outcomes can be found across provinces in South Africa. For instance, grade repetition is most common in Mpumalanga and Limpopo provinces. While 34.6 per cent of children in South Africa had repeated at least once in 2010, provincial proportions of grade repetition vary between 24.9 per cent in the Western Cape and 45.6 per cent in Mpumalanga (Strassburg 2010).

Protective Factors Associated with Educational Outcomes amongst Adolescents in South Africa

Two types of protective factors for the educational outcomes of children in South Africa can be found in the academic literature: first, social protection programmes offered by the government or private institutions aimed at reducing the negative effects of socioeconomic disadvantage (i.e. school feeding schemes—free meals—and cash-transfers—grants); and second, interpersonal relationships and positive influences of children's significant persons and role models, such as parents, peers, and teachers.

School-fee elimination programmes, school feeding programmes, and cash transfers have improved school enrolment and attendance in South Africa (Borkum 2012; Coetzee 2013; DSD, SASSA, and UNICEF 2012). For instance, results of propensity score matching analyses showed that adolescents in households receiving the Child Support Grant (CSG) were absent 2.3 days fewer per term than those in households not receiving the CSG (DSD, SASSA, and UNICEF 2012). In another study, results from a regression discontinuity design indicated that the South African fees elimination programme increased enrolment in quintile one secondary schools by 3.5 percentage points (Borkum 2012). However, the effects of these types of programmes on children's academic achievement or school grade progression is less conclusive (Baird, Ferreira, Özler, and Woolcock 2013; Coetzee 2013).

Extensive international research has documented the association between interpersonal relationships or supportive experiences and good educational outcomes despite socioeconomic risks (Crosnoe and Elder 2004; Gutman, Sameroff, and Eccles 2002; Plunkett et al. 2008). However, equivalent South African evidence is sparse. This is partly explained by the fact that the vast majority of the literature in the field of exclusion in education has focused on identifying at-risk children as well as analysing the contextual risk factors associated with negative educational outcomes, i.e. poverty, family AIDS, violence etc. (Burton and Leoschut 2013; Cluver, Operario, Lane, and Kganakga 2012; Guo, Li, and Sherr 2012; Soudien 2007). The little evidence available from South Africa suggests protective factors concerning parents and teachers (Dass-Brailsford 2005; Fleisch, Shindler, and Perry 2012; Moloi et al. 2010). For instance, some evolving research has found that family structure, especially living with both parents, or having female or biological caregivers, may account for children being enrolled in school (Branson, Hofmeyr, and Lam 2014; Fleisch, Shindler, and Perry 2012; Strassburg 2010). Similarly, qualitative evidence from South Africa suggests that psycho-social support

from teachers, counsellors, and principals in schools, as well as students' perceptions of teacher commitment may exert a positive influence on at-risk educational outcomes (Moloi et al. 2010; Strassburg, Meny-Gibert, and Russell 2010b).

Resilience Theoretical Framework

Broadly speaking, resilience has been referred to as "positive adaptation in the context of risk and adversity" (Masten 2014). By applying a resilience-informed approach, this article aims to examine risk and protective factors for school delay amongst black adolescents from socioeconomically disadvantaged communities in South Africa. To this end, an ecological resilience framework (Bronfenbrenner 1979) with three different levels (personal, family, and school characteristics) was applied.

An aggregated person-focused model of resilience was used to identify members of a high-risk group who were doing well (Masten 2014). By comparing a subgroup doing well in education, i.e. those adolescents who were enrolled in the appropriate grade, to other subgroups not doing well, we are able to identify differences in the personal, family and school factors. A resilience main-effects model identified both 1) *risk factors* negatively associated with educational outcomes and 2) *protective factors* which, despite the presence of risk factors, have a direct and independent positive effect on adolescents' resilience, thus contributing to better educational outcomes (Fergus and Zimmerman 2005; Luthar 1993; Rutter 2012).

Rationale and Aims of the Current Study

Existing evidence from South Africa on school delay has focused on large normative and nationally representative samples (Branson, Hofmeyr, and Lam 2014; Fleisch, Shindler, and Perry 2012; Spaull 2013; Strassburg 2010; Visser, Juan, and Feza 2015). Studies often compare the educational outcomes of students across different socioeconomic backgrounds and explain these variations with socioeconomic characteristics (Branson, Hofmeyr, and Lam 2014; Spaull 2013; Strassburg, Meny-Gibert, and Russell 2010b). However, we provide the first quantitative study that puts emphasis on educational risk and resilience in a specific high-risk adolescent sample. The present study therefore adds to the literature by examining the educational resilience among adolescents aged 16 to 18 from socioeconomically disadvantaged communities in South Africa.

The current study has two research questions:

Research question 1: How at risk of educational delay are socioeconomically disadvantaged adolescents in the study sample, compared to national and provincial estimates?

Research question 2: For adolescents aged 16 to 18 from socioeconomically disadvantaged communities, what are the personal, family and school characteristics that predict being in the age-appropriate grade rather than out of school or behind?

It was hypothesised that adolescents in the sample were at greater risk of school delay, compared to their counterparts in the South African national and provincial surveys. Different risk and protection mechanisms for being out of school or for being enrolled at least one year behind the age-appropriate grade were expected to exist among our socioeconomically disadvantaged adolescents, all of whom were black.

Materials and Methods

Study Participants and Procedure

This study combines self-report and administrative data from three different sources: the Young Carers Project (2010–2012), the master lists of schools from the Western Cape and Mpumalanga provinces in South Africa 2011 (DoE 2016), and the South African General Household Survey of 2010 (Statistics South Africa 2011)

The Young Carers Project (http://www.youngcarers.org.za/) recruited a total of 3,515 adolescents aged 10 to 18. The study was a collaboration among various universities as well as South African governmental institutions to assess the problems experienced by children affected by the HIV/AIDS epidemic in South Africa (Cluver et al. 2013). Data collection occurred in two waves in the provinces of Mpumalanga and the Western Cape, from households in stratified-randomly-selected census areas within two rural and two urban low-income districts (Round 1 in 2010 and Round 2 in 2011–12). Urban and rural enumeration areas were mapped, and a door-to-door household sampling technique was used to identify potential participants. All adolescent participants were from socioeconomically disadvantaged, black communities. The response rate of adolescents who agreed to participate was 97.2 per cent. Ethical approval was obtained from the Research Ethics Committees at the University of Oxford, the University of Cape Town, and the University of KwaZulu-Natal, as well as from the South African Departments of Health, of Social Development, and of Basic Education. Adolescents were interviewed face-to-face, once in Round 1 and once in Round 2, by a mixed

group of trained, local fieldworkers who administered structured questionnaires containing quantitative items from internationally recognised scales and measures. Questionnaires were translated and back-translated from English into isiXhosa, isiZulu, siSwati and Sesotho. The final dataset includes adolescents' socioeconomic characteristics, as well as information regarding psychological and physical health, education, and social functioning. Additional information regarding sampling and methodology can be found in Cluver et al. (2013). The present study focused on adolescents aged 16 to 18 (n = 599) since non-compulsory school-aged adolescents have been found to be at greater risk of educational delay (Meny-Gibert and Russell 2010; Statistics South Africa 2012).

Adolescent self-report data on individual and family characteristics from the Young Carers Project was linked to school administrative data from the master lists of South African schools for the provinces of Mpumalanga and the Western Cape. Master lists of schools are maintained by the provincial departments of education and include a record of each school in South Africa (DoE 2016; Van Wyk 2015). Lists include data such as sector (public or private), phase (primary, secondary, or combined), and quintile (school ranking indicating the socio-economic status of the school). In the current study, data from the master lists were used to describe school characteristics in our sample, as well as to identify school effects on educational delay.

Administrative data was also retrieved from the South African General Household Survey (GHS) 2010 (Statistics South Africa 2011). The GHS is a household survey carried out by StatsSA every year. The purpose of the survey is to measure development and service delivery in the nine provinces of South Africa, the target population being all private households. The GHS 2010 applied a two-stage, stratified design and used a randomised probability-proportional-to-size systematic sample. The GHS ensured that responses represented the entire population of South Africa through the appropriate weighting of data implicit in their design process. For more information on the GHS 2010 sampling methods and imputation techniques see Statistics South Africa (2011). National and provincial estimates of school enrolment, school completion, and grade progression were calculated using the SPSS GHS 2010 micro dataset downloaded from DataFirst (DataFirst 2012). These estimates were used to answer Research Question 1.

Measures

Type of variables, variable description and data source for all variables used in the present study are summarised in Table 1. Different types of measures were used to address Research Question 1 and Research Question 2.

Table 1: Type of variables, description and data source

Type of variable	Variable	Variable description	Data source and original variable name
Research Question 1: Analysis of educational delay			
Educational outcome	Dropout	Dichotomous-categorical. Codes: (0 = attending school or completed Grade 12; 1 = not attending school)	Young Carers Round 1 - *SchoolTypeChild* and *LastGradePassedChild*
			GHS 2010 - *Q110atte* and *Q111rsnn*
Educational outcome	No basic completion	Dichotomous-categorical. Codes: (0 = Grade 9 not completed; 1 = completed Grade 9 or higher)	Young Carers Round 1 - *LastGradePassedChild*
			GHS 2010 - *Q16hiedu*
Educational outcome	Repetition	Dichotomous-categorical. Codes: (0 = never repeated; 1 = repeated at least once)	Young Carers Round 1 - *SchoolRepeatYrChild*
			GHS 2010 - *Q121same*
Educational outcome	Inconsistent attendance	Dichotomous-categorical. Codes: (0 = absent for less than 5 days in the past week; 1 = absent for 5 days in the past week)	Young Carers Round 1 - *SchoolMissDaysChild*
			GHS 2010 - *Q124aabs*
Research Question 2: Individual, family and school effects on school delay			
Educational outcome	Educational delay- age appropriate enrolment	Categorical. Codes: (1 = Out of school Adolescents; 2 = Adolescents at least one year behind; 3 = Adolescent in the age-appropriate grade)	Young Carers Round 2 – *AgeofChildX,and Gradex*
Individual risk factor	Gender (male)	Dichotomous-categorical Codes: (1 = male; 2 = female)	Young Carers Round 1 - *GenderChild*
Individual risk factor	Age (older)	Ratio-scale (min = 16, max = 18)	Young Carers Round 1 - *AgeofChild*
Individual risk factor	Grade repetition (repeated a grade)	Dichotomous-categorical. Codes: (0 = no; 1 = yes)	Young Carers Round 1 - *RepeatedAtLeastOnce*
Individual risk factor	Concentration problems at school (experienced concentration problems at school)	Dichotomous-categorical. Codes: (0 = no; 1 = yes)	Young Carers Round 1 - *AnySchProbsConcentrate*
Individual protection factor	Access to counselling at school (received counselling at school)	Dichotomous-categorical. Codes: (0 = no; 1 = yes)	Young Carers Round 1 - *SchoolCounsChild*
Family risk factor	Geographical area (rural area)	Dichotomous-categorical. Codes: (1 = urban; 2 = rural)	Young Carers Round 1 - *UrbanRural*
Family risk factor	Type of household (informal household)	Dichotomous-categorical. Codes: (0 = formal housing; 1 = informal housing)	Young Carers Round 1 - *Informal*
Family risk factor	Household poverty (experienced poverty at home)	Dichotomous-categorical. Codes: (0 = 0 or 1 necessity missing; 1 = two or more necessities missing)	Young Carers Round 1 - *NecessitiesMissing2More*
Family risk factor	Food insecurity (experienced food insecurity at home)	Dichotomous-categorical. Codes: (0 = less than two days without enough food in the household; 1 = more than two days without enough food in the household)	Young Carers Round 1 - *FoodInsecure*
Family risk factor	Adults with a job in the household (no one employed at home)	Dichotomous-categorical. Codes: (0 = at least one adult working; 1 = no adults working)	Young Carers Round 1 - *NoOneWorkingAtHome*
Family protection factor	Social welfare grants (received the Child Support Grant)	Dichotomous-categorical. Codes: (0 = no; 1 = yes)	Young Carers Round 1 - *ChildSuppGrantChild*
Family protection factor	Female-headed household	Dichotomous-categorical. Codes: (0 = male-headed household; 1 = female-headed household)	Young Carers Round 1 - *FemalePrimaryCaregiver*
Family protection factor	Living with biological parent or grandparent	Dichotomous-categorical. Codes: (0 = not living with biological parent or grand-parent; 1 = living with at least one biological parent or grandparent)	Young Carers Round 1 - *BioParentGrandparent*
School risk factor	Geographical location (rural)	Dichotomous-categorical. Codes: (0 = urban; 1 = rural)	Master Lists 2011 - *Urban_Rural*
School risk factor	School phase (secondary)	Dichotomous-categorical. Codes: (0 = primary; 1 = secondary)	Master Lists 2011- *Phase*
School risk factor	School size (larger schools)	Ratio scale (1=micro; 2=small; 3=medium; 4=large; 5=extra-large)	Master Lists 2011 - *School_Prototype_Size*
School protection factor	Quintile (higher quintiles)	Ratio scale (1=quintile1; 2=quintile 2; 3=quintile 3; 4=quintile 4; 5=quintile 5)	Master Lists 2011 - *Quintile*

Educational Outcomes

First, four dichotomous categorical variables were used to compare the educational characteristics of adolescents in the study sample to national and provincial estimates: dropout,

no basic completion, grade repetition and inconsistent attendance. Basic completion was determined by having completed Grade 9, while inconsistent attendance indicated whether adolescents had been absent from school five days in the past school week.

Second, the outcome of educational delay was indicated by age-appropriate grade enrolment. Age-appropriate grade enrolment was measured using a multinomial categorical variable with three categories. Based on the school status and grade appropriateness by age in South Africa, adolescents aged 16 to 18 at Round 2 were classified into three groups:

Group 1—youth out of school—corresponded to those adolescents who had left school or had not attended for more than one month at Round 2 (n = 64);

Group 2—youth at least one year behind—referred to those adolescents who were attending school in Round 2 but were in lower grades than those considered appropriate for their age (n = 380);

Group 3—youth in the appropriate grade—referred to those adolescents who, at Round 2, were in their appropriate age grade or higher (including those who had finished school) (n = 155).

Individual Characteristics

Demographics: Information regarding child age and gender was requested using items from the South African Census (Statistics South Africa 2001).

Experiences in school: adolescents were asked about grade attainment, school non-attendance, repetition of grades and school dropout. Adolescents were also asked about access to school counselling, as well as having experienced problems concentrating at school.

Family Characteristics

Items from the South African Census (Statistics South Africa 2001) determined whether children were living in rural or urban areas, in formal or informal structures. Household structure and household employment was measured using a household map, that is, a picture-based tool, devised for complex extended family structures (Cluver, Operario, and Gardner 2009). Food insecurity was measured using four items from the South African National Food Consumption Survey (1999; see Labadarios et al. 2005). Household poverty was measured using access to the top eight socially-perceived necessities for children, as identified by the

Centre for South African Social Policy in the Indicators of Poverty and Social Exclusion Project (Wright 2008) and endorsed by over 80 per cent of the South African population in a nationally-representative survey—the South African Social Attitudes Survey 2006 (Pillay, Roberts, and Rule 2006).

Social welfare was measured by asking adolescents whether someone in the household received a Child Support Grant. Household living arrangements were measured using the "residing in a female-headed household" or "living with biological parents or grandparents" items from the National Survey of HIV and Risk Behaviour amongst Young South Africans (Reproductive Health Research Unit and University of the Witswatersrand 2005).

School Characteristics

The following indicators were used from the provincial Master List of schools from Mpumalanga and Western Cape (DoE 2016): geographical location of school (rural versus urban), school phase (primary or secondary), school funding type (independent or public), school quintile (1, 2, 3, 4 or 5), and school fees type (no-fee school versus fee-paying school). School size (micro, small, medium, large and X-large) was categorised by the amount of learners in the school (DBE 2016).

Statistical Analysis

Descriptive and Preliminary Analysis

Descriptive statistics by type of school enrolment—out of school (n = 64), behind (380), and in the age-appropriate grade (155)—were used to analyse the individual, family and school characteristics of adolescents aged 16 to 18 from socioeconomically disadvantaged communities. For categorical variables, the frequencies for all individual, family and school hypothesised risk and protective factors were compared using Chi-square tests.[1] Comparisons of means for continuous variables were performed using analysis of variance (ANOVA).[2]

[1] A Chi-square test is used to determine whether there are any statistically significant differences in prevalence (binary or count data) between three or more groups.

[2] ANOVA is used to determine whether there are any statistically significant differences between the means of three or more independent groups.

Primary Analysis

Two distinct types of analysis were then carried out to address the two research questions. First, inferential statistics were analysed using data from Young Carers at Round 1 and the General Household Survey of 2010. Thus, the educational characteristics of the study sample (n = 599) were compared to the national estimates of all adolescents aged 16 to 18 in South Africa (n = 6698), as well as estimates of black adolescents from the Western Cape and Mpumalanga provinces (n = 831). Frequencies of adolescents' dropout rates, non-completion rates, school grade repetition, and inconsistent attendance (absenteeism) were examined and then compared to representative national and provincial data in two contingency tables. A Chi-square test of homogeneity was used for assessing differences in categorical educational variables. Cramer's V[3] statistic for nominal data was also calculated in order to report the magnitude of the effect sizes from differences in educational outcomes (Rea and Parker 1992). The following conventional sizes were used to determine the effect sizes: negligible association (<0.1), weak association (0.1 to 0.2), moderate association (0.2 to 0.4), and strong association (0.4 to 0.9) (Rea and Parker 1992).

Second, multivariate analyses considered risk and protective factors for school delay of adolescents aged 16 to 18 in the study sample (n = 599). Multilevel modelling techniques, which take into account the data's hierarchical structure (that is, adolescents nested in schools), were initially considered. A null model without explanatory variables was fitted to estimate the variance of educational delay explained at the individual and school levels using the statistical software program R Studio (RStudio Team 2016). However, no significant variation of age appropriate enrolment across schools was found (see Figure 1). Hence, simple robust regression models with clustered standard errors were used to account for the possible correlation of the standard errors in the model (Hayes and Cai 2007).

[3] Cramer's V, which is typically used when using the Chi-square test of association, determines the strength of the relationship between variables in Chi-square testing. Cramer's V can be used with multi-categorical variables that are either nominal or ordinal.

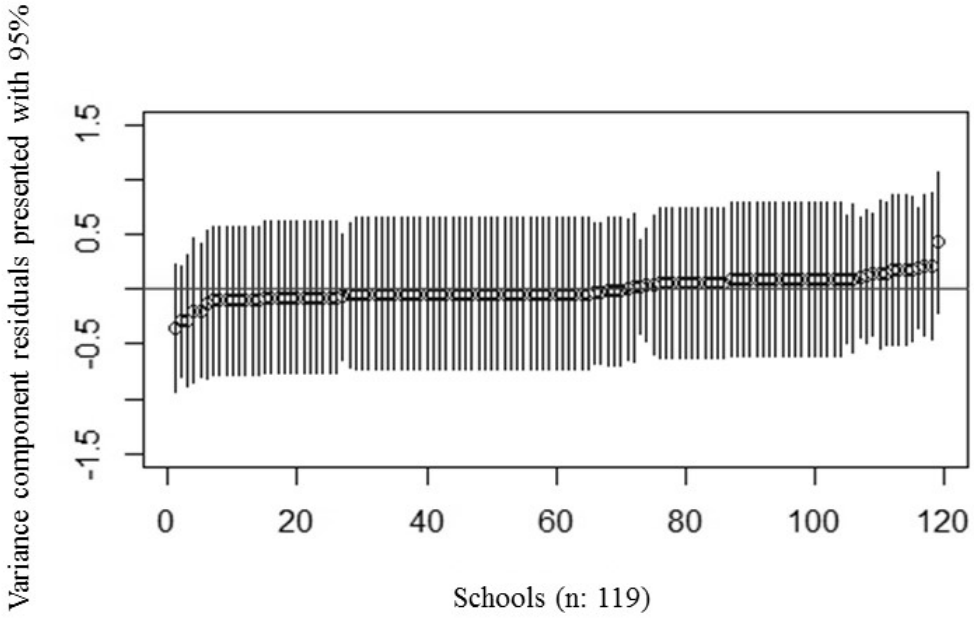

Figure 1: Caterpillar plot illustrating the lack of variation between schools in the educational delay of South African adolescents 16–18 years old at least one year behind rather than in the age-appropriate grade

Given the three categories in the dependent outcome variable (Hosmer and Lemeshow 2000), the hypothesised risk and positive factors at Round 1 associated with educational delay at Round 2 were examined using a multivariate multinomial logistic regression model. Following Hosmer and Lemeshow (2000), univariate unadjusted and adjusted contextualised regressions controlling for age and gender were conducted first. Most adjusted factors exhibited significance at $p<0.25$ and thus were included in the final main-effects models (Hosmer and Lemeshow 2000). Only one adjusted factor, *child support grant*, independently exhibited significance at $p>0.25$. Nevertheless, it was also included in the final model for two reasons: first, traditional levels of significance can fail to identify important variables that are not strongly significant in the univariate regression, but might have an important confounding effect in the multivariate context (Mickey and Greenland 1989); and second, this was a theoretically and substantially important concept—even with no significant associations.

The series of multinomial logistic regression models followed a hierarchical forward method, with three blocks of variables being added based on a theoretical ecological approach (individual, family, and school characteristics). The reference category for the three models is

adolescents in the appropriate grade (n = 155). In Models 1 and 2, the reference category was compared to both out-of-school adolescents (n = 64) and adolescents enrolled in school in lower grades than considered appropriate to their age (n = 380). Out-of-school adolescents were not included in Model 3 as they were not asked the name of the last school attended. Thus, given that school-level data in Model 3 was missing for adolescents out of school, the reference category—adolescents in the age-appropriate grade—was only compared to adolescents enrolled in school in lower grades according to their age. Moreover, only adolescents attending public school institutions were considered for Model 3 (n = 528), since information on school size and quintile was only available for public schools. No other missing data was observed for the variables of interest. Odds ratios were calculated to facilitate the interpretation of the results as they are equivalent to effect sizes (Kelley and Preacher 2012). All statistical analyses were conducted using SPSS 22. Significance level was set at $p<0.05$ in the three final models. Individual, family and school characteristics that were negatively related to age-appropriate enrolment were labelled "risk factors," while positive effects were termed "protective factors" (Masten 2014).

Results

Descriptive Data and Preliminary Analysis

The individual characteristics of the Young Carers sampled adolescents are shown in Table 2. Overall, out-of-school adolescents reported having more negative experiences in school compared to adolescents that were at least one year behind and adolescents in the age-appropriate grade. Chi-square tests showed statistically significant differences in grade repetition ($p < 0.001$) and difficulty concentrating in school ($p < 0.001$) between the three groups. While 60 per cent of out-of-school adolescents experienced problems concentrating at school, only 32 per cent of adolescents at least one year behind had problems concentrating at school. This percentage was even lower for adolescents in the age-appropriate grade (28%). Similarly, the percentage of adolescents who repeated a grade in school was 55 per cent for the out-of-school group, compared to 59 per cent for adolescents at least one year behind and 21 per cent for adolescents in the age-appropriate grade. Overall, considerably fewer out-of-school adolescents reported having accessed school counselling services (11%), compared to nearly 20 per cent of adolescents at least one year behind, and 20 per cent of adolescents in the age-appropriate grade. However, the Chi-square test showed a non-statistically significant difference in access to school counselling between all three groups.

Table 2: Hypothesised individual and family risk and protective factors for educational delay *n*(%) or mean (SD)

	All youth aged 16–18 *n*=599 (100%)	Out of school *n*=64 (10.7%)	At least one year behind *n*=380 (63.4%)	At the appropriate grade or higher *n*=155 (25.9%)	X^2 or ANOVA
Demographics					
Gender					
Girls	363 (60.6%)	45 (70.3%)	211 (55.5%)	107 (69.0%)	11.241**
Boys (risk)	236 (39.4%)	19 (29.7%)	169 (44.5%)	48 (31.4%)	
Age (older=risk)	16.37 (.482)	16.39 (.491)	16.38 (.486)	16.33 (.471)	1.109
Previous experiences in school					
Grade repetition					
No	307 (51.3%)	29 (45.3%)	155 (40.7%)	123 (79.4%)	66.549***
Yes (risk)	292 (48.7%)	35 (54.7%)	225 (59.3%)	32 (20.6%)	
Concentration problems at school					
No	392 (65.4%)	26 (40.6%)	255 (67.1%)	111 (71.6%)	20.504***
Yes (risk)	207 (34.6%)	38 (59.4%)	125 (32.9%)	44 (28.4%)	
School counselling					
No	487 (81.3%)	57 (88.1%)	305 (80.3%)	125 (80.6%)	2.849
Yes (protective)	112 (18.7%)	7 (10.9%)	75 (19.7%)	30 (19.4%)	
Family					
Geographical location					
Urban	284 (47.4%)	28 (43.8%)	167 (43.9%)	89 (57.4%)	8.399*
Rural (risk)	315 (52.6%)	36 (56.3%)	213 (56.1%)	66 (42.6%)	
Type of household					
Formal	419 (69.9%)	39 (60.9%)	268 (70.5%)	112 (72.3%)	2.926
Informal (risk)	180 (30.1%)	25 (39.1%)	112 (29.5%)	43 (27.7%)	
Basic necessities					
Less than two missing	230 (38.4%)	12 (19.7%)	141 (36.8%)	77 (49.7%)	19.051***
Two or more missing (risk)	369 (61.6%)	52 (81.3%)	239 (63.2%)	78 (50.3%)	
Food insecurity					
No	492 (82.1%)	44 (68.8%)	311 (81.8%)	137 (88.4%)	11.966**
Yes (risk)	107 (17.9%)	20 (31.1%)	69 (18.3%)	18 (11.6%)	
Employment					
Someone working at home	444 (74.1%)	46 (72.1%)	275 (72.3%)	123 (79.4%)	2.991
No one working at home (risk)	155 (25.9%)	18 (28.1%)	105 (26.7%)	32 (20.6%)	
Child support grants					
No	298 (49.9%)	36 (56.3%)	185 (48.3%)	79 (51.3%)	1.599
Yes (protective)	301 (50.1%)	28 (43.8%)	197(51.8%)	76 (48.7%)	
Household arrangements					
Non-biological caregivers	111 (18.7%)	11 (17.7%)	79 (21.1%)	21 (13.6%)	3.848
Biological caregivers (protective)	482 (81.3%)	51 (82.3%)	298 (78.9%)	133 (86.4%)	
Male-headed household	84 (14.0%)	13 (20.3%)	55 (14.5%)	16 (19.0%)	3.924
Female-headed household (protective)	515 (86.0%)	51 (79.7%)	325 (85.5%)	139 (89.7%)	

*Denotes significance at p<0.05; ** Denotes significance at p<0.01; *** Denotes significance at p<0.001.

Family characteristics of adolescents by type of school enrolment are reported in Table 2. More out-of-school adolescents lived in rural areas and in informal and male-headed households compared to the other two subgroups. The percentages of out-of-school adolescents living in poverty (81.3%) and reporting food insecurity (31.1%) at home were higher ($p < 0.001$ and $p < 0.01$), compared to the percentages of the other two groups of adolescents. Overall, households of school dropouts received fewer grants and experienced more unemployment than households of adolescents at least one year behind and those at the age-appropriate grade.

However, differences in grant reception and household unemployment were not statistically significant between all three groups.

While 64 adolescents were not attending school, 535 adolescents attended school in Round 1 in the Young Carers study. Out of the 535 adolescents attending school, 99 per cent attended public schools (*n* = 528). Most adolescents attended large to extra-large schools—with more than 500 and 1000 learners, respectively. Approximately 13.6 per cent of the sample were enrolled in primary schools, and less than a quarter attended schools in the upper quintile systems (quintiles 4 and 5). Over 75 per cent of the study sample attended schools in quintiles one to three. School characteristics for adolescents attending school are summarised in Table 3.

Table 3: Hypothesised school risk and protective factors for educational delay *n*(%) or mean (SD)

School characteristics	All youth in school *n*=535	At least one year behind *n*=380	At the appropriate grade or higher *n*=155	X^2 or ANOVA
School geographic location				
Urban	267 (49.9%)	189 (49.7%)	78 (50.3%)	.015
Rural (risk)	268 (50.1%)	191 (50.3%)	77 (49.7%)	
School phase				
Primary	73 (13.6%)	73 (19.2%)	0 (0%)	34.481***
Secondary (risk)	462 (86.4%)	307 (80.8%)	155 (100%)	
School funding type				
Independent	7 (1.1%)	4 (1.1%)	3 (1.9%)	.665
Public	528 (98.9%)	376 (98.9%)	152 (98.1%)	
Public school characteristics	**All youth in public schools *n*=528**	**At least one year behind *n*=376**	**At the appropriate grade or higher *n*=152**	
School size (larger = risk)				
Micro	22 (4.2%)	18 (4.8%)	4 (2.6%)	1.716
Small	9 (1.7%)	6 (1.6%)	3 (2.0%)	
Medium	21 (3.8%)	17 (4.5%)	4 (2.6%)	
Large	175 (33.3%)	133 (35.3%)	42 (27.5%)	
X-Large	303 (57.2%)	203 (53.8%)	97 (65.4%)	
Quintile (higher =protective)				
1	223 (42.2%)	165 (43.9%)	58 (38.2%)	1.641
2	61 (11.6%)	48 (12.8%)	13 (8.6%)	
3	116 (22.0%)	72 (19.4%)	43 (28.3%)	
4	113 (21.4%)	80 (21.3%)	33 (21.7%)	
5	15 (2.8%)	10 (2.7%)	5 (3.3%)	
Fees type				
No fees school (quintiles 1, 2&3)	400 (75.8%)	286 (76.1%)	114 (75.0%)	.067
Fees school (quintiles 4&5)	128 (24.2%)	90 (23.9%)	38 (25.0%)	

*Denotes significance at p<0.05; ** Denotes significance at p<0.01; *** Denotes significance at p<0.001.

Primary Analysis

Research Question 1: How at Risk for Educational Delay are Adolescents in the Study Sample, Compared to National Estimates?

Chi-square tests were conducted to examine whether there were differences in dropout, no basic completion, repetition, and inconsistent attendance between: 1) adolescents in the Young Carers and national estimates for all adolescents aged 16 to 18 (see Table 4), and 2) adolescents in the Young Carers and provincial estimates for black adolescents aged 16 to 18 in Mpumalanga and Western Cape (see Table 4). All analyses yielded statistically significant results, with negligible to moderate effect sizes in both directions (Rea and Parker 1992).

Table 4: Observed frequencies and Chi-square comparative analysis of educational delay between adolescents in the Young Carers sample and estimates for adolescents aged 16–18 in South Africa

	Young Carers Round 1 *n* (%)	South African Household Survey 2010* (GHS) *n* (%)	% of missing data for each variable		X^2	Cramer's φ	Young Carers Round 1 *n* (%)	African/black adolescents from Western Cape and Mpumalanga (GHS 2010) *n* (%)	% of missing data for each variable		X^2	Cramer's φ
			YC	GHS					YC	GHS		
All adolescents aged 16 to 18	599 (100%)	6698 (100%)					599 (100%)	872 (100%)				
Dropout	4.7%	17.1%	0%	0.3%	59.7***	.091***	4.7%	15.4%	0%	0.3%	38.4***	.162***
No basic completion	55.9%	29.5%	0%	1.8%	177.9***	-.156***	55.9%	31.3%	0%	1.4%	88.75***	-.246***
All adolescents aged 16 to 18 attending school	571 (100%)	5284 (100%)					571 (100%)	714 (100%)				
Repetition	48.3%	12.4%	0%	1.1%	347.7***	-.245***	48.3%	15.3%	0%	0.9%	163.9***	-.358***
Inconsistent attendance (5 days of absence in the past week)	1.4%	8.8%	0%	1.4%	43.4***	.080***	1.4%	4.2%	0%	0.8%	11.170**	.091**

*Denotes significance at p<0.05; ** Denotes significance at p<0.01; *** Denotes significance at p<0.001.

The results in Table 4 revealed significant differences between the Young Carers and the national estimates: for dropout, χ^2 (1) = 59.7, φ= .091 indicating *negligible effect size*, p< .001; for no basic completion, χ^2 (1) = 177.9, φ= -.156 indicating *weak effect size*, p< .001; for repetition, χ^2 (1) = 347.7, φ= -.245 indicating *moderate effect size*, p< .001; and for inconsistent attendance, χ^2(1) = 43.4, φ= .080 indicating *negligible effect size*, p< .001. Statistically a significantly lower proportion of adolescents in the Young Carers sample were out of school (4.7%), compared to 17 per cent of South African adolescents, and black adolescents in Western Cape and Mpumalanga (15.4%). Similarly, inconsistent school attendance was significantly lower amongst the Young Carers (1.4%), compared to South African adolescents (8.8%), and black adolescents in Western Cape and Mpumalanga (4.2%). However, the sample in the study seemed to experience slower school progress than average South African adolescents. In the Young Carers sample, 55.9 per cent of adolescents did not complete basic education (grades 1 to 9), compared to 29.5 per cent non-completion rates for adolescents aged 16 to 18 in South Africa. Likewise, repetition of grades was particularly high amongst adolescents in the sample (48.3%), compared to national estimates (12.4%).

Table 4 also shows similar significant differences in dropout, no basic completion, repetition, and inconsistent attendance, when adolescents in the Young Carers were compared to provincial estimates for black adolescents. Disparities observed in school progress marginally increased when non-completion and repetition in the Young Carers sample were compared to black adolescents aged 16 to 18 in the Western Cape and Mpumalanga.

Research Question 2: Personal, Family and School Characteristics Predicting Being in the Age-Appropriate Grade

Table 5 displays the three final multinomial logistic regression models (individual, family and school) for educational delay amongst black adolescents aged 16 to 18 from socioeconomically disadvantaged communities. Overall, the models accounted for 35.7 per cent of the variance in school delay.

Risk Factors for Educational Delay

Significant risk factors for being out of school (rather than in the age-appropriate grade) included the following: past grade repetition versus none (OR=.176, p < 0.001), having experienced problems concentrating at school versus not experiencing such problems (OR=.267, p < 0.001), household poverty versus less household poverty (OR=.398, p < 0.05), and food insecurity versus none (OR=.389, p < 0.05). Significant risk factors for being behind

(rather than in age-appropriate grade) included the following: gender—male versus female (OR=.594, $p < 0.05$), past grade repetition versus none (OR=.168, $p < 0.001$), rural location versus urban location (OR=.370, $p < 0.001$), and larger school size by number of students (OR=.723, $p < 0.05$).

Table 5: Multinomial logistic regression models presenting significant risk and protective factors for educational delay amongst adolescents aged 16 to 18 from socioeconomically disadvantaged communities in South Africa

Factors		*Model 1: Individual Characteristics*				*Model 2: Family Characteristics*				*Model 3: School Characteristics*			
		Out of school		*At least one year behind*		*Out of school*		*At least one year behind*		*Out of school*		*At least one year behind*	
		B	*OR* *95% CI*	*B*	*OR* *95% CI*	*β*	*OR* *95% CI*	*B*	*OR* *95% CI*	*β*	*OR* *95% CI*	*β*	*OR* *95% CI*
Gender	Male Female (ref)	.095	1.099 (.565 2.141)	-.467	.627* (.410 .957)	.891	1.050 (.519 2.124)	-.616	.540** (.346 .843)			-.521	.594* (.369 .957)
Age		.007	1.007 (.532 1.905)	-.040	.961 (.628 1.471)	0.17	1.017 (.523 1.978)	.006	1.006 (.649 1.559)			.018	1.018 (.635 1.633)
Grade repetition	Repeated Never repeated (ref)	-1.712	.181*** (.094 .348)	-1.726	.178*** (.114 .279)	-1.737	.176*** (.089 .350)	-1.781	.168*** (.106 .268)			-1.781	.168*** (.103 .275)
Concentration problems at school	Yes No (ref)	-1.538	.215*** (.114 .406)	-.467	.647* (.416 .994)	-1.321	.267*** (.136 .522)	-.292	.747 (.471 1.186)			-.283	.754 (.456 1.246)
School counselling	No (ref) Yes	.799	2.224 (.896 5.520)	-.014	.986 (.594 1.638)	.939	2.557* (.998 6.552)	.081	1.084 (.637 1.846)			-.055	.947 (.528 1.696)
Geographical area	Rural Urban (ref)					-.619	.539 (.278 1.045)	-.629	.533** (.345 .823)			-.993	.370** (.191 .719)
Household type	Informal Formal (ref)					-.569	.566 (.280 1.146)	-.348	.706 (.438 1.139)			-.246	.782 (.450 1.359)
Household poverty: Basic necessities	Necessities covered (ref) Necessities not covered					-.920	.398* (.185 .859)	-.231	.794 (.509 1.238)			-.405	.667 (.411 1.1083)
Food insecurity	Yes No(ref)					-.943	.389* (.175 .865)	-.459	.632 (.341 1.172)			-.540	.583 (.304 1.119)
Household unemployment	No one working At least one adult working (ref)					-.354	.702 (.332 1.483)	-.387	.679 (.410 1.125)			-.448	.639 (.373 1.094)
Child support grants	Yes No(ref)					.158	1.172 (.615 2.232)	-.145	.865 (.571 1.312)			-.223	.800 (.507 1.263)
Household living arrangements	Biological Non-biological (ref)					-.070	1.073 (.457 2.517)	.625	1.869* (1.058 3.300)			.677	1.969* (1.075 3.606)
	Female-headed Male-headed (ref)					.796	2.17 (.895 5.491)	.971	1.012 (.521 1.967)			.159	1.172 (.582 2.361)
School location	Urban (ref)											-.315	.730 (.443 1.201)
School phase	Primary (ref) Secondary											.631	1.880 (.915 3.859)
School size												-.324	.723* (.548 .955)
School quintile												.391	1.479* (1.115 1.961)
		Individual factors				Family factors				School factors			
Overall model Chi-square		104.513***				148.303***				151.775***			
Pearson Chi-square		45.192				928.391				440.831			
Nagelkerke R2		.194				.263				.357			
Δ Nagelkerke R2		.194				.069				.094			
N		599 (100%)				599 (100%)				528 (100%)			

*Denotes significance at p<0.05; ** Denotes significance at p<0.01; *** Denotes significance at p<0.001. Reference category: adolescents in the age-appropriate grade

Protective Factors for Educational Delay

Significant protective factors for being in the age-appropriate grade (rather than adolescents who were at least one year behind) were living with biological parents or grandparents versus non-biological or remotely related caregivers (OR=1.969, $p < 0.05$) and attending school in wealthier communities, indicated by school quintile (OR= 1.479, $p < 0.05$). Compared to adolescents who were out of school, receiving counselling at school was a significant protective factor for being in the age-appropriate grade (OR=2.557, $p < 0.05$).

Discussion

The study first described the educational delay of 599 black South African adolescents aged 16 to 18 from socioeconomically disadvantaged communities, compared to national and provincial estimates. Adolescents from socioeconomically disadvantaged communities were at greater risk of school non-completion and repetition than average South African adolescents and black adolescents from Western Cape and Mpumalanga. A range of risk and protective effects of personal, family, and school characteristics for age-appropriate enrolment were then demonstrated. Both personal and contextual factors—family and school—predicted age-appropriate enrolment in both detrimental (risk-conferring) and beneficial (disadvantage-mitigating) ways.

School Delay

The study sample showed low dropout and absenteeism rates, compared to national and provincial estimates. In the Young Carers study, only black adolescents from socioeconomically disadvantaged communities were interviewed, as opposed to the inclusion of other ethnic groups in national estimates. Evidence in South Africa suggests that black adolescents are at a greater risk of grade repetition and low completion, compared to their coloured, Indian, and white counterparts (Strassburg 2010). However, coloured older adolescents have been found to be considerably more vulnerable to being out of school and having worse attendance rates than black adolescents (Strassburg 2010). Furthermore, some studies have found that black adolescents from socioeconomically disadvantaged backgrounds maintain academic motivation, persevere and stay in school, even if they often repeat grades (Bray et al. 2010; Strassburg, Meny-Gibert, and Russell 2010a; Ward et al. 2007). One plausible explanation for the low absenteeism in the study sample may be the fact that most adolescents came from poor families and attended no-fee schools (schools in quintiles 1 to 3). These schools provide daily free meals for all their learners.

The study sample showed high rates of grade repetition, compared to the South African population as a whole. Grade repetition was 33 per cent higher in the study sample than in the general adolescent population in South Africa. These patterns were an indication of the slow progression and school delay of adolescents from socioeconomically disadvantaged communities, compared to the average adolescent in South Africa. Our findings thus suggest consistency with previous research indicating that older adolescents from socioeconomically disadvantaged communities are at a higher risk of educational delay (Branson, Hofmeyr, and Lam 2014; DBE 2010; DBE 2011; Lam, Ardington, and Leibbrandt 2011). When compared to all black adolescents of the same age in Western Cape and Mpumalanga, adolescents in the sample did worse in terms of grade repetition and basic completion. Consistent with previous studies on the educational outcomes of black adolescents in South Africa, these findings suggest that racial educational inequalities can be explained by the socioeconomic status of the family, school and community contexts—i.e. socioeconomically disadvantaged communities (Branson, Hofmeyr, and Lam 2013; Lam, Ardington, and Leibbrandt 2011; Meny-Gibert and Russell 2010; Spaull and Kotze 2015; Spaull 2015).

Subsequently, this study identified factors at different ecological levels (Bronfenbrenner 1979) that were significantly associated with educational delay. Results showed different mechanisms for being enrolled at least one year behind or out of school, compared to being in the age-appropriate grade.

Individual Characteristics

Overall, individual characteristics explained most of the variance in school delay. Displaying consistency with the literature, boys and adolescents living in rural areas were less likely to be in the appropriate grade according to their age, while school grade repetition and concentration problems were highly negatively correlated with attending school in lower grades and being out of school. The results also suggest that previous negative experiences in school (grade repetition and having problems concentrating) were correlated with adolescents being less likely to be enrolled in the age-appropriate grade. In South Africa, evidence shows that school delay amongst adolescents is not only due to grade repetition, but also to late school entry, temporary absence and migration (Meny-Gibert and Russell 2010; Spaull and Taylor 2015). The strong relationship between grade repetition and appropriate grade enrolment provides further evidence on repetition being an important risk factor not only for delayed school progress, but also for school dropout amongst older adolescents in socioeconomically disadvantaged communities.

Family and School Characteristics

The current study examined the effects of school psychosocial support on educational delay amongst older adolescents from socioeconomically disadvantaged communities. Receiving counselling at school was significantly associated with being in the age-appropriate grade (compared to adolescents out of school). The effect of school counselling was only significant when family characteristics were considered. These study findings, which suggest the potential beneficial effect of school counselling, particularly for adolescents from families at greater socioeconomic risk, are in line with previous findings from South Africa. For instance, qualitative evidence shows the important role of providing psychosocial support in schools for the educational effectiveness of adolescents in poor communities (Moloi et al. 2010) as well as for improving adolescents' academic motivation in deprived schools (Olivier 2006).

Female headship and living with biological caregivers have both been associated with better school attendance and completion in previous studies in South Africa, Zimbabwe and Ghana (Branson, Hofmeyr, and Lam 2013; Fleisch, Shindler, and Perry 2012; Gage 2005; Hunt 2008; Nyamukapa and Gregson 2005; Strassburg 2010; Wells 2009). The protective effect of living with biological and female caregivers on educational outcomes can be explained by the amount of money invested in children and schooling as biologically close parents are those who invest more in schooling within socioeconomically disadvantaged contexts (Anderson 2003). Nevertheless, in the present analysis, residing in a female-headed household was not found to have a significant effect on school delay. However, in line with previous studies in South Africa (Anderson 2003; Fleisch, Shindler, and Perry 2012), living with biological caregivers was confirmed as a protective factor for grade appropriate enrolment amongst older adolescents from socioeconomically disadvantaged communities.

Although all our participants came from areas similar in their low socioeconomic status, our findings suggest that the greater the poverty in the household, the worse the educational delay of adolescents. That is, adolescents of a non-compulsory school age from especially poor households were more likely to be out of school, compared to their peers coming from less poor households (yet still disadvantaged). Given the low absolute cost of education in the poor disadvantaged communities which the sample participants came from, these findings seem to confirm recent South African research on the impact of relative poverty and social exclusion as a barrier to completion via indirect school costs (Dieltiens and Meny-Gibert 2012; Strassburg, Meny-Gibert, and Russell 2010a).

South African and sub-Saharan literature shows that unconditional cash transfers can have a positive impact on school enrolment amongst children and younger adolescents (Baird et al. 2013; Coetzee 2013; Kremer, Miguel, and Thornton 2009). However, the results showed that no significant direct effects of receiving the Child Support Grant on age-appropriate enrolment outcomes were found. These findings may seem to challenge other studies, which have found a positive effect of social grants on educational outcomes in sub-Saharan developing countries (Baird et al. 2013; Coetzee 2013; DSD, SASSA, and UNICEF 2012). However, the diversity of findings seems plausible and could be explained by several factors in the current design, and the South African context. First, most of the quantitative evidence in South Africa focuses on the school enrolment and academic achievement of children or young adolescents (Baird et al. 2013; Coetzee 2013), while the current study compares the educational delay of adolescents of non-compulsory-age according to their age-appropriate grade—it may be that a grant helps children to access school, but that more is needed in order to achieve progression and completion. Second, most studies in South Africa consist of macro-population analyses of children's educational outcomes using nationally-representative samples. In contrast, this study looked specifically at the risk and protective factors for educational delay amongst adolescents aged 16 to 18 from socioeconomically disadvantaged communities. Hence, social grants may have a *promotive* effect, that is, their beneficial effect on educational outcomes can be observed at a macro-population level (e.g. made of high-risk and low-risk adolescents). However, when taking into account a fairly similar group of adolescents exposed to similar community disadvantages, social grants did not mitigate other risk factors that also hindered adolescents' school progression (i.e. low school performance and quality). Thus, with regards to the external validity of the study, findings should not be extrapolated to other groups of South African adolescents.

Preliminary multilevel analysis showed that overall very little variance in school delay was accounted for at the school level. This might be explained by the very similar types of institutions which adolescents attended (i.e. public, poorly-resourced schools). However, attending schools from higher quintiles was found to be associated with being in the age-appropriate grade. This finding confirms that attending no-fee schools (schools in quintiles 1, 2, and 3) is associated with school delay (Spaull 2015; Spaull and Kotze 2015). Given that a school's quintile is determined by the socioeconomic characteristics of the surrounding community, this finding suggests that lower poverty levels in the community may also be associated with age-appropriate enrolment.

Limitations and Future Directions

The current study has several limitations due to its methodology and the original design of the Young Carers study. First, further research defining at-risk adolescents on the basis of previous experiences such as grade repetition, migration patterns, long absences and delayed entrance to school is needed to look at the effect of *proximal risk factors* on educational outcomes beyond contextual characteristics (Cappella and Weinstein 2001). Second, several key factors for the investigation of the risk and protective factors for education in South Africa were either not available in our current dataset or not included in the final model due to them not showing significance at $p<0.25$ in univariate regressions (i.e. province factor) (Hosmer and Lemeshow 2000). Thus, one needs to be aware of the potential confounding effects of some important missing variables. For instance, school-level factors, such as school safety or school resources, were not measured (Burton and Leoschut 2013; Hunt 2008; Strassburg, Meny-Gibert, and Russell 2010b; Visser, Juan, and Feza 2015). Third, all adolescents in the sample were considered as a homogenous group because all adolescents came from socioeconomically disadvantaged, black communities. However, descriptive results showed that adolescents in the age-appropriate grade experienced less risk factors, compared to those of out-of-school adolescents, and adolescents at least one year behind. This suggests that despite the fact that all adolescents were from socioeconomically disadvantaged communities, a substantial portion of the sample were experiencing relatively few risk factors (Kumpfer 1999; Luthar 1993). Furthermore, given the nature of the sample, it was not possible to conclude from the findings whether the identified positive factors were associated with positive educational outcomes in general, or if they were specifically important for black adolescents from socioeconomically disadvantaged communities, i.e. differentiating *promotion* from *protection* (Hall 2009; Rutter 1987). Thus, further cluster and mixture analyses, as well as person-centred approaches including low-risk group comparisons (Masten 2014), would be needed to complement this study's findings in order to better understand the educational risk and resilience of adolescents in South Africa. Fourth, the present study consists of a one-year snapshot. Given its short time frame, more interesting changes in educational outcomes may be found in longer investigations. Fifth, causality cannot be inferred, given the non-experimental nature of this observational study.

Conclusion

To our knowledge, no quantitative studies to date have specifically focused on the educational delay of socioeconomically disadvantaged children who are not of compulsory school age in

South Africa. This is also the first prospective and quantitative study to systematically investigate risk and protective factors for post-compulsory educational outcomes amongst black South African adolescents aged 16 to 18 living in socioeconomically disadvantaged communities. The study's findings suggest the potential value of two types of interventions that may decrease the risk factors related to personal characteristics and family characteristics for educational delay amongst South African older adolescents from socioeconomically disadvantaged communities. First, psychosocial support programmes can help socioeconomically disadvantaged adolescents stay in school (i.e. keeping biological caregivers close to their older adolescents and ensuring access to counselling services in school). Second, employment and income generating initiatives targeting poor families may also have the potential to reduce food insecurity and assist in securing adolescents' basic necessities, which in turn might reduce the risk for school delay. Finally, in order to ensure no adolescent is left behind, more financial and technical support from the Department of Basic Education, as well as better monitoring systems are needed in no-fees primary schools (Gilmour and Soudien 2009; Spaull 2013). Improving the quality of children's education in the early grades in the poorest areas can reduce the current unsurmountable inequality gap in education amongst South African adolescents.

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