

Time to learn? Time allocations among children in South Africa

Dorrit Posel
University of the Witwatersrand
dorrit.posel@wits.ac.za

Erofili Grapsa
Rhodes University
erwfili@gmail.com

Biennial Conference of the Economic Society of South Africa
Rhodes University, Grahamstown, South Africa
30 August – 1 September 2017

Paper published as: Posel, D. and Grapsa, E. (2017) “Time to learn? Time allocations among children in South Africa”. *International Journal of Educational Development* 56: 1 – 10.

Abstract

We investigate the time allocations of children (10-17 years) in South Africa using nationally representative time-diary data. We show that racial variation in time allocations mirrors well-documented findings of racially differentiated schooling outcomes. African children spend significantly less time on learning activities than other children, particularly outside school hours. They also spend significantly more time on household and production work and on school-related travel. We use regression analysis to investigate whether these race differences persist among children in households with similar socio-economic characteristics; and we explore whether children’s subjective time evaluations reveal evidence of greater time pressure among African children.

Keywords: children; time allocations; education; South Africa

1. Introduction

A large body of literature documents and explores the persistence of race differences in educational outcomes in post-apartheid South Africa (cf. van der Berg 2007; 2008; Bhorat and Oosthuisen 2008; Lam et al. 2011; Timaeus et al. 2013; Spaul 2013). Lower levels of educational attainment among Africans have been linked partly to the poor performance of schools which the majority of African pupils attend. Despite attempts by the post-apartheid government to reduce inequalities in resource allocations to schools, substantial variation persists in schooling infrastructure and the quality of schooling (Yamauchi 2005; van der Berg 2007; 2008; Spaul 2013). Studies also highlight the role of enduring race differences in the socio-economic characteristics of children's households in influencing children's progress through school (Gustafsson 2011; Fleisch et al. 2012; Timaeus et al. 2013).

In this study, we explore the time allocations of children in the context of these differentiated schooling outcomes in South Africa. The Schools Act of 1996 establishes that schooling in South Africa is compulsory for all children from the ages of seven to 15 years. However, children living in poorer households, who typically also attend 'poor' schools, may allocate less time to learning, both at school and in learning outside of formal school hours. This may be because children face more constraints on the time available for learning and because children receive less positive encouragement to learn. For example, studies from other developing countries suggest that children may be expected to spend more time on household and production work, and on travelling to school, which reduces the time or energy that they have for learning activities (cf. Ozarem and King, 2007; Assad et al. 2010; Zapata et al. 2011). But it is also likely that children who attend better quality schools and who live in better resourced homes face a more conducive environment for learning outside school, and receive more input from teachers, and from parents who are also typically better educated (Anderson et al. 2001).

We analyse the time diaries of children (aged 10 to 17 years) collected in a nationally representative time use survey, conducted in 2010. We show that well-documented findings of race differences in educational attainment may be linked to variation in children's time allocations. On average, African children spend significantly less time on learning activities, and particularly outside school, than other children. They also allocate significantly more time to household and production work, and to school-related travel, than other children, although

no less time to leisure. We use regression analysis to investigate whether race differences in mean time allocations persist among children with the same socio-economic status. Although we cannot directly test whether children's responsibilities in the home crowd out the time they have available for learning, we investigate a possible trade-off indirectly, by comparing children's subjective evaluations of their daily time pressure.

In the next section, we briefly review the literature on educational outcomes in South Africa, and children's time allocations in developing countries. In section 3, we discuss the time use data and the methods we apply to compare time allocations among children. In section 4, we describe differences by race in the educational attainment of children, the characteristics of the households in which they live, and their time allocations to learning, school travel, household work, production work, leisure and personal care. We consider not only the average time allocations of children, but also their real time behaviour to reveal differences in the timing and structure of their day. In section 5, we present the results of the regression analysis which estimates the correlates of children's mean time allocations, and in the final empirical section, we compare children's subjective evaluations of their time use during the day. The conclusion summarises our main findings and briefly discusses their implications.

2. Review

Large race differences in both school expenditure and school quality during apartheid are well documented (cf. Case and Deaton 1999; van der Berg 2007). Education was racially segregated, in terms of funding, administration and syllabus content, where the government's policy of "Bantu education" was used as one of the main tools of apartheid's founding ideology of 'separate development'.

With the end of apartheid and the transition to democracy, formal racial segregation in schools was removed, a unified schooling system was established, and resource allocations across schools, and pay structures for teachers, were formally equalised. However, although race differences in educational attainment have narrowed over the past two decades, they remain sizeable. For example, in their analysis of regional longitudinal data, Lam et al. (2011) find that over three years (from 2002 to 2005), 82 percent of White pupils who had been in grades 8 or 9 in 2002 had advanced three grades by 2005, compared to only 27 percent of African students.

Most African learners still attend former African schools where the large majority of pupils are African; and schools-based data provide quantitative evidence of a large gap in student performance between former White schools and former African schools (cf. van der Berg 2007; 2008; Bhorat and Oosthuisen 2009; Bloch 2009; Spaul 2013). Persistent race differences in educational attainment therefore have been attributed partly to persistent differences in school quality. For example, the educational infrastructure, including the physical environment, in former African schools tends to be far lower, and particularly among schools in rural areas. It is not uncommon for schools to lack electricity, running water and toilets, or adequate classroom and library facilities including teaching resources and computers (Fiske and Ladd 2004; Timeaus et al. 2013). Children in poorly resourced schools are also far less likely to have access to textbooks or to be allowed to take textbooks home after school (Taylor 2008).

There are also other differences in school quality, including in the quality of teachers and school management. Studies point to considerable heterogeneity in the qualifications, subject knowledge and motivation of teachers, with high levels of teacher absenteeism and late-coming particularly in poorer schools, less time spent in classroom instruction, and inadequate mechanisms in place for monitoring the performance of teachers (Fiske and Ladd 2004; Taylor 2008; Bloch 2009; Spaul 2013; Wills 2016).

These disparities in school quality are reinforced by large differences in school fees. The poorest schools (identified as schools in quintiles¹ 1 to 3) receive the most public funding but they are no-fee schools. Richer schools, in contrast, are able to levy high school fees which more than offset smaller state allocations (Fiske and Ladd 2004), and thereby, they can employ more and better qualified teachers, and invest more in teaching facilities.

Race gaps in schooling derive also from large race differences in access to resources. Despite a growing African middle class, inequality among Africans has increased during the post-apartheid period, and Africans remain over-represented among the poor (Leibbrandt et al. 2010). Some research identifies differences in socio-economic status as the primary cause of racially differentiated schooling outcomes. Timeaus et al. (2013: 270), for example, find that “most educational disadvantages of African children, including low matriculation rates, are

¹ The quintiles are determined by income, employment rates and literacy levels in the school’s neighbourhood (Branson et al. 2012).

accounted for by household poverty and their mothers' own limited education". However, studies which model both school quality and household characteristics typically find that both are significant correlates of schooling outcomes (cf. Case and Deaton 1999; Branson and Lam 2010; Lam et al. 2011).

Almost all studies in this quantitative literature analyse schools-based data or household survey data. In this study, we explore time use data to shed further light on race differences in schooling outcomes in South Africa. One of the proximate reasons for why children perform poorly at school is that both the quantity and quality of time spent in learning activities at school and at home is lower.

Children who attend schools with more resources and better facilities, for example, would be expected to have a greater opportunities for learning at school. With teachers who are more qualified or motivated, children may also receive more encouragement, or face higher expectations, to learn in the home environment. Studies find that children who spend more time on homework generally perform better than other students (Keith 1982; Cooper and Valentine 2001; Epstein and Van Voorhis 2001). A regional study of performance in primary schools in South Africa, for example, found that time spent on homework, and particularly on reading, was strongly correlated with literacy scores and school performance (Taylor 2008). Parental involvement in homework has also been found to increase both the quality and the amount of time that children spend on homework (Hoover-Demsey et al. 2001), and more educated parents may be better able to assist children with homework (Anderson et al. 2001).

One of the legacies of apartheid, as Lam et al. (2011: 124) note, is that it "left black (African) parents without the resources to create a favourable home environment for students". African children are far less likely than other children to live in households with both their parents (Hall and Posel 2012), and parents are typically less educated (Branson et al. 2012). African children who attend poorer schools are also more likely to live in households where physical space is constrained, where there is no running water and electricity, and where access to computers and books is far more limited (Spaull 2013), characteristics which would make it much harder for students to spend time studying at home.

In addition, children in poorer households may also face greater demands on their time outside of learning and leisure. The association between economic status and children's time allocation

to production and household work has been found to be more pronounced in nonindustrial societies and rural populations (Larson and Verma 1999; Ersado 2005). In comparison to children in urban areas, children in rural areas allocate more time to production (and particularly farming-related) work and household work, which is often more time-consuming because of the relative lack of infrastructure. Work outside school (in the market or in the home) in turn has been found to lower the productivity of children's time in school, and therefore their progress through school and the quality of their schooling attainment (cf. Ozarem and King, 2007; Zapata et al. 2011).

The focus of much of the research on children's time allocations is on gender differences in the context of a gender gap in educational enrolment and attainment; and several studies have identified a displacement effect of domestic work on girls' schooling (see, for e.g., Assad et al. (1998) on Egypt; Yamano and Jayne (2005) on rural Kenya; and Zapata et al. (2011) on Bolivia).

Studies which have analysed time use data for South Africa have also been concerned with gender differences in time use patterns (Budlender et al. 2001; Chobokoane and Budlender 2002; Charmes 2006; Wittenberg 2009; Statistics South Africa 2013; Grapsa and Posel 2016). The time use data describe a clear traditional gender division of labour, among both adults and children. However, although girls spend more time on household work, and less time on production work and leisure, they do not also spend less time on learning activities than boys (Statistics South Africa 2013). These findings are consistent with other research which finds little evidence of a gender gap in educational attainment in South Africa, particularly in the post-apartheid period. Rather, among adults younger than 30 years, a small female advantage in schooling has emerged (Posel and Casale 2014).

Race differences in the time allocations of children have received little attention in the analysis of time use data in South Africa. Bray (2003) offers some descriptive findings from the first Time Use Survey (TUS) conducted in 2000, which she complements with ethnographic data collected from African children living in two poor urban neighbourhoods. Using the TUS data, she identifies that African children spend more time on household work than other children. However, her ethnographic research does not show a displacement effect on learning time; rather household work is "fitted in around educational and recreational activities" (Bray 2003:115). In this case, children from poorer households may allocate less time to learning

activities outside school hours not because of constraints on their time, but because there is less positive encouragement or stimulation to spend time on learning, either from school or home.

3. Data and methods

In this study, we undertake a more extensive quantitative analysis of children's time allocations in the context of persistent race differences in schooling outcomes in South Africa. We investigate not only how these time allocations vary by race but also across children living in households with very different socio-economic status. The data come from the most recent Time Use Survey (TUS), conducted in 2010, which surveyed approximately 39,000 individuals. A three-stage process was used to select the sample: first on primary sampling units, then on households within each sampling unit, and finally on two individuals aged ten years or older in the household who were selected to complete the time diary. We use the sampling weights released with the data to adjust for non-response and for the probability of inclusion in the sample.

The time diary was completed for a 24 hour period, starting at 4am on the day before the survey, with time allocations recorded in 30 minute slots. In addition to the time diary, a short household-level questionnaire was administered to identify the household roster and household characteristics, and an individual questionnaire was administered to the two individuals selected per household to complete the time diary.

All activities recorded in the diary were post-coded by Statistics South Africa, using a classification system that is structured around categories in the System of National Accounts (Budlender et al. 2001). We retain this system with two small adjustments. First, we collapse the three production activities (formal employment, informal employment and home-based production, and primary production) into a single category representing production work. Included in this category is subsistence farming and the collection of wood and water. Second, we identify a distinct category capturing time spent on travel for learning activities. The remaining six categories are learning (school and homework), household maintenance, caring labour, social activities (which include cultural, religious and sporting activities), mass media and personal care.

The TUS was conducted in the fourth quarter of 2010, with information collected in the last week of each month. Of the 7380 children (aged 10 to 17 years) in the sample, 1216 (17%) completed the survey in the last week of December, when schools were already on vacation. Because we are interested particularly in time allocations to learning activities, we restrict the analysis to children who completed the time diary in October and November (with November being the month during which year-end examinations are typically written). We also exclude 566 children who reported that their day had been “non-typical” and 139 children with inconsistent reports for educational attainment and age. This yields a total sample of 5459 children aged 10 to 17 years, and 5267 children for whom we have complete individual and household-level information.

In section 4, we first describe the characteristics of children in South Africa, and then present their participation rates and mean time allocations by activity type and race. The participation rate identifies the share of children who performed an activity type at any point during the 24 hour day. The mean total time is calculated by averaging the total amount of time that children spend on a particular activity, where we present mean total time for the whole sample of children (an unconditional mean), and mean total time only for the ‘actors’, that is only for children who participated in the specific activity (a conditional mean).

We augment this descriptive analysis by considering the real time allocations of children, which take into account when an activity was undertaken. This makes it possible to compare time use behaviour among children not only according to the average amount of time they allocate to activities, but also according to the timing of activities during the day. We describe real time allocations using activity distribution graphs, which plot the proportion of children who perform a particular activity at the start of each 30 minute time period.

The descriptive statistics reveal significant differences by race in the time use behaviour of children in South Africa. In section 5, we estimate whether race differences in mean time allocations persist among children living in households with comparable socio-economic characteristics. These characteristics include the income and wealth of the household, whether a domestic helper is employed, household composition, and whether the household is located in a rural (or urban) area. To measure household wealth, we create an asset index using principal components analysis of a range of assets (including household ownership of a car,

television, computer, washing machine and dishwasher) and the type of dwelling (formal or informal housing).

Parental education has been identified as an important correlate of schooling outcomes in South Africa (cf. Case and Deaton 1999; Anderson et al. 2001; Timeaus et al. 2013). However, because an individual-level questionnaire was administered only to two people in the household, we do not have information on the education (or employment status) of children's parents, although we can identify whether a child's parent is resident in the household.

In addition to household characteristics we control for a range of individual characteristics in the estimations, including a quadratic in age, sex and the highest level of education attained, as well as whether the time diary was completed on a week day or during the weekend. Although information in the time diary makes it possible to identify participation rates and time spent in learning activities, the individual questionnaire does not ask specifically whether children are currently enrolled in an educational institution. However, findings from other surveys identify near universal enrolment in primary school in South Africa and very high enrolment rates at least until age 15, the threshold age for mandatory schooling (Anderson et al. 2001; Branson and Lam 2010; Timaeus et al. 2013; Spaul 2015).²

As no information in the TUS is collected on school enrolment, we also cannot control for school quality in our analysis. In South Africa, most children attend school in their neighbourhood (Branson et al. 2012), and school quality is positively associated with the socio-economic status of households in that neighbourhood (Spaul 2013). Consequently, it is possible that the economic characteristics of children's households also capture characteristics of the school that children attend.

Not all children participate in all activities on a given day, and to estimate mean time allocations we use Tobit regression models, which adjust for zero time values for an activity (see e.g. Hsin 2007; Bonke 2010). Because time is finite, time allocated to one activity reduces time available for another activity. However, the Tobit model does not control for the joint or simultaneous

² Moreover, lower levels of educational attainment by age among Africans derive primarily from "a slower rate of grade advancement that begins in early grades" (Anderson et al. 2001: 43), rather than from differences in school drop-out rates.

determination of time. We therefore cannot infer causality between time allocations, and argue for example that because African children spend more time on household or production work, they therefore have less time to allocate to learning activities. However, if African children do have more demands on their time than other children, we would expect that they would be more likely to report time pressure during the day. In section 6, therefore, we investigate children's subjective evaluations of their time use (was there a comfortable amount to do during the day, or too much or too little). We first describe differences in responses by race and gender and then use multinomial logit regression analysis to investigate the correlates of these responses in a multivariate context, using the same set of covariates as that in the Tobit regressions.

4. Descriptive statistics

The descriptive characteristics of children aged 10 to 17 in South Africa and the households in which they live are presented in Table 1. The first three rows describe race differences in educational attainment. Compared to Indian and White children, substantially larger percentages of African and Coloured children have not yet progressed beyond primary school, while smaller percentages report secondary school as their highest educational attainment.³

Differences in grade completion are explained partly by differences in the age distribution of children. A larger share of African and Coloured children is younger than 14, the age at which children would be expected to transition from primary into secondary school. But race differences in grade attainment also reflect differences in the shares of children who maintain grade for age.

Grade for age has been calculated on the assumption that with no grade repetition, a student would have finished grade 12 (matric) by age 18. However, because late enrolment has been identified particularly among African children (Lam et al. 2011), we identify children who are not maintaining grade for age if there is more than a two-year difference between a child's age and the expected grade.

³ The majority of African and Coloured children (aged 10 to 17) have grade 6 as their highest level of educational attainment (approximately 55 percent), and are therefore likely to still be enrolled in primary school. The respective percentages among Indian and White children are 39 percent and 44 percent (data not shown).

Table 1. Individual and household characteristics of children (10-17 years), by race

	African (n = 4712)	Coloured (n = 544)	Indian (n = 76)	White (n = 127)
	% (SE)			
Primary school or lower	69.6 (0.9)	68.4 (2.4)	50.2 (6.6)	56.5 (5.3)
Secondary school	30.4 (0.9)	31.6 (2.4)	49.8 (6.6)	43.5 (5.3)
Grade-for-age	82.2 (0.7)	86.9 (1.6)	94.0 (2.9)	98.4 (1.3)
Average age	13.5 (0.0)	13.5 (0.1)	13.8 (0.3)	13.8 (0.2)
Younger than 14 years	48.9 (0.9)	51.5 (2.6)	44.2 (6.4)	44.6 (5.4)
Female	50.7 (0.9)	50.5 (2.6)	50.5 (6.5)	52.2 (5.4)
Rural	52.9 (0.9)	9.9 (1.5)	0.0 (0.0)	5.9 (2.8)
Employs domestic help	1.4 (0.3)	3.3 (0.9)	25.6 (5.7)	45.4 (5.4)
Household monthly income:				
≤ R1500	42.4 (0.9)	20.8 (2.1)	3.6 (2.0)	1.0 (1.0)
R1501 – R6000	47.0 (0.9)	54.0 (2.7)	29.0 (6.6)	5.8 (2.2)
> R6000	10.7 (0.7)	25.2 (2.4)	67.4 (6.7)	93.2 (2.5)
Asset quintile (1)	24.0 (0.8)	6.0 (1.0)	0.0 (0.0)	0.8 (0.8)
Asset quintile (2)	23.3 (0.8)	11.9 (1.6)	1.8 (1.4)	0.0 (0.0)
Asset quintile (3)	19.1 (0.7)	13.4 (1.8)	3.4 (1.9)	1.6 (1.3)
Asset quintile (4)	18.3 (0.7)	29.6 (2.4)	5.7 (2.8)	3.9 (1.9)
Asset quintile (5)	15.3 (0.7)	39.1 (2.5)	89.2 (3.5)	93.7 (2.4)
Average household size	6.1 (0.1)	5.7 (0.1)	5.1 (0.2)	4.0 (0.1)
Lives with at least one parent	65.1 (0.9)	83.8 (1.9)	90.8 (3.7)	89.4 (3.6)
Average number of female adults	1.7 (0.0)	1.6 (0.1)	1.5 (0.2)	1.1 (0.1)
Average number of male adults	1.1 (0.0)	1.3 (0.1)	1.5 (0.1)	1.0 (0.0)
Weekend diary	24.2 (0.8)	18.8 (2.1)	18.8 (5.3)	13.0 (3.3)

Source: TUS 2010

Note: The data are weighted using population weights. Standard errors are in parentheses.

Based on this definition, 82 percent of African children were maintaining grade for age in the TUS 2010, compared to 86 percent of Coloured children, 94 percent of Indian children and 98 percent of White children. Consistent with other studies (cf. Timaeus et al. 2013), the maintenance of grade for age declines overall with age, but this is most pronounced among African children. For example, whereas 95 percent of African children aged 10 had maintained grade for age, this was the case for only 67 percent of African teenagers aged 17 (data not shown). Among White and Indian children, in contrast, there is little change by age, while among Coloured children, the share declined from 97 percent among children aged 10 to 76 percent among children aged 17.

In addition to differences in schooling outcomes, Table 1 also describes large race differences in the socio-economic characteristics of children's households. In comparison to other children, African children are far more likely to be living in rural areas, where access to infrastructure (including electricity and running water) is lower, and in households with substantially lower levels of income and wealth. For example, whereas only 11 percent of African children lived in a household with income greater than 6000 rand per month in 2010, this was the case for 67 percent of Indian children and 93 percent of White children. Not surprisingly, therefore, African children are less likely to live in a household where domestic help is employed. In comparison to other children, African children also live in significantly larger households, but they are far less likely to co-reside with at least one parent. These distinguishing features of African children's households reflect enduring spatial and economic divisions in South Africa, continued patterns of temporary labour migration enforced during apartheid as a means of restricting African urbanization, high adult mortality rates, low marriage rates and more complex processes of household formation (cf. Russell 2003; Hosegood et al. 2007; Posel 2010; Budlender and Lund 2011; Posel and Casale 2013).

Differences in mean time allocations to learning activities, described in Table 2, largely mirror differences in schooling outcomes. African children spend significantly less time than other children on learning activities: average daily total time allocations are approximately 30 minutes higher among Coloured children and more than an hour higher among Indian and White children. These differences derive partly from race differences in participation rates. African children are less likely than other children to have spent any time on learning activities during the day although differences in participation rates are not statistically significant. However, conditional on participation, mean time allocations to learning activities are

significantly lower among African children, and they are highest among White children. These differences are not explained simply by higher shares of African children who are still in primary school, where the school day is shorter. Conditional on participation, African children who have incomplete primary schooling on average spend 23 minutes less than Coloured and Indian children on learning activities during the day; and 47 minutes less than White children (data not shown).

Mean differences in schooling time among children are evident both in the time spent in the school itself and in the time spent learning outside the school. However, they are larger and significant in the case of the latter. Among African children, conditional mean time allocations to learning outside school are approximately 80 minutes lower than the average daily time allocations of White children, and 40 minutes lower than those of Coloured and Indian children.

Table 2. Participation rates and average time spent in learning activities among children (10-17 years), by race

	African	Coloured	Indian	White
Unconditional mean time in learning	234.0 (3.2)	265.4* (8.7)	298.4* (22.7)	333.0* (18.0)
Participation in learning	0.7 (0.0)	0.8 (0.0)	0.8 (0.1)	0.9* (0.0)
Conditional mean learning time	314.4 (2.5)	348.9* (5.4)	364.1* (15.3)	387.2* (15.1)
Conditional mean time in school	333.3 (3.8)	346.7 (6.9)	373.9 (20.9)	385.6 (24.0)
Conditional mean time outside school	310.2 (3.0)	350.8* (8.2)	354.3* (21.9)	388.2* (19.3)

Source: TUS 2010

Note: The data are weighted using population weights. Standard errors are in parentheses. Participation rates are calculated as the proportion of the sample who reported spending any time on the activity. Asterisks indicate that in comparison to African children, proportions or mean times are significantly different at the 5 percent level

One explanation for why African children spend less time on learning outside of school is that there may be more demands on their time. Table 3 describes participation rates among children in other activities, and the mean total time for those who engaged in the activity. The table shows that in comparison to other children, African children spend significantly more time travelling to and from school (conditional on participation). This is partly because African children are far more likely to live in rural areas where distances to schools can be longer, and because they are more likely to reach school by walking or through public transport. African children are also significantly more likely than other children to have spent any time on

household maintenance and production work, although their conditional mean time allocations are significantly higher than among White and Indian children only in the case of production work.

Table 3. Participation rates and conditional mean time by activity among children (10-17 years)

	African	Coloured	Indian	White
Participation rates				
Travel to/from school	0.6 (0.0)	0.6 (0.0)	0.7 (0.1)	0.7 (0.1)
Household work	0.8 (0.0)	0.5* (0.0)	0.4* (0.1)	0.5* (0.1)
Care of persons	0.1 (0.0)	0.1 (0.0)	0.0 (0.0)	0.1 (0.0)
Production work	0.3 (0.0)	0.2 (0.0)	0.1* (0.1)	0.1* (0.0)
Social/cultural/sport	0.9 (0.0)	0.9 (0.0)	0.6* (0.1)	0.8* (0.1)
Mass media	0.8 (0.0)	0.9* (0.0)	0.9* (0.0)	1.0* (0.0)
Personal care	1.0	1.0	1.0	1.0
Conditional mean time				
Travel to/from school	74.6 (0.9)	60.9* (2.9)	53.7* (2.6)	59.5* (4.0)
Household work	119.4 (2.2)	93.2* (6.9)	113.2 (25.7)	84.1 (16.7)
Care of persons	79.0 (5.8)	71.7 (12.4)	69.9 (39.0)	70.7 (12.4)
Production work	82.7 (2.7)	96.1 (14.2)	49.9* (9.5)	50.3* (8.7)
Social/cultural/sport	202.9 (2.7)	203.5 (7.1)	149.7* (14.0)	158.1* (17.5)
Mass media	164.8 (2.3)	158.4 (5.4)	194.3* (15.4)	169.9 (12.3)
Personal care	739.6 (2.1)	748.3 (6.0)	775.5 (10.8)	732.0 (9.4)

Source: TUS 2010

Note: The data are weighted using population weights. Standard errors are in parentheses. Participation rates are calculated as the proportion of the sample who reported spending any time on the particular activity. Mean time is calculated by allocating the full 30 minute timeslot to the first activity reported and is conditioned on participation in the activity. Asterisks indicate that in comparison to African children, proportions or mean times are significantly different at the 5 percent level

The share of African children who engage in household work (80 percent) is substantially (and significantly) larger than the share who engage in learning activities outside the school environment (61 percent). This may provide evidence that household work in particular,

competes with the time African children have for learning in their home environment. But participation in social (including cultural or sporting) activities is even higher (85 percent); and the daily conditional mean time allocated to social activities by African children (203 minutes) far exceeds the average time they spend on household maintenance (119 minutes). In comparison to Indian and White children, African (and Coloured) children also spend significantly more time on social activities. It is therefore also possible that because time allocated to learning is lower, African children have more time to allocate to socialising, and to household and production work.

We further explore the time allocations of children by describing their real time trajectories during the day. Figures 1 and 2, which distinguish between time use on a week day and on the weekend, are constructed by plotting the proportion of children who performed a specific activity at the start of each 30 minute time period.

The graphs reveal differences by race, also in the timing of activities and the structure of the day. In comparison to other children on a week day (Figure 1), a larger share of African children is active before 7am, largely because of their involvement in household work but also because children are travelling to school. For example, at 6.30am, 72 percent of African children reported spending time on personal care, while 13 percent engaged in household work and a further eight percent travelled to school. In contrast, 84 percent of Coloured children, 98 percent of Indian children and 87 percent of White children reported spending time on personal care at this time.

Time spent on schooling activities outside of typical school hours peaks among children from 3pm to 5.30pm on a week day. However, whereas seven to 12 percent of African children engaged in learning activities over this period, the respective shares for Coloured, Indian and White children ranged from eight to 21 percent, 12 to 25 percent, and 15 to forty percent. During this time period, the share of African children involved in household work exceeded the share who spent time on learning activities, but even larger shares of African children spent time on mass media activities and particularly on socializing. For example, from 4.30pm to 5.30pm, ten percent of African children engaged in learning activities, between 14 and 16 percent did household work, and 43 percent spent time on social activities. Among other children, the percentages who engaged in household work were substantially smaller than the

percentages who spent time on learning activities, but only White children were more likely to have spent time on school work than on socializing or mass media activities.

Figure 1. Activity distributions among children (10-17 years) during the week

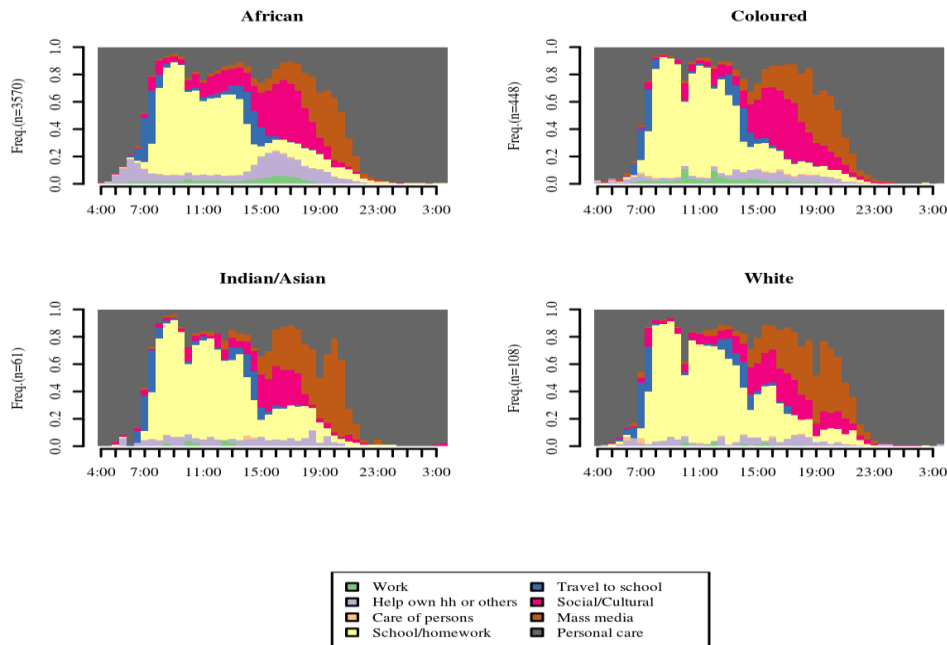
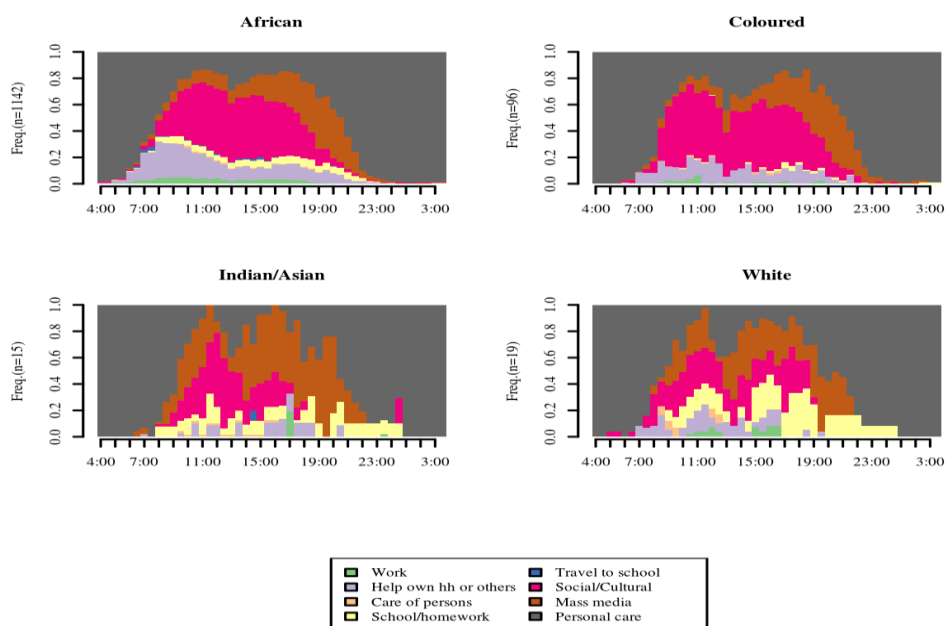


Figure 2. Activity distributions among children (10-17 years) during the weekend



During the weekend (Figure 2), children allocate more time to non-learning activities, and particularly to leisure. However, African children also start the weekend day earlier than other children (and they finish the day earlier). Compared to other children, Africans are also the most likely to have spent time on housework. Between 7am and 8am, for example, approximately thirty percent of African children engaged in housework compared to less than ten percent of other children. A far larger proportion of Indian and White children spend time on school work on a weekend day, compared to both African and Coloured children, and this evident throughout the day. The figure also reveals race differences in how leisure time is allocated, particularly during daytime hours: whereas social and cultural activities dominate among African and Coloured children, mass media activities are dominant among Indian and White children.

5. Regression analysis

To explore the correlates of children's mean time allocations in South Africa, we estimate two sets of Tobit regressions for each activity (reported in Table 4). The first regression controls only for the demographic characteristics of children and whether the time diary was completed during the week or the weekend; the second controls also for the socio-economic characteristics of the child's household. For the estimations, we combine time spent on mass media and social activities into a single category of "leisure". Although the descriptive statistics revealed race differences among children in how leisure time is spent, we are interested here in whether mean total time allocations to leisure activities differ by race.

Consistent with studies from other countries, time use behaviour among children in South Africa is strongly correlated with their age and education (Robinson and Bianchi 1997; Hofferth and Sandberg 2001; Hsin 2007). As children age, so time spent on learning and household maintenance increases (non-linearly), while time spent on leisure decreases. Children with more education also spend more time on learning activities, and less time on leisure and production work. Not surprisingly, mean time allocations to learning, and associated travel, are substantially lower on the weekend than during the week, while time allocations particularly to leisure but also to household work are significantly higher.

Table 4. Tobit regressions of mean total time by activity among children (10-17 years)

	Learning		Household work		Production work		Travelling: school		Leisure		Personal care	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Coloured	13.6*	-8.5	-73.5***	-51.7***	-20.6*	-29.0**	-14.7***	-4.1	27.0***	9.1	12.7**	24.9**
Indian	59.3**	9.2	-112.0***	-97.0***	-106.3***	-28.1	-9.5**	-30.7***	-5.2	-10.1	42.8***	64.0***
White	75.5***	14.1	-89.6***	-44.4**	-92.1***	-6.3	-12.0**	-12.6*	9.2	-12.1	3.1	20.8*
Age	36.9***	36.7**	50.0***	52.6***	-19.3	-12.1	10.7*	7.2	-27.6*	-26.9*	-13.6	-15.4
Age ²	-1.6**	-1.6**	-1.2***	-1.4***	1.1	0.7	-0.5**	-0.4	0.8	0.8	0.4	0.4
Female	-3.7	-5.7	57.1***	58.4***	-26.4***	-23.3***	-1.4	-1.9	-43.4***	-45.3***	5.6	7.2*
Secondary education	44.8**	39.8***	0.8	4.0	-29.5***	-14.5	7.0*	6.2*	-10.1	-16.6*	-14.8**	-9.7
Weekend diary	-359.4***	-363.2***	49.9***	54.1***	-0.6	7.0	-128.7***	-132.3***	188.8***	183.3***	70.7***	73.4***
Income: 1501 – 6000		1.7		-0.5		2.9		4.3*		7.9		-12.9**
> 6000		20.5*		-20.1**		-19.0		12.4***		3.9		-8.4
Asset quintile (2)		17.8*		-13.6**		-44.5***		-3.2		50.4***		-27.0***
Asset quintile (3)		23.2**		-7.3		-62.9***		-2.5		57.4**		-36.9***
Asset quintile (4)		28.2***		-13.6**		-64.8***		1.6		62.2***		-48.3***
Asset quintile (5)		29.9**		-6.3		-56.6***		1.3		57.1***		-52.2***
Domestic help		17.5		-17.6		-22.6		4.9		-6.9		8.4
Household size		-3.7*		1.4		5.2***		0.3		-1.4		-1.1
No. of female adults		11.5**		-9.9***		-8.2*		0.4		3.2		3.7
No. of male adults		1.7		-2.8		-0.1		-0.8		-0.3		3.6
Parent present		5.2		-9.6**		-10.3*		5.9***		1.9		-0.4
Rural		-8.4		26.7***		64.4***		4.7*		-41.73***		6.8
Sample (n)	5452	5267	5452	5267	5452	5267	5452	5267	5452	5267	5452	5267

Source: TUS 2010

Note: The data are weighted using population weights. The omitted categories are African, male, primary education, weekday diary, income < R1500, asset quintile (1), does not employ domestic help, at least one parent not resident and urban location. The estimations also control for the province of location. Leisure represents time spent on mass media and social/cultural/sporting activities.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Time use behaviour is also significantly correlated with gender and the estimations reveal a traditional gender division of labour even among children. On average, boys spend more time than girls on production work and leisure during the day, while girls spend substantially more time on household work (and a few minutes more on personal care). However, there is no significant gender difference in the average time allocated to learning.

Our main focus of the study is on race differences in time spent on learning and on other activities. The first estimation (regression 1) shows that the descriptive comparisons presented earlier are robust when controlling for the age, gender and education of the child, and for the day of the time diary: African children allocate significantly less time to learning than other children, and particularly Indian and White children. However, these race differences fall substantially, and lose significance, when the household's socio-economic characteristics are included in the estimation (regression 2). This is because average time spent on learning activities increases markedly with economic status, and Africans are more likely than other children, and particularly White and Indian children, to live in poor households.

As we have no direct controls for the quality of the school that the child attends, it is possible that the effects of a better school environment on learning time are being captured by the child's economic status. Children in richer households may also experience more favourable conditions for learning in their home environment, and receive more input and encouragement from parents or other adults (who would typically be more educated). Time allocated to learning increases when children live with at least one parent, although this is not significant, but it increases significantly among children who live in smaller households that include relatively more female adults.

Children in better resourced and smaller households with relatively more women may also experience fewer constraints on the time available for learning activities. In comparison to other children of the same age, education and gender, African children spend significantly more time particularly on household and production work, but also on travelling to and from school. In the case of production work, mean time allocations are highly correlated with the child's household characteristics (regression 6). Time spent on production work declines considerably among children living in urban households and in households with more assets, at least partly because children in these households would not need to spend time collecting wood and water. Consequently differences in mean time allocations to production work, between African

children and Indian and White children, fall dramatically and lose significance in the expanded regression, although Coloured children still spend significantly less time on production work than African children.

Race differences in mean time allocations to household work are also reduced with socio-economic controls (regressions 3 and 4), but they remain sizeable and significant: African children living in households of similar size, composition and resource access still spend substantially more time than other children on household work. Mean time allocations are significantly lower for children in urban households and in households with monthly income above 6000 rand; but in comparison to production work, the time allocated to household work declines less markedly as the household's ownership of assets increases.

The time which children spend travelling to and from school (regressions 7 and 8) is higher among children living in households with more income, suggesting that in richer households, the choice of school is not limited to schools that are geographically accessible. African children living in similarly resourced households to other children still spend significantly more time than White children, and even more time than Indian children, on school-related travel. One possible explanation for these results is that African children for whom good schools are financially accessible, typically live further away from these schools than White and Indian children.

In comparison to other children, African children spend significantly less time on personal care (regressions 11 and 12). Mean time allocations to personal care decrease with household income and particularly household assets. Consequently race differences are more pronounced when African children are compared to other children living in households with similar socio-economic characteristics.

In sum, compared to other children with similar individual characteristics, mean time allocations to learning are significantly lower among African children. However, there is no race difference among children who live in households with similar socio-economic characteristics. Differences in the socio-economic circumstances of children also help to explain why African children spend more time on work-related activities and particularly on production work. These findings would be consistent with a displacement effect on children's learning time in poor households. However, if African children face time constraints to

learning, then it is surprising that there is no evidence of this constraint in children's time allocations to leisure. In comparison to Indian and White children, African children with similar individual characteristics did not spend less time on leisure (regression 9), and there are no significant race differences with socio-economic controls (regression 10). Although we cannot control directly for the simultaneous determination of children's time, we investigate whether there is evidence of time pressure particularly among African children in the next section.

6. Time evaluations of the day

After completing the time diaries, all respondents were asked to provide assessments of their time use during the day, according to three response options: "a comfortable amount of things to do"; "too busy" or "not busy enough". If African children spend less time on learning activities because their time is squeezed by their responsibilities in household and production work, then we would expect their subjective evaluations to reflect this time pressure: children would either have less time than they would like or less energy for the time available.

Table 5, which describes children's time evaluations by race and gender, shows that among all children, the majority response was that their time use during the day had been comfortable. All children were also more likely to report that their day had not been busy enough, rather than too busy, but this difference is most pronounced among African children. This is because African children were more likely than other children to view their day as insufficiently active. White children were the least likely to report their day as too busy (less than 2 percent) but African children were no more likely than Coloured and Indian children to provide this assessment.

These comparisons are also robust by gender. Girls spend significantly less time on leisure than boys, but similar percentages of girls and boys reported that their day had been too busy (less than 6 percent). Although a lower share of girls assessed their day as not busy enough, this is because girls were more likely than boys to report a comfortable use of time during the day. These overall gender comparisons mirror gender patterns among African children specifically.

Table 5. Time evaluation of the overall day

	Too busy	Comfortable	Not busy enough
	Overall		
African	5.9 (0.4)	64.0 (0.9)	30.1 (0.8)
Coloured	6.2 (1.2)	68.0 (2.3)	25.8 (2.2)
Indian	6.6 (3.2)	86.6 (4.4)	6.9 (3.3)
White	1.5 (1.2)	74.2 (4.7)	24.3 (4.6)
<i>Overall</i>	<i>5.8 (0.4)</i>	<i>65.2 (0.8)</i>	<i>29.0 (0.8)</i>
	Female		
African	5.9 (0.6)	65.9 (1.3)	28.2 (1.2)
Coloured	8.0 (1.9)	68.2 (3.2)	23.8 (2.9)
Indian	7.4 (5.0)	84.7 (7.0)	7.9 (5.3)
White	0.0 (0.0)	71.6 (71.6)	28.4 (6.8)
<i>Overall</i>	<i>5.8 (0.6)</i>	<i>66.8 (1.2)</i>	<i>27.4 (1.1)</i>
	Male		
African	5.9 (0.6)	62.0 (1.3)	32.1 (1.2)
Coloured	4.4 (1.4)	67.8 (3.4)	27.8 (3.3)
Indian	5.8 (4.0)	88.5 (5.4)	5.8 (3.8)
White	3.2 (0.5)	77.0 (6.3)	19.8 (6.0)
<i>Overall</i>	<i>5.7 (0.5)</i>	<i>63.6 (1.2)</i>	<i>30.7 (1.1)</i>

Source: TUS 2010.

Notes: The percentages are weighted using population weights. Standard errors are in parentheses.

In a multivariate context, race differences in time evaluations remain small and there are no differences by gender. The marginal effects from multinomial logit regressions, reported in Table 6, show that White children are significantly less likely than African children (and other children) to report their day as too busy, and more likely to report a comfortable use of time. But African children are more likely than other children to evaluate their day as not busy enough, and significantly so in comparison to Indian children.

Positive assessments of time use are more likely among more educated children, but time evaluations are not strongly correlated with the socio-economic status of children's households. Only the presence of at least one parent in the child's household, and whether the household is located in a rural or urban area, are significantly associated with subjective time reports, although not in ways consistent with a constraints argument. Rural children spend significantly more time, on average, on household and production work, and less time on learning (Table 4). They are also significantly less likely than other children to report that their time use during the day was not comfortable. But this is because they are more likely to evaluate their day as not busy enough. In contrast, children living with at least one parent spend significantly less time on work-related activities, but they are more likely than other children to report their day as too busy.

The subjective time evaluations, therefore, do not provide compelling evidence of time pressure particularly among African children or among children living in poorer households, where more time is spent on household and production work. Rather, they point to ‘opportunity constraints’ among children, and they suggest the importance of the environment for learning, and the encouragement to learn, when accounting for lower learning time allocations among African children.

Table 6. Time evaluations of the day, marginal effects after multinomial regressions

	Too busy	Comfortable	Not busy enough
Coloured	-0.02	0.02	-0.01
Indian	0.04	0.09	-0.13*
White	-0.05***	0.12*	-0.07
Age	-0.00	-0.03	0.03
Age ²	0.00	0.00	-0.00
Female	0.00	0.02	-0.03
Secondary education	0.00	0.05*	-0.05*
Weekend diary	0.01	-0.04*	0.03
Income: 1501 – 6000	0.00	0.01	-0.02
> 6000	-0.02	0.05	-0.03
Asset quintile (2)	-0.01	0.04	-0.03
Asset quintile (3)	-0.01	0.04	-0.03
Asset quintile (4)	-0.01	0.03	-0.02
Asset quintile (5)	0.01	-0.02	0.02
Domestic help	0.04	-0.04	0.00
Household size	-0.00	-0.00	0.00
No. of female adults	-0.00	-0.00	0.01
No. of male adults	-0.00	-0.01	0.01
Parent present	0.02**	-0.00	-0.02
Rural	0.00	-0.10***	0.10***
Observations	5267	5267	5267

Source: TUS 2010.

Notes: The data are weighted using population weights. The omitted categories are African, male, primary education, weekday diary, income < R1500, asset quintile (1), does not employ domestic help, at least one parent not resident and urban location. The estimations also control for the province of location.

(d) for discrete change of dummy variable from 0 to 1. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

7. Conclusion

An analysis of time diary data for South Africa, collected in the 2010 Time Use Survey, shows that among children who attend school, African children spend substantially less time on learning activities than other children (between 30 and 70 minutes less per day on average). The real time trajectories of children reveal a key source of this difference to be lower

participation rates in learning outside school hours, and particularly in the afternoon of a school day, and over the weekend.

African children are also more likely than other children to live in rural areas, in households that are larger but more poorly resourced, and where neither parent is co-resident in the household. When these differences are accounted for, race differences in learning time allocations are no longer evident.

Socio-economic characteristics may affect learning time allocations because they influence both the constraints on children's time and the environment in which children learn, including the encouragement and involvement of parents or other family members, and teachers. Consistent with a constraints argument, the time diary data show that on average, African children spend significantly more time on production and household work, and on school-related travel, than other children. These mean time differences are also correlated with the socio-economic status of children's households, and particularly in the case of production work.

However, other evidence suggests that time constraints may not be binding. African children did not spend less time on leisure than other children, and an analysis of the real time trajectories shows that after school and over the weekend, the share of African children who engage in leisure activities far exceeds the share who spend time on learning or work-related activities. Like all children, the majority of African children provided positive assessments of their time use during the day, but where assessments were negative, then this was far more likely to be because the day was not busy enough, rather than too busy. Children living in rural areas, whose mean time allocations to household and production work are higher and to learning lower, were significantly more likely than other children to view their day as not busy enough.

Although we cannot establish causal inference from our analysis, these findings suggest that lower time allocations to learning among African children derive also from inputs from school and home. Children who live in poorer households and in rural areas typically face a less conducive environment for learning in schools which are more likely to lack access to basic services, text books, libraries and computers, and where teacher absenteeism is higher. They may also lack the facilities in their home environment that enable studying outside school

hours, including the physical space in which to study, and adequate lighting and books, and they may receive less input from parents in their learning activities. In this case, children do not spend less time on learning because their time is constrained by household and production work; but rather, lower time allocations to learning mean that children have more time to spend on work-related activities without compromising the time spent on leisure.

References

Anderson, K.G., Case, A. and Lam, D. (2001) “Causes and consequences of schooling outcomes in South Africa: Evidence from survey data”. *Social Dynamics* 27(1): 37 – 59.

Assad, R., Levison, D. and Zibani, N. (2010) “The effect of domestic work on girls' schooling: Evidence from Egypt”. *Feminist Economics* 16(1): 79-128.

Bhorat, H. and Oosthuizen, M. (2009) “Determinants of Grade 12 pass rates in the post-Apartheid South African schooling system”. *Journal of African Economies* 18(4): 634 – 666.

Bloch, G. (2009) *The toxic mix: What's wrong with South Africa's schools and how to fix it*. Cape Town: Tafelberg.

Bonke, J. (2010) “Children's housework – Are girls more active than boys?” *Electronic International Journal of Time Use Research* 7(1): 1 – 16.

Branson, N. and Lam, D. (2010) “Education inequality in South Africa: Evidence from the National Income Dynamics Study”. *Journal of Studies in Economics and Econometrics* 34(3): 85 – 109.

Branson, N., Lam, D. and Zuze, L. (2012) “Education: Analysis of the NIDS Wave 1 and 2 datasets”. Southern African Labour and Development Research Unit (SALDRU) Working Paper No. 81.

Bray, R. (2003) “Who does the housework? An examination of South African children’s working roles”. *Social Dynamics* 29(2): 95 – 131.

Budlender, D., Chonokoane, N., and Mpetsheni, Y. (2001) “A Survey of Time Use. How South African women and men spend their time”. Resource document. Pretoria: Statistics South Africa.

Budlender, D., and Lund, F. (2011) “South Africa: A legacy of family disruption”. *Development and Change* 42(4): 925–946.

Case, A. and Deaton, A. (1999) “School inputs and educational outcomes in South Africa”. *The Quarterly Journal of Economics* 114(3):1047 – 1084.

Charmes, J. (2006) “A review of empirical evidence on time use in South Africa from UN-sponsored surveys”. In: Blackden, M. and Wodon, Q. (eds.) *Gender, Time Use, and Poverty in Sub-Saharan Africa*. Washington DC: The World Bank: 39–72.

Chobokoane, N. and Budlender, D. (2002) “A day in the life of a South African teenager”. Occasional paper 2002/02. Statistics South Africa.

Cooper, H. and Valentine, J.C. (2001) “Using research to answer practical questions about homework”. *Educational Psychologist* 36(3):143 – 153.

Epstein, J.L and Van Voorhis, F.L. (2001) “More than minutes: Teachers’ roles in designing homework”. *Educational Psychologist* 36(3): 181 – 193.

Ersado, L. (2005) “Child labor and schooling decisions in urban and rural areas: Comparative evidence from Nepal, Peru and Zimbabwe”. *World Development* 33(3): 455 – 480.

Fiske, E.B. and Ladd, H. F. (2004) *Elusive equity: Education reform in post-apartheid South Africa*. Washington D.C: Brookings Institute Press.

Fleisch, B, Shindler, J and Perry, H, (2012) “Who is out of school? Evidence from the

Community Survey 2007, South Africa”. *International Journal of Educational Development* 32: 529-36.

Grapsa, E. and Posel, D. (2016) “Analysing the real time of the elderly: Evidence from South Africa”. *Demographic Research* 35(25): 711-744.

Gustafsson, M., (2011) “The when and how of leaving school: The policy implications of new evidence on secondary schooling in South Africa”. Stellenbosch Economic Working Papers: 09/11.

Hall, K., & Posel, D. (2012). Inequalities in children’s household contexts: Place, parental presence and migration. In K.Hall, I.Woolard, L. Lake, & C.Smith (Eds), *South African Child Gauge 2012* (pp. 43-47). University of Cape Town, Cape Town: Children’s Institute.

Hofferth, S.L. and Sandberg, J.F. (2001) “How American children spend their time”. *Journal of Marriage and Family* 63: 295 – 308.

Hosegood, V., Preston-Whyte, E., Busaza, J., Moitse S. and Timaeus, I. (2007) “Revealing the full extent of households’ experiences of HIV and AIDS in rural South Africa”. *Social Science & Medicine* 65(6): 1249–1259.

Hoover-Demsey, K.V., Battiato, A.C., Walker, J.M.T, Reed, R., DeJong, J.M and Jones, K.P. (2001) “Parental involvement in homework”. *Educational Psychologist* 36(3):195 – 209.

Hsin, A. (2007) “Children’s time use: Labor divisions and schooling in Indonesia”. *Journal of Marriage and Family* 69: 1297 – 1306.

Keith, T.Z. (1982) “Time spent on homework and high school grades”. *Journal of Education Psychology* 74: 248 – 253.

Lam, D., Ardington, C. and Leibbrandt, M. (2011) “Schooling as a lottery: Racial differences in school advancement in urban South Africa”. *Journal of Development Economics* 95(2): 121 – 136.

Larson, R., and Verma, S. (1999) "How children and adolescents spend time across the world: Work, play, and developmental opportunities". *Psychological Bulletin*, 125: 701–736.

Leibbrandt, M., Woolard, I., Finn, A. & Argent, J. (2010) "Trends in the South African income distribution and poverty since the fall of apartheid". OECD Social, Employment and Migration Working Papers No. 101.

Ozarem, P.F. and King, E.M. (2007) "Schooling in developing countries: The roles of supply, demand and government policy". In: *Handbook of Development Economics* Vol. 4, pp. 3475 - 3559.

Posel, D. (2010) "Households and labour migration in post-apartheid South Africa". *Studies in Economics and Econometrics* 34(3): 129-141.

Posel, D. and Casale, D. (2013) "Sex ratios and racial differences in marriage rates in South Africa". *Applied Economics* 45(3): 663-676.

Posel, D. and Casale, D. (2014) "Gender, education and labour market outcomes". Background report prepared for the United Nations Progress of World's Women 2015.

Robinson, J. P. and Bianchi, S. (1997) "The children's hours." *American Demographics* 20: 22–24.

Russell, M. (2003) "Understanding black households: The problem". *Social Dynamics* 29(2): 5–47.

Spaull, N., (2013) "Poverty & Privilege: Primary school inequality in South Africa." *International Journal of Educational Development*. 33: 436–447.

Spaull, N. (2015) *Education quality in South Africa and Sub-Saharan Africa: An economic approach*. PhD thesis: University of Stellenbosch.

Statistics South Africa (2013) A survey of time use, 2010. Statistics South Africa, Pretoria.

Taylor, N. (2008) “What’s wrong with South African schools”? Paper presented at the What’s Working in School Development Conference, JET Education Services, Boksburg, South Africa, 28-29 February.

Timaeus, I. M., Simelane, S. and Letsoalo, T. (2013) “Poverty, race and children’s progress at school in South Africa”. *Journal of Development Studies* 49(2): 270 – 284.

van der Berg, S. (2007) “Apartheid’s enduring legacy: inequalities in education”. *Journal of African Economies* 16(5): 849 – 880.

van der Berg, S. (2008) “How effective are poor schools: poverty and educational outcomes in South Africa”. *Studies in Educational Evaluation* 34(3):145 – 154.

Wills, G. (2016) “Principal leadership changes and their consequences for school performance in South Africa”. *International Journal of Educational Development* 51: 108 – 124.

Wittenberg, M. (2009) Lazy rotten sons? Relatedness, gender and the intra-household allocation of work and leisure in South Africa. *Southern Africa Labour and Development Research Unit Working Paper Number 28*, Cape Town: University of Cape Town.

Yamauchi, F. (2005) “Race, equity and public schools in post-apartheid South Africa: Equal opportunity for all kids.” *Economics of Education Review* 24:213–33.

Yamano, T. and Jayne, T.S. (2005) “Working-age adult mortality and primary school attendance in rural Kenya”. *Economic Development and Cultural Change* 53(3):619-653.

Zapata, D., Contreras, D. and Kruger, D. (2011) “Child labor and schooling in Bolivia: Who's falling behind? The roles of domestic work, gender and ethnicity”. *World Development* 39(4):588-599.