

# **The influence of family background on high school completion for males and females in South Africa.**

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Development Studies

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## **Declaration**

I, Annah Vimbai Bengesai declare that:

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## **Abstract**

High school completion is an important transition leading on to post-secondary education and by implication into the labour market. In South Africa, a matriculation certificate- obtained at the end of secondary schooling is a prerequisite for access to diploma and degree programmes in institutions of higher learning. Several studies have also pointed to higher economic returns for people with a high school leaving certificate and more so, those with a post-secondary qualification. Hence, people who do not graduate from high school have bleak economic prospects and are likely to earn less than those who do. This study sought to explore factors that underpin the observed association between familial resources and high school completion. Specifically, the study examined whether the differences in high school completion are accounted for by family background factors such as family structure and income, while controlling for demographic factors such as age, race and, place of residence and the interaction with sex. The empirical analysis adopted a retrospective methodology and uses data from the third wave of the National Income Dynamics Study collected in 2012, a longitudinal household survey that was implemented by the Southern Africa Labour and Development Research Unit (SALDRU). The sample consisted of 1821 young people aged 18, 19 and 20 who had successfully completed the interview. Acknowledging that the factors under investigation play out differently for both male and females, the inquiry further sought to interrogate the association between males and females and among males and females. Logistic regression models were fitted to estimate the likelihood of completing high school. The results illustrated that that there are many sources of variation in matric completion. Age, gender, race, residence, household income each have both an independent and joint effect on matric completion. Most notably, family structure behaved differently for the males and females. There was a strong discernible effect on matric completion for the male population for co-resident and lone parent structures, while for the females, residing with both or one parent had no advantage over non-residence with both parents. In fact, females living with one or both parents were less likely to have matric relative to those who live with neither parent.

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## **Dedication**

For my girls

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## List of Accronyms

ECD	Early Childhood Development
EFA	Education For All
MAR	Missing at Random
MCAR	Missing Completely at Random
MNAR	Missing Not at Random
MDG	Millenium Development Goals
MI	Multiple Imputation
NIDS	National Income Dynamics Study
SALDRU	Southern Africa Labour and Developoment Research Unit
SDG	Sustainable development Goals
SPSS	Statistical Package for Social Sciences
Stats SA	Statistics South Africa
UN	United Nations
UNDP	United NationsDevelopment Programme

# Chapter 1

## Introduction to the study

### 1.0 Introduction

Research on education attainment is often framed within two discourses. The first is the human rights argument which was affirmed under the aegis of the Education for All (2005-2015, United Nations 2010;2015). The second claim is that education is an important determinant of later life chances (Cutler, Huang and Lleras-Muney 2015). Both claims cannot be disputed and there is an abundance of studies that have sought to i) trace progress towards the attainment of the education for all goals (see UNESCO Education for All Global Monitoring Report 2015; Orodho, Waweru and Getange 2014; Omiyefa, Ajayi and Adeyangu 2015) and ii) the protective effect of education against poverty (Cutler et al. 2015; Lam and Branson 2014; Branson et al. 2012); Panday et al. 2009).

Approximately 30 million children of primary school going age are not in school in sub-Saharan Africa, while 22 million adolescents are out of secondary school (UNESCO 2012). When compared to other regions, sub-Saharan Africa has the lowest educational attainment. Only seven countries (Kenya, Mauritius, Namibia, Seychelles, South Africa, Tanzania, and Zimbabwe) have primary education attainment rates above fifty percent. Lower secondary attainment rates range from 2% in Burkina Faso to 70% in South Africa, upper secondary rates 0.5 % (Burkina Faso) to 44% in Seychelles, while 0.5% have some post-secondary education in Burkina Faso and 12% in South Africa (UNESCO 2012). These grim facts indicate that education for all is unlikely to be attained in most sub-Saharan African countries (Nudzor 2015) - at least not in the recent future. Bluntly speaking, the sub-Saharan Africa youth is still a long way to benefit from the protective effect of education.

The effect of sex on life chances, sometimes referred to as gender equality, has become a prominent issue in policy and academic discussions over the past few decades (Rarieya, Sanger and Moolman 2014; Unterhalter 2013; Moletsane 2010). The South African government's establishment of the gender machinery in government, a forum for ensuring women's empowerment and gender equality

demonstrate some of the efforts and strides made towards the realisation of gender equity in the country (Moletsane, 2010). Consequently, the month of August is set aside as a gender equality month- “a time to salute women for the role they have played and to reflect on challenges women continue to face (Jackson Mthembu ANC National Spokesperson, 2010). Public discourse during the month of August has tended to focus on issues of women empowerment, gender equality as well as violence against women. Seemingly, this would make the relevance of a study on sex differences questionable. Indeed, no-one would dispute the view that the South African policy framework for human rights in general, and gender equality in particular, is amongst the best in the world (Moletsane, 2005).

Within the scope of education, several global mandates such as the Education for All and United Nations Millennium Development Goals and recently Sustainable Development Goals have been put into place towards the realisation of gender equality (Rarieya et al. 2014; United Nations 2010; 2015). In South Africa, these policies have been twinned with the main agenda of educational transformation which seeks to improve educational productivity (Badat 2010; Ramdass 2009). Consequently, policy makers have pushed for wider access, especially for the previously disadvantaged groups (Manik, 2015). Through these policies, access to education has increased. Yet, in spite of such a successful and progressive legislative framework, there is concern that gender inequality in society in general, and in education in particular, continues (Rarieya et al. 2014; Moletsane and Reddy 2011). The country suffers from increasing and extremely high levels of gender based violence (Brock et al. 2014). There is also evidence to suggest that a girl born in South Africa in 2011 has a greater chance of being raped than finishing high school (Witney 2012). Moreover, an estimated one in three girls finish secondary school, while one in two will suffer rape (ibid). All of these factors point to inequalities in the quality of educational experiences of girls.

While acknowledging the gains in enrolment resulting from the Education for All (EFA) initiatives, there is also growing recognition that the massification of education is a poor indicator of participation or equality (Modisaotsile 2012). This is borne out by the high dropout rates that seem to scourge the South African education system (Murray 2014). For instance, South Africa still exhibits low mean

years of schooling (9.9 years, Unesco Institute of Statistics, UIS 2013). This implies that a significant proportion of individuals do not make the transition beyond the Grade 10 level (Hall and Lannoy 2014; Spaull 2013). In other words, some learners remain out of school and by default are systematically and silently excluded (Lewin and Little 2011).

The returns to education, in particular, post-secondary education are well documented. There is ample evidence both locally and internationally which shows that education plays a critical role in empowering people and protecting them against income shocks and poverty (Cutler et al. 2015; Stats SA 2014; Branson et al. 2012; Warner, Malhotra, and McGonagle, 2012; Grout-Smith et al. 2012). At the individual level, education provides them with formal knowledge, skills and tools for logical reasoning and participation in the economy (Frye, Farred and Nojekwa 2011). Evidence from South Africa reveal that in 2011, an estimated 5% of people with a higher education qualification were living in poverty as compared to 60% of those with some primary education (Stats SA 2014). At the societal level, inequality in education “reduces the amount of human capital in a society, by artificially restricting the pool of talent from which to draw for education, thereby excluding highly qualified girls (and taking less qualified boys instead” (Klassen and Lamnana 2009, 93). As well, educating girls has been linked to a reduction in fertility and mortality levels (Bongaarts 2010). Neoclassical theory assumes that as women are co-opted into the labour market, their earning potential increases, and their fertility behaviour changes in favour of fewer children (Bbaale and Mpuga 2011). This is supported by empirical evidence from both developed and developing countries which point to reduced fertility among educated women (Shapiro 2012; Reading 2011; Cleland 2002). UNESCO (2012) also reports that a child born to an educated mother has a 0.5 probability of living to the age of 5. The reason is that educated women are empowered to make wise decisions about their health and the health and nutrition of their children.

If education is this important, then an exploration of how it is distributed is certainly worth studying (Buis 2010). In a speech delivered at the 2003 Commonwealth Conference in Edinburgh, citing HG Wells, Sen (2003, para 2) captures this well when he says “human history becomes more and more a race

between education and catastrophe". He further contends that "if we continue to leave vast sections of the people of the world outside the orbit of education, we make the world not only less just but also less secure." In other words, the persistent educational inequalities hold the society at ransom, and affect the quality of life in general. The purpose of this study is to contribute to the body of knowledge on educational inequalities by empirically testing the effect of the family background on the likelihood of completing high school for both boys and girls. An assumption is made that the family background directly impacts the educational opportunities available to an individual (Benardi and Requena 2010). For instance, given the resources available, individuals might choose to either complete high school or drop out in search of economic opportunities. Further, any disturbances in the compulsory education levels might hold individuals back, and influence the decision to either retake a grade or completely drop out of the education system. It is further assumed that sex interacts with these decisions.

## **1.1 Statement of the Problem**

High school completion is considered an important transition and a prerequisite for post-secondary education. Since the demise of apartheid, the South African government has increased education campaigns and invested in access to education (Rarieya et al. 2014). In spite of such efforts, it is important to note that less than 50% of the learners graduated from high school between 2002 and 2011 (Stats SA 2014). This suggests that there are still loopholes in the completion rates of learners, a situation which points to educational inequality and raises questions such as: What exactly are the factors which influence high school completion? Why are some learners successful in completing high school than others? This study sought to address these critical questions and specifically interrogated the layered and overlapping effect of family background and demographic factors on the high school completion transition and how these intersect with sex. However, an observation was made that most analyses on educational outcomes have focused on the differences between girls and boys (Eloundou-Enyegue Makki and Giroux 2009). By implication such analyses assume that girls on one side or boys on another, are a homogenous group and the inequalities they experience are

ubiquitous across socio-economic groups within a particular sex category (Eloundou-Enyegue et al. 2009). Acknowledging that the mechanisms which influence high school completion differ significantly across males and females and among males or females and in order to understand the deeper significance of education inequalities, the inquiry further interrogated the effect of the family background and demographic factors between males and females and within each sex category.

## **1.2 Definition of key terms**

### **1.2.1 Gender versus sex**

One of the challenges faced by social scientists is whether to use the term gender or sex in scientific research. Heinämaa (2012) defines sex as a biological and physiological characteristic. That is one is born either male or female. Gender, on the other hand refers to the socially ascribed roles that are placed on the physiological characteristics. In other words, gender is rooted in the physiological characteristic distinguishing males from females but is influenced by the socio-cultural context. In this study, both terms are adopted. The difference between males and females in high school completion (by sex) and the effect of social processes on this difference in educational attainment (the gender aspect) is investigated.

### **1.2.2 Gender equality, parity, equality**

The ubiquity of the term gender in/equality has made it a taken for granted term which is often used without being defined (Unterhalter 2013). In the context of this study, gender equality means that men and women have equal opportunities to realise their full potential and to benefit from the economic, social, cultural and political development. This is not to be compared with the notion of gender equality as sameness, but that opportunities are not depended on whether someone was born male and female. Lynch and Baker (2005) refer to this conception of equality as 'equality of condition' which involves the *equal enabling and empowerment* of individuals. This kind of equality can only be realised through the building blocks of parity and equity (UNESCO 2003). Gender parity refers to the equal participation of girls and boys in all forms of education based on their proportion in the relevant age-groups in the population (Subrahmanian 2005, 2). Thus, gender parity is a

quantitative measure of participation, and is often presented as an index of the ratio of the number of boys and girls in the education system. However, achieving equal numbers in the education system does not necessarily indicate equal progression through the same system. There is need to take into consideration the central conditions which affect access to education, that is the historical, cultural and social conditions which hinder boys and girls from operating on a level playing field; that is, equity (Subrahmanian 2005).

### **1.2.3 Family background**

The family background construct used in this study refers to those family characteristics such as family composition and its socio-economic status (Crawford et al. 2017). In this study, the following indicators are used: family structure, parental education and household income.

### **1.2.4 Family structure**

Families are an important mechanism in the transmission of resources (later referred to as capital in this study (Martin 2012; Strohschein, Roos and Brownell 2009). There are different family structures, such as extended families, nuclear families, foster families and so on (Sharma 2013). These families are defined by the relations between the members constituting the 'family unit' (Sharma 2013). In this study family structure is defined in terms of residence with parents.

### **1.2.5 Matric /High School completion**

In South Africa, the 12<sup>th</sup> Grade is the highest level leading onto the National Senior Certificate (Spaull 2013). This level is also referred to as the matriculation level.

## **1.3 Importance of high school graduation**

The high school graduation rate is a barometer of the skill level of the future workforce of any society. It shapes an individual's entire career pathway and life course as it is the entry requirement for tertiary education. This is supported by the



literature on returns to education which has established higher returns to post-secondary education, in particular degree qualifications (May 2014; Branson et al. 2012). Bernadi and Requena (2010) note that post-secondary education mediates the intergenerational transmission of inequality. This is because parental education is a strong determinant of a child's educational attainment given educated parents have the resources to invest in their children's human capital (Connolly and Lefebvre 2012). Cast in this way, post-secondary education is catalytic and can potentially produce irreversible gains in educational attainment. There is also recognition that the educational system is pivotal in the allocation and distribution of attractive positions and goods (Hellevick 2007). In particular, post-secondary education, which is a good in itself, opens up opportunities for employment and, by extension elevates an individual's socio-economic status (Branson et al. 2012; Hellevick 2007).

Using cross-sectional regression for 50 countries, Hanushek and Wobmann (2007) found that the benefits of education are particularly higher for girls in the developing world with each additional year in schooling boosting economic growth by 0.58% per year. Thus, through acquiring a post-secondary education, girls from disadvantaged backgrounds do not only have the opportunity to resist embodied beliefs in their habitus, and acquire the 'high-brow' culture which facilitates upward mobility, but also contribute towards the economic development of the country.

This study acknowledges the gains that have been observed in education expansion, leading to near parity in most countries (UNESCO 2012). However, an argument is made that education expansion, defined as distribution of schooling (Mare 2011), is not an adequate indicator of inequality. It is recognised that access to education is socially selective, and there is need to explore the principles and conditions upon which schooling is allocated (Tsai and Yu 2011; Tieben and Wolbers 2010; Tsai and Shavit 2007). The present study sought to contribute to this school of thought by highlighting sex differentials and the influence of family background in high school completion in South Africa.

## **1.4 Key issues in the high school graduation**

There are a number of factors which either facilitate or hinder the high school graduation. These include family background characteristics such as family income, parental educational and occupational status, and educational policies and the readiness of the schooling system to accommodate a diverse student body (Restoule et al. 2013; Tieben and Wolbers 2010). Of relevance to the present study are the family background characteristics. These family characteristics are seen as instrumental in reproducing inequality (Crawford et al. 2017). Thus, an argument is made that inequality in the high school graduation is not benign or an individual attribute per se, but rather a characteristic of a group or social class one belongs to (Healey and O'Brien 2015; Ferraro and Andreatta 2014).

## **1.6. The objectives of this study were to:**

- i) explore the effect of sex in high school completion in South Africa.
- ii) ascertain the contribution of family background and sex to the overall educational inequality in high school graduation.

## **1.7 The key research questions that this study asks were:**

- i) Are there any sex differentials in high school completion rates in South Africa by sex?
- ii) What is the contribution of family background and sex to the overall educational inequality in high school graduation?

## **1.8 Hypotheses**

The following hypotheses were tested:

- i) Sex contributes to the inequality in high school completion in South Africa
- ii) The family background of an individual has a significant bearing on the likelihood of completing high school on time.

## **1.9 Significance of the study**

This study stemmed from the recognition that education is a fundamental right which has the potential to move people out of poverty. At the same time, there is recognition that education as a resource is not equally distributed along racial and family socio-economic levels. Sex is hypothesised to interact with these forms of inequality. With these assumptions in mind, this study sought to contribute to the study of educational inequality by exploring the distribution of inequality (focusing on family background) in high school completion.

## **1.10 Methodology**

Using the 2012 wave of the National Income Dynamics Study (South Africa), this inquiry estimated the contribution of sex and family background models on the probability of completing high school on time. Participants born 18, 19 and 20 years before the survey year Y were singled out. That is, participants born in 1994, 1993 and 1992 were selected. This selection was based on the plausible assumption that they would have completed Grade 12 by the survey year if they were on time. A retrospective methodology was adopted. In particular, the study applied a *logistic model* to estimate the probability of completing high school.

## **1.11 Limitations of the study**

A major limitation of this study is the use of secondary data. This limited the opportunities to refine the data collection process to suit specific needs of the study. Another limitation is that the data focuses on national level data and the relationship between the key variables at that level. The challenge is that the complexity of inequality at the individual level is potentially obscured. Further, survey data as in the case of the NID study, is drawn from self-reported responses. Finally, the use of the quantitative methodology does not allow for a full exploration of unobservable factors that may have affected the high school completion. For instance, sexual violence, which is not captured in the NIDS data, has been shown to be an important factor influencing decisions to progress with education.

## **1.12 Organisation of the thesis**

The study begins with a background account which outlines the way in which the study was conducted as well as motivations for the study. This is followed by a review of literature which is done in **Chapter 2**. **Chapter 3** provides the presents the methods and analytical tools that were used to answer the critical questions posed in this study. This constitutes a discussion of the methodological framework and the analytical framework adopted in the study. **Chapter 4** presents the findings. This constitutes descriptive statistics on the distribution of educational attainment by gender, race and geographical location and is followed by regression analyses, estimating the likelihood of high school completion. **Chapter 5** seeks to bring together the findings and discuss their implications in the light of the theoretical framework adopted. The final chapter, **Chapter 6**, concludes and synthesises the findings. In the same chapter, recommendations and suggestions for future research are also made.

## **Chapter 2**

### **Literature Review**

#### **2.0 Introduction**

Chapter 1 provided a summary and background to the whole study. The importance of high school graduation and, some of the factors influencing high school graduation were introduced. Chapter 2 seeks to provide a nuanced understanding of these factors, which include the family background influences such as parental education, family structure and income as well gender. The chapter sets the scene with a discussion of the historical educational inequalities in South Africa. This is followed by an exploration of the determinants of educational outcomes. Next, the description of the South African education system is provided. The Chapter ends with an outline of conceptual framework adopted in the study.

#### **2.1 Inherited educational inequalities in South Africa**

South Africa is a nation with a vivid history of racial disparity which was legislated under the apartheid system (Seekings, 2011; Keswell 2010). Under the apartheid system, education was fragmented and the white minority enjoyed the privilege of the highest quality of education, while the Blacks, Coloureds and Indians received an education that was inferior (de Wet and Wolhuter 2009). These racial disparities have affected every aspect of life, leaving South Africa with high income disparities which ranks amongst the highest in the world (Louw, van der Berg and Yu 2006). For instance, Stats SA (2011) reports that in 2010 Africans earned 22% of what their white counterparts earned. Further, high levels of education have been associated with a range of outcomes. Stats SA (2014) report that approximately instance, an estimated 66% of South Africans with no schooling were living in poverty in 2011, as compared to 60% of those with some primary education, and 55% who had completed primary, 44% some secondary and 23.6% who had completed matric. Only 5 % (one in 20) of those with a tertiary education lived in poverty during the same period (Ibid). These statistics reveal the following: i) there is

still undereducation for some of the demographic groups in South Africa and, ii) this under-education leads to poverty traps. Simply put, the observed disparities are an indication of deeper sources of inequality. It is only those individuals who attain high levels of education who become gainfully employed in occupations that command higher income. Taking this position therefore, that education is important and directly influences socio-economic status, calls for an exploration of not only how it is distributed, but also the factors influencing its distribution. The sections to follow focus on the determinants of educational attainment that have been explored in previous studies.

## **2.2 Determinants of educational attainment**

One of the goals of the transformation of education in South Africa has been to increase the skills base to match the labour market (Badat, 2007). Related to this, is the need to ensure students make successful educational transitions. Although participation rates during the teenage years are relatively high in South Africa (Spaull, 2015), there is also concern that most young people do not progress to higher school grades and even so, tertiary education (Spaull 2015; Moletsane 2014; 2006). As already highlighted in Chapter 1, South Africa has a low mean years of schooling (9.9 years, UNESCO 2012), a *status quo* which has been attributed primarily to factors such as poor schooling, socio-economic inequality and past racial inequalities (Spaull 2015). These factors are discussed in the ensuing sections.

### **2.2.1 Schooling**

Sheppard (2009) notes that achieving quality education is one of the biggest challenges facing South Africa. This is borne out by the widespread underperformance of South African learners in international tests such as the Southern and Eastern African Consortium for Monitoring Educational Quality (SACMEQ) and the Trends in International Mathematics and Science Study (TIMSS, Reddy et al. 2012). Spaull (2015) also reports that there are huge disparities in educational performance and attainment in South Africa which are more pronounced across geographic and racial categories. For instance, in the 2007 SACMEQ tests

approximately 41% of Grade 6 learners in the rural areas where functionally illiterate as compared to 13% of those in urban areas. As well, research continues to show that schools which served black learners under apartheid remain dysfunctional, more than two decades after the demise of apartheid (Spaull 2015; Pretorious 2014).

Dysfunctional schools can be defined as schools:

in which teaching, learning, or management are significantly impeded by intentional and unintentional actions from, or positions of, one or more individuals, groups, or institutions by infringing on the school's educational goals, norms, regulations, or societal standards relevant to the school. (Bergman 2013, 388)

Thus, school dysfunction could consist of factors such as teacher absenteeism, lack of conceptual knowledge and resources (Shepherd 2013). In a study on South African teachers' conceptual knowledge, Carnoy and Arends (2012) found that teachers with higher content knowledge were more likely to teach in well resourced and urban schools. This was supported by Shepherd (2013) whose study concluded that teacher content knowledge was not homogeneous across different school types in South Africa. The study by Reddy et al. (2010), also points teacher absenteeism especially in rural schools. Taken together, these findings suggest that some schools (especially rural) face a multiple inequalities. Several consequences follow from these examples of school dysfunction: i) either teachers teach by rote ; ii) or avoid teaching topics they are not familiar and iii) the curriculum is not completed. By extension, learners progress through different grades with little understanding, leading to either high drop outs prior to the matric examination or failure to pass the school leaving examination. Thus, poor quality of schooling is directly linked to discontinuation of education. While the present study does not examine the effect of quality of schooling on high school completion, it bears mention here in view of its effect on educational outcomes, and is perhaps a subject for further exploration beyond the current research.

## 2.2.2 Family Background

### *Family structure*

Several studies have focused on the association between family structure and educational outcomes. However, most of this research has been conducted in developed countries (Thompson and Galindo, 2015, UK; Cid and Stokes, 2013, Uruguay; Martin, 2012, US; Frisco, Muller and Frank, 2007). Regionally, Uwaifo (2012) highlighted the effects of family structure and parenthood on academic performance at a Nigerian university. There also have been a few studies in South Africa on the subject. Ndagurwa and Nzimande's study examined the effect of family structure on schooling in general, focusing on children aged 7-17 years, while Anderson (2003) explored the relationship between family structure and family investment in education in terms of current enrolment in school, highest grade completed and number of grades completed per year. There remains a need for more culturally relevant studies on the relationship between family structure and educational attainment in South Africa. Despite this limitation, the available research has unequivocally illustrated a significantly positive effect of two parent families on children's educational outcomes. The present inquiry adds to this body of knowledge by exploring the effect of family structure on one academic milestone: high school completion.

Structurally, a family can be defined as either intact (having both mother and father resident) or broken (where the one or both parents are not resident (Uwaifo, 2012). Over the past few years however, especially so in South Africa, family structures have been dramatically transformed, a situation that has been attributed to the decline in marriage rates and the rise in non-marital fertility (Posel and Rudwick, 2013). The 2011 census revealed that only a third of the households in South Africa were 'traditional' families consisting of married parents and their children. These family dynamics have been compounded by the HIV pandemic, which has left many children orphaned (Monasch and Boerma 2004). Consequently, under this new family regime, many children are not raised by biological parents.

These important changes in family structure have the potential to alter other family functions such as the transmission of socio-economic status across



generations (Uwaifo 2012). Several studies have shown that educational attainment of children is an outcome of the investment that parents make which varies systematically with family structure (Martin 2012). This understanding is drawn from Becker's household theory and posits that children's educational attainment is a valued commodity in the family and its production is dependent upon parental investments such as time and money (Becker 1993). It is believed that dual and co-resident parenthood results in more parental inputs while single parenthood is often linked to low socio-economic status, social isolation and lower parental support for children (Martin, 2012). This is largely because most single parent families are headed by females, who historically are less educated and hence are usually employed in less prestigious occupations (Schatz, Madhavan and Williams, 2011). Consequently, children who live with single parents often lack parental supervision and the financial support necessary for them to succeed in school (Uwaifo, 2012; Martin, 2012). On the contrary, co-resident parents are seen as more attractive in transmitting socio-economic resources to their children (Cid and Stokes, 2013). If this is the case, then family structure provides an opportunity to investigate the extent to which economic and social capital intersect and influence children's education attainment (Martin, 2012).

### *Parental Education*

Parental education has been shown to be one of the strongest determinants of children's educational outcomes. Scholars have tended to agree that parental education is an index of socio-economic status which potentially leads to better children outcomes (Baxter 2002; Martin 2012). The reason is that parents with higher levels of education can generate higher incomes which can in turn, be used to invest in their children. Put simply, more educated and richer parents can provide a better environment for their children's educational achievement (Chevalier et al. 2013). There is also research which suggests that parents learn skills and habits during their schooling that they can transfer to their children through behaviour modeling (Hampden-Thompson and Galindo 2015; Dubow 2009). Better educated parents are also knowledgeable about the returns to education and therefore might be willing to invest more money in providing quality education for their offspring (Erola, Jalonen

and Lehti 2016). van der Berg and Louw note that some of the investments better educated parents may make include living in neighbourhoods with better schools. By so doing, they are able to provide better schooling opportunities for their children. In the 2007 TIMSS study, Visser, Juan and Feza (2015) found that learners whose parents had completed at least Grade 12 (matric) scored higher grades in mathematics. Another South Africa study by Mutodi and Ngirande (2014) established a positive correlation between parental education levels and performance in mathematics. However, van der Berg and Louw (2008) comment that quantifying the exact effect of parental education on children's educational outcomes is complex, hence these findings should not be interpreted as showing a causality, but rather as associations.

### *Poverty*

Poverty is often raised as a major determinant for educational attainment- in particular as it relates to school dropout (Reddy et al. 2012; Dieltiens and Meny-Gibert, 2012). Studies emanating from large surveys in South Africa have successively shown a negative correlation between low socio-economic status and academic attainment (Branson et al. 2012; Dinkelman, Lam and Leibbrandt 2008). International surveys have also shown similar correlations (Lacour and Tissington 2011; Alexander, Entwisle and Olson 2001). It is often assumed that there is a direct link between the inability to pay fees and other school related costs and family poverty (Dieltiens and Meny-Gibert, 2012). However, the South African Barriers to Education study conducted in 2007 found that while poverty was the main cause of school dropout, the ability to pay fees had a minimum effect given the pro-poor policies implemented by the Department of Education (Dieltiens and Meny-Gibert, 2012). Strassburg, Meny-Gilbert and Russell (2010), as well as Dieltiens and Meny-Gibert, (2012) note that there are other ways in which poverty affects school attendance. For instance, children might be forced to do domestic or agricultural chores (in exchange for money) during school days. As well, in some remote areas there is poor accessibility of schools, and learners have to travel long distances. This travelling time also eats into the school day, and sometimes the transport costs are unaffordable for the families resulting in absenteeism (Strassburg et al. 2010).

### 2.2.3 Gender inequality

Perhaps the most articulated barrier to educational attainment is gender equality. The Universal Declaration of Human Rights of 1948, article 26 clearly specifies education as a fundamental human right. Yet, cultural and ideological positions which favoured males over females in all aspects of life have created gender gaps which have stubbornly persisted throughout the decades (Njogu and Orchardson-Mazrui 2005). Through culture and social institutions, gender roles are defined, reinforced and enacted, while girls and boys are conditioned to be-do-say-and value in certain ways (Kinias and Kim 2012). Such socialisation and conditioning creates mental frames which are difficult to remove and women by default are forced to occupy spaces of subordination (Chabaya Rembe and Wadesango 2009). While such ideologies shaped the social and education policies and practices of the past in some countries, they continue to exist, albeit at different levels in most developing countries (UNESCO 2012). Consequently, all countries in the world face gender disparities, which differ in kind depending on the level of development.

Recognising the role of education in social and economic development, the Education for All mandate was launched at the World Conference on Education which was held in Jomtien Thailand, (Skilbeck 2000). Through this mandate, two global goals were established. The first related to the provision of free and compulsory primary education for all. The second, the conference made it clear that:

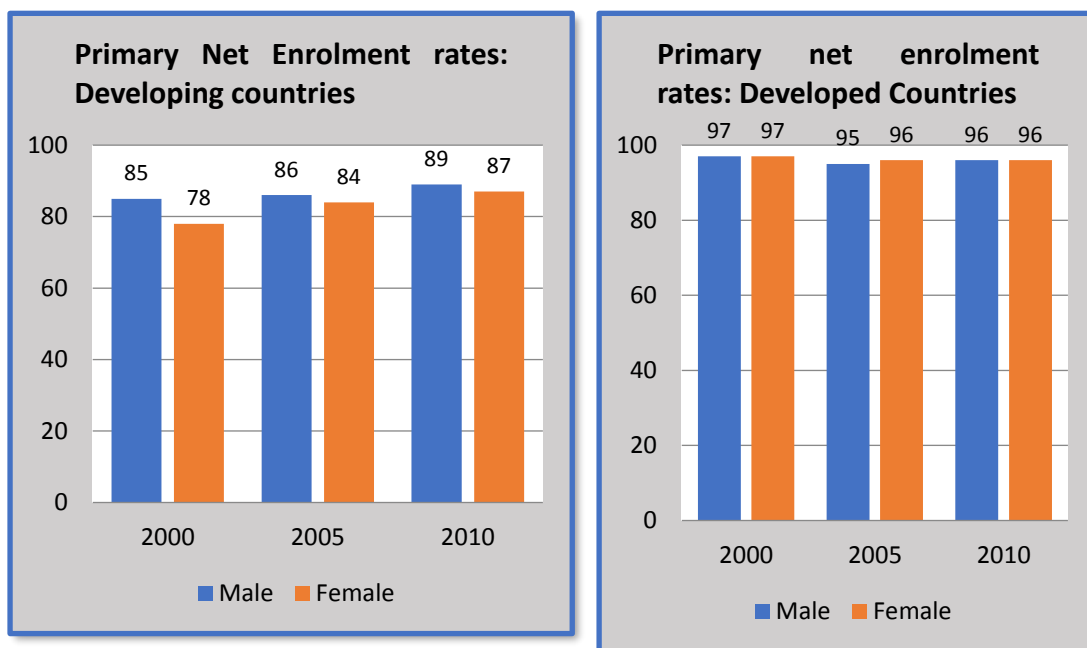
Education for All means educating both boys and girls and that treating both sexes equally – and in the process narrowing the “gender gap” – is a matter of justice and equality (UNESCO World Education Atlas 2012, 21).

However, while instrumental, the Jomtien framework did not address equality in education *per se*, but limited it to female literacy. The promotion of gender equality was refined in 2000 during the Dakar Conference in the form of goal 5 which sought to eliminate:

gender disparities in primary and secondary education by 2005, and achieving gender equality by 2015, with a focus on girls’ full and equal access to, and achievement, in basic education (UNESCO and UNICEF 2012, 2;Skilbeck 2000).

Governments have committed to this mandate, which has been re-affirmed under the aegis of Millennium Development Goals (Unterhalter 2013; Eloundou-Enyegue, Makki and Girroux 2009). This commitment has resulted in the narrowing of the gender gap in access to primary education (UNESCO 2012). Figure 2.1 illustrates that enrolment rates increased more for females than males (9% increase for females; 4% increase for males).

**Figure 2.1 Primary net enrolment rates**

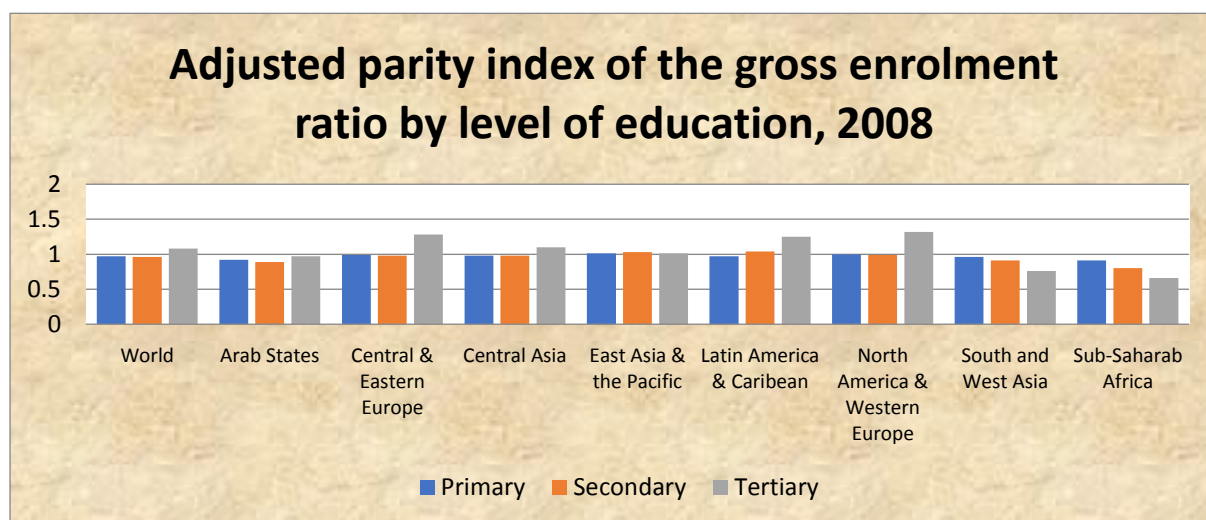


**Source UNESCO Institute for Statistics, 2012**

By 2010, there was only a two percent difference in net enrolment rates at the primary school level in the developing world. In the developed world, enrolment rates seem to be at par for both boys and girls and this has been consistent throughout the decade (2000-2010). With such gains in education, the question of the continued relevance of gender as a measure of educational inequality is evoked.

Gender Parity Index (GPI) is the most used measure to explain gender differences in education (UNESCO 2012). A GPI of 1 indicates parity- that, here is no difference between female and male participation. A parity of less than 1 indicates that participation is higher for boys and more than 1 that girls' participation is higher than boys (FHI 360 2012; Hall and Lannoy 2013). Figure 2.2 shows the adjusted parity index of the gross enrolment ratio by level of education, 2008.

**Figure 2.2 Adjusted parity index of gross enrolment ratio by region**



**Source: UNESCO Institute for Statistics, Global Education Digest 2010, Statistical Tables 3, 5 and 8.**

Although progress has been made in narrowing the gender gap in education, inequalities still exist across levels of education and regions. Most regions seem to have achieved parity or close to parity at the primary school level. East Asia and the Pacific seem to have reached gender parity at all levels. In Central and Eastern Europe, Latin America and the Caribbean as well as a North America and Western Europe all exhibit a parity of more than 1 for tertiary education, suggesting that there are more females in tertiary education than in males. Sub-Saharan Africa falls short of the world average at all three levels and exhibits the lowest GPI. Although these figures indicate that gender parity is not yet the norm globally, with Sub-Saharan Africa significantly falling short, the improvements over the years indicate that the expectation of gender equality in the future is a goal that many countries are striving towards.

#### **2.2.4 Is gender inequality in education justified?**

In spite of the variation across regions, it cannot be disputed that the gender gap has been closing over the years with the most dramatic changes occurring in the poorest countries (Lloyd 2010). In some cases, the gender gap has been reversing in favour of girls. However, the implications of this gender convergence have been

placed into dispute Eloundou-Enyegue, Makki and Girroux (2009). On one hand, the issue of socio-economic dividends has been raised, and critics have questioned the extent to which girls' education translates into socio-economic gains such as employment and elevated social status (Bbaale 2011; Floro and Komatsu 2011). This is particularly important when one considers that only 60% of the global gender gap has been closed in economic participation (WEF 2014). Lloyd (2010) comments that the rate of change in gender gaps in labour force participation has been slower than the rate of change in education limiting the extent to which women have been able to translate education gains into economic gains.

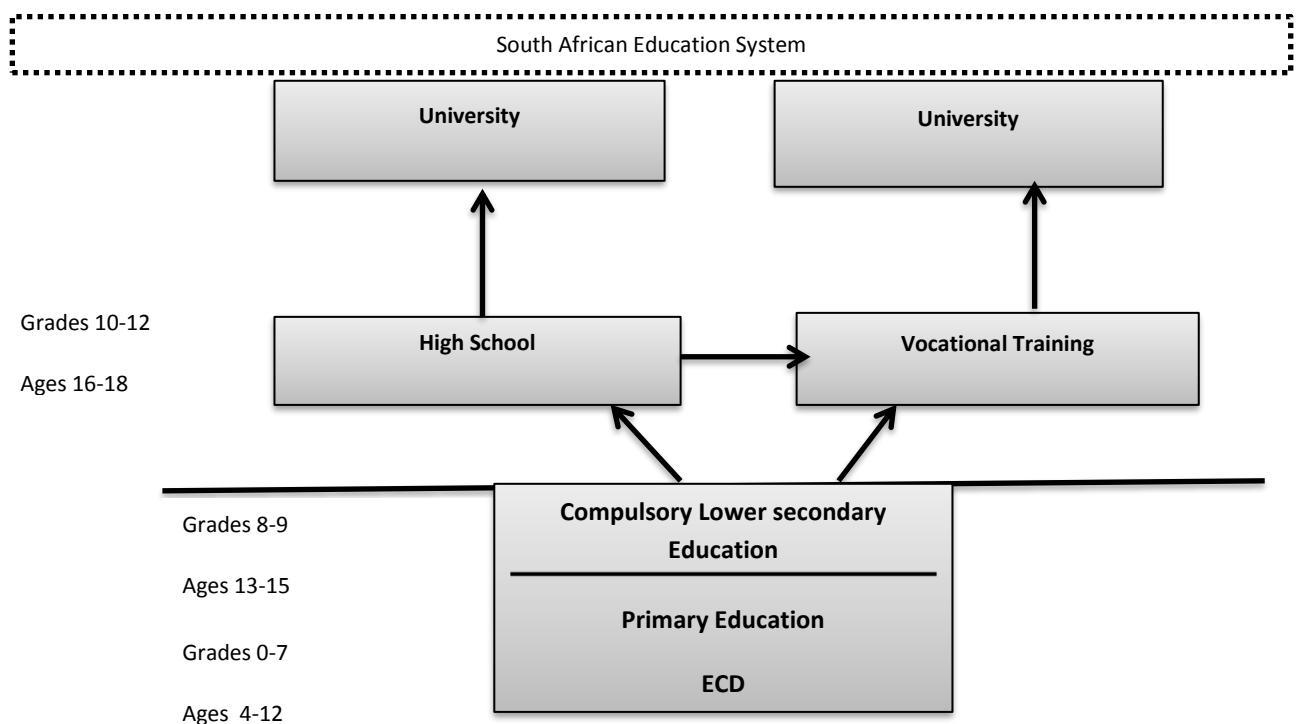
Other critics have questioned the continued relevance of gender as a priori focus area especially considering the co-existence of other forms of inequality (Eloundou-Enyegue et al. 2009; Blau, Brinton and Grusky 2008). Proponents of a shift away from gender argue that gender is no longer an adequate indicator given the existence of other forms of inequalities, in particular socio-economic status (Grant and Berhman 2010). However, Eloundou-Enyegue et al. (2009) caution that such a shift should not just be made based on enrolment and educational attainment statistics. There are other conditions that must be satisfied. These include: the magnitude of gender gaps, irreversibility of gains in closing the gender gaps, and socio-economic ubiquity (Eloundou-Enyegue et al 2009). With regard to the magnitude, Eloundou-Enyegue et al (2009) argue that gender will continue to be relevant as an indicator of inequality if much of the inequality in schooling unfolds along gender lines, that is, if gender related inequalities account for a large share of the discrepancy in educational equality. Irreversibility is reached when the gains in education become catalytic, and past gains determine the momentum of future gains. In other words, education gains are considered irreversible if present generations surpass the gains of the parental generation (Martin 2012). A third factor that should be considered is the socio-economic ubiquity. Most analyses of educational inequality have focused on differences between boys and girls, as if gender convergence occurs ubiquitously among girls in all socio-economic groups (Rarieya et al. 2014; Eloundou-Enyegue et al 2009). This third point is considered particularly important for two reasons. First it brings to the fore the relative importance gender vis a viz socio-economic gaps in analyses of inequality.

Secondly, it has the potential whether efforts to narrow gender gaps also reduce socio-economic inequality.

Given these reasons, Eloundou-Enyegue et al (2009) caution against an uncritical shift away from gender as an indicator of inequality. Drawing on a small sample of data from Sub-Saharan Africa, they conclude that although the gender gap has been narrowing, the pace has been slow such that the convergence which was expected by 2015 (MDG 3) has not been realised. This is largely because the convergence has been stalled or even reversed in higher levels of education in some cases.

### 2.3 The South African Education System

South Africa has a three tier education system consisting of primary, secondary and tertiary education levels (Ramdass 2009) as shown in Figure 2.3.



**Figure 2.3 Structure of the South African Education System**

This is further disaggregated into phases as follows:

- Foundation phase: Reception to Grade 3.
- Intermediate phase: Grades 4 to 6.
- Senior phase: Grades 7 to 9.
- Further Education and Training (FET): Grades 10 to 12 (matriculation certificate).
- Higher Education (HE) (Department of Education, DOE online; Spaul 2013).

The primary phase consists of the reception year to Grade 7 while the secondary phase comprises Grade 8 to 12. The intermediate phase (Grade 4-6) and the senior phase (Grade 7-9) are also referred to as the general education and training (GET). Higher Education has two streams, one leading towards diplomas and certificates and another towards Bachelor's degrees and postgraduate study. Schooling is compulsory from ages 6 (reception) to Grade 9. Secondary School has two terminal stages, at Grade 10 and Grade 12. Learners who choose to leave the system after Grade 10 have the option of enrolling in colleges towards vocational Diplomas and Certificates. Matric is the only recognised qualification for entry into a university. The proposed study focuses on the matriculation level.

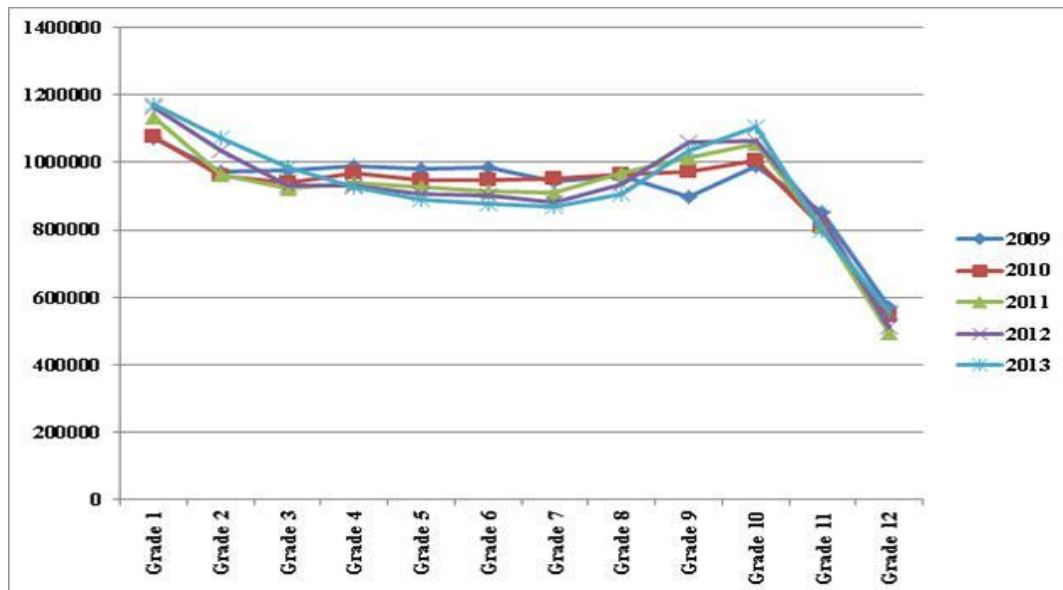
### **2.3.1 Educational enrolment in South Africa**

Data from South Africa also shows that there has been a rise in educational enrolment and attainment since the onset of democracy (van Wyk 2015). Overall, gender parity has been achieved in South Africa and the 2013 education statistics reveal a GPI index of more than 1.03 in most provinces at both GET and FET levels (Department of Education 2015). Census data also reveal that there has been an increase in net enrolment between 1996 and 2011 with the highest gains being experienced at the Foundation level and the FET levels (Stats SA 2011). Seemingly, this finding indicates that there are more learners enrolling in FET. However, a closer look at the statistics (Figure 2.4) shows that while there seem to be a sustained enrolment up to the Grade 10 level, significant drop outs are experienced in Grades 11 and 12. Moreover, data on educational enrolment also shows that there are more male learners in the lower education phases and a female dominance in the FET phases (van Wyk 2015; Stats SA 2011). Thus, from the available data, it is clear that



i) most learners do not finish high school and ii) males tend to leave school earlier than females.

**Figure 2.4: Enrolment in public schools by grade and year, 2009-2013**



Source: van Wyk (2015). : An overview of Education data in South Africa: an inventory approach.

## 2.4 Conceptualising educational attainment

Clearly, there are an array of factors which influence an individual’s educational attainment. Drawing from the literature discussed in this Chapter, these factors include- family background characteristics such as family intactness and parental education as well as socio-economic status (Goodman and Gregg 2010; Taylor and Yu 2009; Tzanakis 2011). Sociologists such as Coleman (1988) and Bourdieu (1986/1984) have theorised this relationship between family resources and educational attainment in terms of capital, suggesting that a child/s wellbeing and success in life is contingent upon the different forms of capital that are transmitted by their parents since they are dependent on them for resources. While there are various forms of capital such as human, economic, social and capital, the conceptual tools for this study were drawn from cultural capital (Bourdieu 1984) and social capital (Coleman 1988; Bourdieu 1984).

Bourdieu advances the notion of habitus or one’s world view and position in it, which simultaneously affect how an individual navigates their way through the

educational system (Jaeger 2010). Related to habitus is the notion of cultural capital which refers to how individuals are situated within a hierarchy of preferences (Bourdieu and Passeron 1977/1990; Sullivan 2002). In this theory, Bourdieu defines cultural capital as the “transmissible parental codes and practices capable of securing returns to the holder (Tzanakis 2011, 77). These codes are transmitted through upbringing and socialisation in the habitus and are passed on from one generation to another (Bourdieu and Passeron, 1977/1990). Simply put, cultural capital refers to those characteristics that potentially lead to social mobility. These include educational qualifications, knowledge, skills, ability to speak well, dress well etc. According to Bourdieu (1986, 244) “the scholastic yield from educational action depends on the cultural capital previously invested by the family”. The acquisition of this initial ‘parental’ capital ultimately redounds one’s economic and social opportunities while at the same time it is reproduced by economic capital. Conversely, parents who possess high economic capital are likely to invest in their children to gain more cultural capital. Thus cultural capital and economic capital are directly proportional (Martin, 2012).

While cultural capital is directly linked to parental socio-economic status and prestige, the social capital refers to the aggregate (actual or potential) resources found in social networks and relationships (Bourdieu 1986). Coleman (1988), drawing from Bourdieu’s work reasoned that family background was a strong form of capital which has three interrelated components, human capital financial capital and social capital. He further contended that families must have strong social capital to transmit the necessary financial and human capital for their child’s human capital development (cited in Martin 2012 p. 34). Coleman identified a number of indicators that can be used to measure social capital. These include: family structure; number of children in the family; parental expectations, and the nature of the parental-child relationship. In this study, only one measure will be used- family structure. As discussed in section 2.2.2, intact families are hypothesised to facilitate better educational outcomes than single parent households

Based on the social class individuals are born into and the nurturing available in this habitus, they internalise their possibilities and develop aspirations and ideas about their individual potential. For instance, those born in a family where no-one

has completed high school education might believe that their calling is to remain in the same social class. Thus in consequence, habitus, if not challenged, can reproduce class structure. Essentially, the notion of habitus provides the lenses through which the processes by which the “social structure as a whole reproduces itself over generations...” (Morgan 1985, 102).

It is important to note that cultural capital does not only seek to explain class differences. Gender differences are also relevant. According to Bourdieu (1984, 107) “sexual properties are as inseparable from class properties as the yellowness of a lemon is from its acidity”. In fact, any attempt to separate class and gender from a Bourdieusian perspective is artificial. Children from well to do families experience their lives differently depending on their gender. For instance, girls from better off families might receive a privileged education in a good school, but their choice of subjects might be defined by gender. Similarly, girls from poor families, might not experience the benefits of education as families tend to favour boys when faced with austerity. In essence, the experience of being a woman, although differing in kind, is to an extent removed from that of men.

Bourdieu (1984) notes that while men use their cultural capital to acquire qualification and get jobs, women are key players in transmitting cultural capital to their children. In every relationship between educational capital and a given practice, one sees the effects of the dispositions associated with gender which help to determine the logic of the reconversion of inherited capital into educational capital, that is, the "choice" of the type of educational capital which will be obtained from the same initial capital, more often literary for girls, more often scientific for boys. Bourdieu (1984, 105).

Simply put, habitus shapes the class based capital that families have and the conceptualisation of cultural and social capital provides a framework for analysing the persistence of educational inequality in this study. If parents endow their children with resources that facilitate educational attainment and social mobility, given that family habitus varies, only those who are in privileged positions will possess the cultural capital that is valued in society. Cast in this way, “knowledge and the possession of a ‘highbrow’ culture is unequally distributed, according to social class [gender] and education” (Tzanakis 2011, 77).

## **2.5 Conclusion**

The objective of this chapter was to bring to discuss some of the determinants of educational attainment that have been explored in the literature. The discussion has shown that family background factors such as family structure, parental education and socio-economic status can influence the educational outcomes of children. Gender was also discussed as one of the main reasons hindering girl's educational outcomes. It has also emerged that education has the potential to dismantle the cycles of poverty that are often strengthened by social inequalities. It remains to be seen how these factors play out in the current study. The next chapter introduce the methodology that was used to explore the research problem in this study.

# Chapter 3

## Methodology

### 3.0 Introduction

In Chapter 2, three important concepts adopted in this study were introduced. Chapter 3 describes the methodological framework which was adopted for this inquiry, which as indicated in Chapter 1, is to explore how gender convergence with other family contextual factors can impede or facilitate the probability of completing high school. In brief, Chapter 3 sets out the strategic approach or logic according to which the study was conducted, indicating the research questions, research design, data collection management and analysis procedures. Validity and rigor indicators adopted in the study are also presented in this Chapter.

### 3.1 Restatement of the Problem

High school graduation is an important barometer of not only the likelihood of an individual being gainfully employed in future, but also of the skill level and development of a country. South Africa in particular, education has been part of the transformative agenda, and various education reforms have been initiated in an effort to break the cycle of disadvantage for individuals from poor backgrounds. Still, less than 50% of individuals graduated from high school between 2002 and 2011 (Stats SA 2013). This status quo is worrisome and deserves to be interrogated. Specifically, the study sought to examine the layered and overlapping effect of family background characteristics and their intersection with sex on the likelihood of completing matric on time in South Africa.

### 3.2 Location of the Study

The study is located in South Africa. It makes use of secondary survey data collected for the National Income Dynamics Study. The data was collected from private households in South Africa's nine provinces, covering 53 district councils (South African Labour and Development Research Unit, SALDRU 2009, Lam et al. 2008).

### **3.3 The objectives of this inquiry were to:**

- iii) explore the effects of sex in high school completion in South Africa.
- iv) ascertain the contribution of family background and sex to the overall educational inequality in high school graduation

#### **3.3.1 The following research questions guided this study**

- i) Are there any sex differentials in high school completion rates in South Africa by sex?
- ii) What is the contribution of family background and sex to the overall educational inequality in high school graduation?

#### **3.3.2 The following hypotheses were tested**

- iii) Sex contributes to the inequality in high school completion in South Africa
- iv) The family background of an individual has a significant bearing on the likelihood of completing high school on time.

## **3.4. Methodology**

### **3.4.1 Research design**

There are three research approaches which are which are contingent upon “philosophical assumptions about the nature of reality, epistemology, values, the rhetoric of research and methodology” Creswell (2003 p.4). These approaches are quantitative research, qualitative research and mixed methods research. The present inquiry was located within quantitative paradigm which allows for a systematic examination of phenomena using statistical methods. The purpose is either explain or predict events (Creswell 2003; Leedy and Omrod 2001). By default, the design adopted is *ex post facto*. This is because the study uses secondary data which was collected using the same approach. According to Simon and Goes (2013) *ex post facto* is a research approach which explores relationships between factors retrospectively (Simon and Goes 2013). Simply put, the research inquiry links phenomenon observed currently to events occurring in the past.

Statistical models have made great methodological contributions to educational research. They are generally used for three reasons: causation, prediction and description (Xie 2011). Statistical models that can lead to a causal explanation have the highest scientific value (Shmueli 2010). However, causal explanation is often difficult to achieve largely because of heterogeneity in the population which makes it difficult to describe phenomena at the individual level. Therefore, a common approach is to use statistical models to summarise diverse social phenomena as they are observed in the population (Xie 2011). This is especially the case in research which seeks to inform policy. For instance, it is not enough to know how individuals experience schooling, or that some people have not completed high school. For policy purposes, it is more important to know the proportion of people experiencing schooling in a particular way or the proportion which has or not completed high school.

There is a range of statistical models which can be used to provide summary statistics about education. Among them are correlation studies, and or regression models. Correlation studies are mainly concerned with the association between two variables (Pierce 2008). Regression models on the other hand are used to predict the effect of explanatory variables on a dependant variable (Mare 2011; Xie 2011). Using logistic regressions, this study treats high school completion as a dichotomous variable, and explores the effect of the family background variables on the likelihood of making the transition. The inquiry draws data from the third wave of the National Income Dynamic Study (NIDS 2012). It is important to note that the NIDS was conceived as a panel study with three completed waves at the time of writing this thesis. By using only one wave, the data is treated as a cross sectional study.

#### **3.4.2 Sampling for the NID study**

The baseline study which was conducted in 2008 employed a stratified two stage cluster design and sampled 28 000 people from 7305 households. Wave 3 data was collected in 2012 and followed the same sampling frame. At the initial sampling stage, 400 Primary Sampling Units (PSUs) were drawn from Stats SA's 2003 Master Sample of 3000 PSUs. The NIDS study targeted private households in all the nine provinces of South Africa. As well, residents in workers' hostels, convents

and monasteries were also sampled to provide a more nationally representative sample. Further details on sampling for the NIDS are provided in Lam et al. (2008).

### **3.4.3 The NIDS questionnaire**

Four questionnaires were used to collect data in the NID study. These are the household questionnaire, the adult questionnaire, the children questionnaire and a proxy questionnaire. The Household questionnaire was used to collect data on household characteristics such as mortality, living standards, income and expenditure, negative and positive events/shocks. The adult questionnaire was used to collect data from respondents aged 15 and above and focused on. The questionnaire focused on aspects such as education, labour market participation, income, health, well-being, numeracy and anthropometric data. The Children questionnaire targeted responded aged 0-14 and focused on issues such as health, education, numeracy, literacy, family support etc. A proxy questionnaire was also used to collect data for adult household members who were unable/unavailable to take part in the adult questionnaire. A knowledgeable family member answered the questions on behalf of these adults.

For the present inquiry, the adult questionnaire was used. The rationale for using this questionnaire is provided under the section which deals with validity and reliability.

### **3.4.4 The variables**

In this study, the following variables were measured:

#### *Dependent variables*

The dependent variable in this study is high school completion. A dummy variable was coded to take a value of 1 if the subject has completed Matric by 2012, otherwise 0.



### *Independent variables*

Although there are many studies that have focused on social and cultural capital, there seems to be no consensus as to how to measure and define the concepts. However, in spite of such dispute, there are some measures which seem to feature in research studies (Martin 2012). These include parental measures such as parental education, parental occupation, parental income as well as family structure. In like manner, the following family background variables were used to measure cultural capital: family structure, parents' educational level and household income. The following class schema used in the NID study is adopted:

#### Family Structure

Residence with mother and father was combined into residence with both parent;  
Residence with either mother or father was recoded residence with one parents;  
and,  
Residence with none of the parents was recoded residence with none of the parents

#### Parental educational level

0 years of schooling- no schooling;  
1-7 years- primary education;  
8-11 years of schooling- lower secondary education; and,  
12 years of schooling – Matriculation level.

#### *Socio-demographic controls*

Variables such as population group and place of residence were used as control variables while sex was used as the interaction variable. Including place of residence allows for an exploration of habitus, based on the assumption that in urban areas there is more acceptance of girls' education, and by extension role models, making it easier for girls in urban areas to progress to higher levels of education than those in rural areas.

### **3.45 Sampling for the present inquiry**

To explore the probability of completing high school in South Africa, the study used the 2012 wave of the National Income Dynamics Study Individuals born 18, 19 and 20 years before the survey year Y were singled out. That is, participants born in

1994, 1993 and 1992 were selected. This selection was based on the plausible assumption that they would have completed Grade 12 if they were on time. Although a total of 2407 individuals aged 18, 19 and 20 were sampled, this analysis is restricted to the 1821 who were interviewed successfully and also answered the family background information.

### 3.4.6 Basic Characteristics of the study population

**Table 3.1 Basic Characteristics of the study population**

Characteristics	Counts	Percentages
<b>Sex</b>		
Male	858	47.1
Female	963	52.9
<b>Total</b>	<b>1821</b>	100
<b>Age</b>		
18	659	36.2
19	558	30.6
20	604	33.2
<b>Total</b>	<b>1821</b>	100
<b>Population Group</b>		
African	1590	87.3
Coloured	202	11.1
Indian	10	0.5
White	19	1.0
<b>Total</b>	<b>1821</b>	100
<b>Residence</b>		
Urban	775	42.6
Rural	1046	57.4
<b>Total</b>	<b>1821</b>	100
<b>High School Completion</b>		
Yes	381	20.9
No	1438	79.0
<b>Total</b>	<b>1821</b>	100
<b>Family Structure</b>		
No Parents	780	42.9
One Parent	678	37.3
Both Parents	361	19.8
<b>Total</b>	<b>1819</b>	100
<b>Parental Education</b>		
Primary	229	23.2
Lower Secondary	280	28.3
Upper Secondary	254	25.7
No Schooling	225	22.8
<b>Total</b>	<b>988</b>	100
<b>Log of Household Income</b>	<b>1821</b>	100

Table 3.1 presents the distribution of the outcome variable, independent and control variables. The analyses exclude the missing cases in the data. Approximately 47% of the sample was male and 52% female. This is in line with the official statistics published by Statistics SA where on average consists of 48.2% of male population and 51.7% of female population (Stats SA 2014). Thirty-six percent of the sample was aged 18 years; while 31% was aged 19 and 33% aged 20.

One of the questions that often arise when one talks of socio-economic status in South Africa is the issue of race. Indeed, race issues are inherently intertwined with issues of poverty and education, especially considering the history of disadvantage that has been characteristic of the education system since apartheid (Timaeus, Simelane and Letsoalo 2013). Thus, including race would add a more comprehensive analysis and provide a fine grained insight into educational inequality. In this study 87% was African, 11% coloured, while the Indian and white population constituted approximately one percent each. The 2011 census found the following racial proportions: Africans, 80.2%; coloureds, 8.8%; Indian, 2.5% and white, 8.4%. Thus, there was a deviation in the composition between the White and Asian groups which although corrected after weighting, still had less than 50% of the white population (4.5%). This presents a challenge for regression analysis with unequal sample sizes and is characteristic of naturally occurring factors such as race. Hence, it was noted from the outset that population would present a challenge in the regression analysis.

The impact of geographical variation is also acknowledged in this study. Geotype was chosen over province as the indicator for geographic variation. This decision was necessitated by the sample size as using province would have spread the data thinly and thus present a challenge in the analysis. The variable available for geotype in the NIDS dataset was: traditional; urban and farms. The first and third categories were combined to form one category: rural and 57% of the individuals surveyed lived in the rural areas, while 43% lived in urban areas.

Data asking respondents their highest level of education was recoded to form the category 'finished matric on time' and approximately 21% had finished matric by the survey date, while 79% did not have a matric qualification. With regard to the independent variables, socio-economic status was measured as the parental level of education as well as household income. The NIDS data had three variables for parental education. These included: parental highest education level, parental highest grade and whether the parent had completed any certificates, diploma or degrees. Parental highest education level, which would have included education levels post-secondary had very few cases (33 cases for mothers' and 51 cases for father's highest education). As shown in Table 3.2 the responses for the indicator

mother completed diploma, certificate or degree) were unevenly distributed, which would have caused problems in the regression analysis.

**Table 3.2 Frequency of missing data on the parental education variable-(diplomas, certificate, degrees**

Mother completed diploma, certificate or degree	Frequency
Yes	35
No	757
Don't know	77
Refused	-
Missing	911
<i>Total</i>	<i>1821</i>
Father Completed diploma, certificate or degree	Frequency
Yes	41
No	1058
Don't know	291
Refused	2
Missing	420
<i>Total</i>	<i>1821</i>

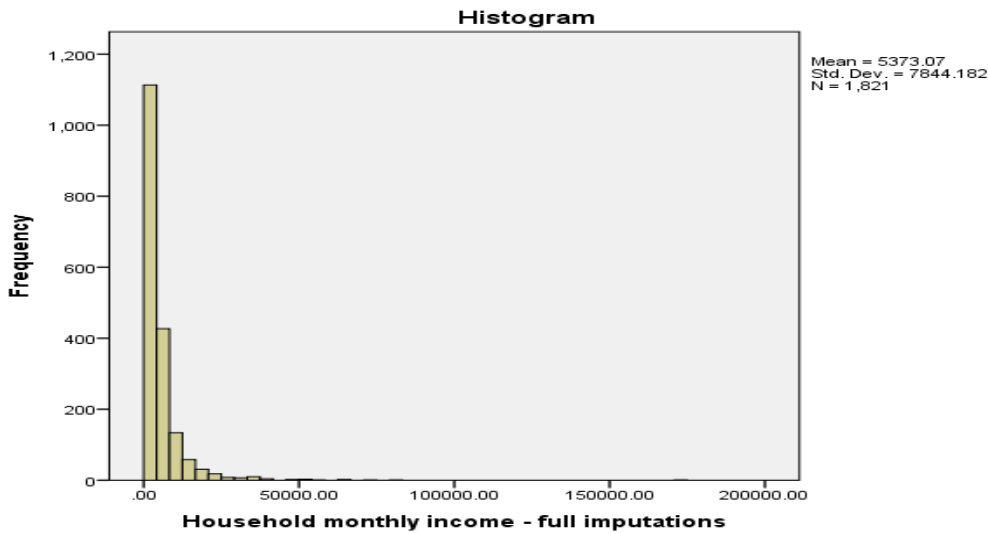
The third parental education variable in the data was the highest grade achieved by the either parent (Table 3.3). This variable also had a large quantity of missing values (68% for mothers' highest grade) and (64% for fathers' highest grade).

**Table 3.3 Frequency of missing data on the parental education variable- highest grade**

What is your mother's highest grade?	Frequency
Primary	145
Lower Secondary	125
Upper Secondary Education	190
No Schooling	120
Don't Know	259
Refused	1
Missing	977
<i>Total</i>	<i>1821</i>
What is your father's highest grade	Frequency
Primary	146
Lower Secondary	126
Upper Secondary Education	194
No Schooling	196
Don't Know	716
Refused	3
Missing	440
<i>Total</i>	<i>1821</i>

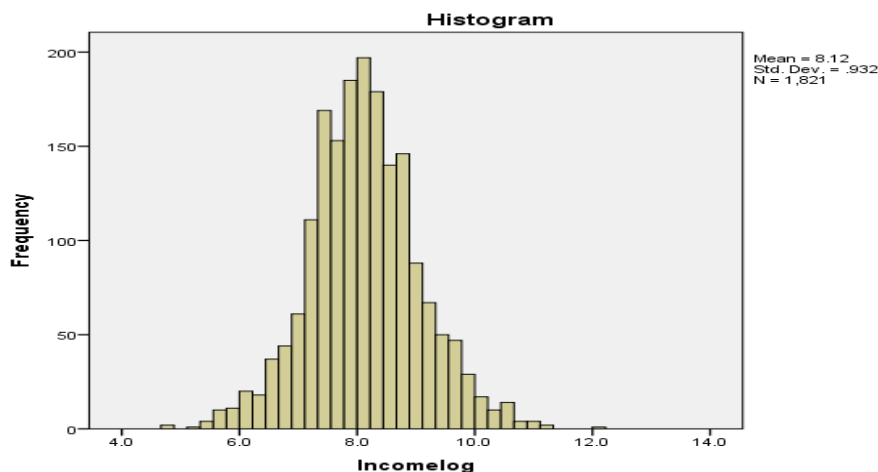
An initial decision to modify the parental education variable to merge responses from the question asking whether the parent had successfully completed a certificate, diploma or degree and parent's highest grade was discarded. While it is highly likely that parents who have obtained a post-secondary qualification had also completed matric or its equivalent- there is also a possibility that a parent who might not have successfully completed a certificate or diploma, would have completed matric. With these shortcomings in mind, a decision was made to include only parent's highest grade in the analysis. To increase the sample size, a parental education variable was created by computing mother's highest grade and father's highest grade using the 'max function' in SPSS24. For instance, if the mother's highest grade was primary (value 2) and father's was upper secondary (4), parental highest grade was computed as 4. This was based on the plausible understanding that at least one parent had that highest level of education. Other studies have used the mean of the two parents' educational levels (for instance, Dubow, Boxer and Huesmann 2009). However, this option was rejected because it had the potential of reducing the level of education especially in instances where data for one parent was missing. This modified parental education measure increased the sample size to 988. Hence, even after modifying, 45% of the cases had missing data. In spite of this, a decision was made to proceed with the analysis using variable. This decision was influenced by the theoretical framework adopted in this study, which makes the assumption that parents endow their children with cultural and social capital through transmission of knowledge, attitudes and skills needed to succeed in education (Martin 2012). Therefore, it was important that a parental education variable be included in the analysis. Of the valid cases before imputation, 23.2% of the parents had primary education, 28.3% lower secondary education, 25.7% upper secondary and 22.8% no schooling.

The independent variable household income was retrieved from the household questionnaire. However, the distribution of the variable was positively skewed as shown in Figure 3.1.



**Figure 3.1 Household Income Distribution, NIDS 2012.**

Following other studies (for instance Dinkelman, Lam and Leibbrandt 2008), a decision was made to transform the income variable into a natural log was seen as a more sensible solution as it resulted in a more normally distribution (Figure 3.2). A logarithmic transformation of income is considered a convenient approach to changing a highly skewed variable into one that is approximately normal (Bennoit 2011).



**Figure 3.2 Log of Income distribution, NIDS 2012.**

### 3.5 Missing Data

Missing data on participants' characteristics is a common problem in survey research. This occurs for a variety of reasons such as: total non-response; non

coverage; item non response and partial non response or error on the part of the researcher (Pambaka, Hutcheson and Williams 2016). Total non-response occurs when a respondent refuses to participate in the survey, is not available during the interview or there is a language barrier (Brick and Kalton 1996). In the NIDS data set, total non-response problems were dealt with through proxy interviews for respondents not at home, the use of different languages to cater for the language barrier and weighting adjustments where some respondents were assigned greater weights to represent non-respondents. Non coverage occurs when some elements in the population are not included in the sampling frame and likewise, this was corrected through design weights (Pambaka et al. 2016). Item non-response occurs when a participant fails to provide answers to some of the items (Yan and Curtin 2010). This can be corrected through deleting items which have a missing element, mean imputation or multiple imputation. All these methods have their advantages and disadvantages, although multiple imputation is considered the better way of handling missing values. Data could also be missing due to errors on the part of the researcher during data collection and capturing.

Non-response missing data can be classified as missing completely at random (MCAR), missing at random (MAR) and missing not at random (MNAR, Schaffer and Graham 2002). When data are MCAR – the missingness is independent of the observed and missing responses, that is, all cases have the same probability of being missing. MAR refers to systematic missingness, where the propensity of missingness is directly related to other variables in the data set (Nicholson, Deboeck and Howard 2015,3), but not the outcome being measured. MNAR occurs when the missingness can be attributed to both observed and

The first step in understanding missing data in analysis is to look at the patterns of missingness or incompleteness in the data. Two essential questions should be asked.

1. Where are the missing values located?
2. How extensive are the missing data?

**Table 3. 4Pairwise analysis of missing data**

	Age	Gender	Population Group	Residence	Family structure	Parental Education	Income	High School completion
Age	1821							
Gender	1821	1821						
Population group	1821	1821	1821					
Place of Residence	1821	1821	1821	1821				
Family Structure	1819	1819	1819	1819	1819			
Parental Education	988	988	988	988	987	988		
Income	1821	1821	1821	1821	1819	988	1821	
High School Completion	1819	1819	1819	1819	1817	987	1819	1819

Parental Education had the highest frequencies and percentages of missing data (45.8%). The next step was to understand the pattern of missingness in the data. This was done through identifying the pairwise frequencies (Table 3.4) and the list wise frequencies (Table 3.5). Pairwise frequency shows that when parental education is included in the model together with the family structure variable and the high school completion variables the sample size decreased by one case from 988 to 987 cases representing 54.2% of the total sample. List wise frequencies show that excluding parental education from the model with family structure would increase the sample from 831 to 1817. At the same time, excluding family structure and including parental education would reduce the sample to 986 (Table 3.5). As a consequence, parental education was excluded from the model which included family structure and the relationship variable.

**Table 3.5Listwise analysis of missing data**

Number of Cases	Age	Gender	Population Group	Residence	Income	Family Structure	Education	Parental Education	Complete cases if x is excluded
986									986
831								x	1817



### **3.5.1 Dealing with the missing data in the Analysis**

Pambaka et al. (2016) note that there are three recommendations of what should be done when there are missing data, i) report the details of the missing data ii) adjust the results for what is known and iii) report the likely sensitivity of the reported results. The preceding section has addressed the first recommendation. The analysis in Chapter 4, will address the third recommendation, while this section seeks to explain how the second recommendation was handled.

There are a number of methods that can be used when working with data with missing values. These include using available cases, and imputation methods. The standard approach in SPSS is to restrict the analysis to participants with no missing values in the specific set of variables. Thus SPSS uses listwise deletion to allow for available case analysis (Pambaka et al. 2016; Saunders et al. 2006). It is acknowledged that listwise deletion significantly reduces the sample size for the parental education variable, and has the potential to produce biased effect estimates, especially in the regression coefficients. Further, case deletion for such large numbers of non-respondents results in a sample size with characteristics different from the original sample and from the population under study. There is also a possibility that certain groups of respondents might have a propensity to respond or not to certain questions in a certain way.

Besides list wise case deletion (which in this case is the default SPSS option), there are other methods that can be used to deal with missing values for instance, pairwise deletion in which each bivariate correlation is estimated on all data available for each successive pair of study variables (Saunders et al. 2006). There are also single imputation methods where missing values are filled in using predicted values from the available data (Little and Rubin 2002). An example of single imputation is mean imputation in which missing values are replaced with the mean of the available cases. (Pambaka et al. 2016; Schafer and Graham 2002). This is considered a bad estimate since it has the ability to exaggerate effects, and weaken covariance and correlation estimates in the data (because ignores relationship between variables).

A more recent and recommended method is multiple imputation (MI) which is based on the is based is based on filling in or imputing the missing values in the data

set, while allowing the uncertainty due to imputation to be incorporated into the analysis (Schafer and Graham 2002; Little and Rubin 2002; Guo and Fraser 2014). The idea is to create more than one, say M, plausible sets of replacements for the missing values, thereby generating M completed data sets (Ragunathan 2004). The variation across the M completed data sets reflects the uncertainty due to imputation. However, MI works well when the amount of missing values is not large (recommended cut off is 50%, although other scholars use lower cut offs such as 20%). Multiple imputation works under the assumption that data are missing at random- in other words the pattern of missingness only depends on the observed data and not the unobserved (Pambaka et al 2016). To test this assumption, a logistic regression model of missingness on the parental education was estimated. The variable was recoded as 1- information available and 0 information missing.

**Table 3.6 Logistic regression for missingness on the parental education variable**

Variables	Estimate	se	pvalue
Age			
18	0.951	0.139	0.715
19	0.949	0.144	0.717
Gender			
Female	0.995	0.115	0.967
Race	0.648	0.190	<0.022
Residence	0.827	0.121	0.117
Rural			
Family Structure			<0.000
One Parent	0.489**	2107.2	0.992
Two Parent	0.000**	0.115	<0.000
Log of Income	1.021	0.065	0.746
Matric	0.953	0.115	0.675
Completeness			

The logistic regression model revealed family structure and being white were significantly associated with missingness on parental education. Specifically, those people who lived with both parents were 99% less likely to provide information on their parent's education, while the white individuals were 40% less likely as well. Assuming that the probability of missing parental education depends only on family structure and population group, then the probability of missing data on this variable is MAR. This is because family structure and race are observable variables in the data. Therefore, a decision was made to apply multiple imputation for missing values.

Multiple Imputation was done in steps as indicated below:

- i). identify and investigate the location, patterns and amount of missing data (Table 3.4-3.6)
- ii). define the variables in the data set which may be associated with the missing values and therefore, add more information about the missing variables.
- iii). impute missing data to give 'm' complete data sets – (this step should also include the dependent variable whether or not it has missing values)
- iv). Run the regression models using the 'm' imputed data sets;
- v). Pool or combine the estimates, (Pambaka et al. 2016).

Although there is no agreed upon limit of imputations to produce stable and accurate p-values- a number of guidelines are provided. White, Royston and Wood (2011) and Allison 2002 advise that the number of imputations should be proportionate with the percentage of missing data in the sample. Graham (2012) advises that at least 40 imputations should be used for data with 50% missing cases.

While MAR is assumed (Table 3.9), Graham (2011), like Schafer and Graham (2002) caution that the missing mechanism might be never be known for sure. This is especially so in cases where the missingness is beyond the researcher's control, as is usually the case with secondary data analyses. Ideally, follow up interviews with non-respondents would provide more information on reasons for missing data. However, this was beyond the scope of the scope of this study. The only way to verify the assumption was through a sensitivity analysis. Multiple Imputation when conducted under MAR conditions should produce reduced parameter estimates. The analysis presented in Chapter 4 used the available case analysis (default in SPSS) as the initial analysis and this was followed by analysis with imputed data. The variation in findings is provided in Chapter 4.

### **3.6 Data analysis**

The study employed two levels of analysis. The first level involved running descriptive statistics on demographic characteristics of the survey participants and other nominal-level data. The purpose was to map out the composition of the sample by race, gender, geographic location and fertility. Descriptive statistics were also run for the distribution of schooling at the time of the survey. The second level of analysis was the logistic regression models. This was done in SPSS24 to estimate

the effect of family background factors, as well as socio-demographic variables on likelihood of completing matric on time.

### 3.6.1. Logistic regression model

Logistic regression, also called logit regression, was used to explore the likelihood of completing high school. The outcome of interest matric completion was constructed using the information on the highest level of education attained by the survey year. This was recoded such that the dependent variable (matric completeness) was an outcome of either 1 (the respondent has matric) or 0 (the respondent does not have matric). Age, gender, race, place of residence, family structure and household income were the covariates considered

Consequently, the specific model that was used was binary logistic model due to the fact that the dependent variable was binomial (Sperandei 2014). The model is represented by equation 3.1

$$\log \frac{\pi_i}{1-\pi_i} = \beta_0 + \beta_1(X_1) + \beta_2(X_2) + \dots + \beta_m(X_m) \quad [3.1]$$

Where  $\pi$  is the probability of completing high school,  $\beta_i$  are the regression co-efficients associated with the reference group and  $X_i$  are the explanatory variables (age, sex, family structure, place of residence, race, parental education and household income). The reference group is denoted by  $\beta_0$  and is made up by subjects in the reference level of each  $X_i$  variable (Sperandei 2014). For instance, the  $X_i$  variable, age has three categories, 18, 19 and 20. The last category, age 20 is the reference category.

## 3.7 Validity, Reliability and Rigour

Validity and reliability are important constructs in any research project. They are the criteria that justify the study's claim to attention. Validity is generally defined as the ability of the data collected to answer to research questions and meet the objectives of the study (Pierce, 2008). However, Cohen, Manion and Morrison (2007) extend the definition to include careful sampling, appropriate instrumentation and

statistical treatments of the data. Cast in this way, the validity of any research study lies in the data that was collected, how it was collected, from whom it was collected and how it was treated.

There are several measures that provide evidence of the validity of a study. These include: internal validity, external validity, content validity and construct validity. Internal validity concerns the accuracy of the data in testing the hypotheses of the research question (Cohen et al. 2007). External validity refers to the degree to which the results of the study can be generalised beyond the sample of the study (Pierce, 2008). Content validity refers to the extent to which the instrument comprehensively covers the domain under investigation while construct validity refers to the operationalised forms of the variables under research.

The validity of the study reported here was based on how well the research instruments, that is the NIDS adult questionnaire performed at measuring the phenomenon under study. Regarding generalizability, the NIDS data was collected from a representative sample of the population. The sampling, fieldwork and processing of the NIDS data is described in detail in Lam et al. (2009).

Cohen et al. (2007) suggest that reliability in quantitative research is synonymous with dependability, consistency and replicability. For research to be reliable, it must demonstrate that if it were to be carried out in a similar context, similar results would be yielded, that is it must be consistent over time and over samples.

The reliability of the data used in this study lay in the methods in which it was collected, which are clearly articulated in Lam et a. (2008). The questionnaires which were used to collect the data were analysed and the raw data/original data files which had not been manipulated were extracted and analysed in line with the research questions. This data was carefully chosen since it includes a detailed educational, family history for both female and male adults. In this way, the data allowed the researcher to explore real life educational outcomes for young adults aged 18, 19 and 20 years. The adult questionnaire in the NIDS study also contains information on family characteristics, such as parental education, living arrangements; factors which helped explain factors which have an impact on educational transitions.

### **3.8 Concluding remarks**

The aim of this study was to empirically test the effect of family background variables as well socio-demographic factors on the probability of completing high school on time. The research methods that were used in this study together with the epistemological principles that guided these methods were presented in this chapter. Issues of sampling, and data analysis were discussed. Also discussed were issues regarding ethical guidelines, as well as limitations of the study. The methodology described in this chapter enables an exploration of influence of socio-cultural capital on high school completion.

# Chapter 4

## Findings

### 4.0 Introduction

This chapter presents the findings of the study. The principal educational outcome of interest in this study was high school (matric) completion. Specifically, the study sought to explore the effect of gender on the completion of matric on time amongst individuals aged 18, 19 and 20 in South Africa. Contributing factors such as family background (family structure, parental education, place of residence and income), as well as demographic factors (age and ethnic background) were also investigated. These factors were included because they align with the theoretical and conceptual framework formulated in Chapter 2. The sample was constituted from the NIDS wave 3 study and comprised of 1821 individuals who had been successfully interviewed and had been asked the questions related to family background (parent survivorship and residence, as well as parental education). As highlighted in Chapter 3, this excluded individuals surveyed through the proxy questionnaire as their parental information was not requested. The data was coded and analysed using the Statistical Package for Social Sciences (SPSS) Version 24.

The chapter begins with the analysis of the distribution of educational attainment amongst the individuals aged 18, 19 and 20 in 2012. This is followed by statistical modelling to address the key research questions in this study.

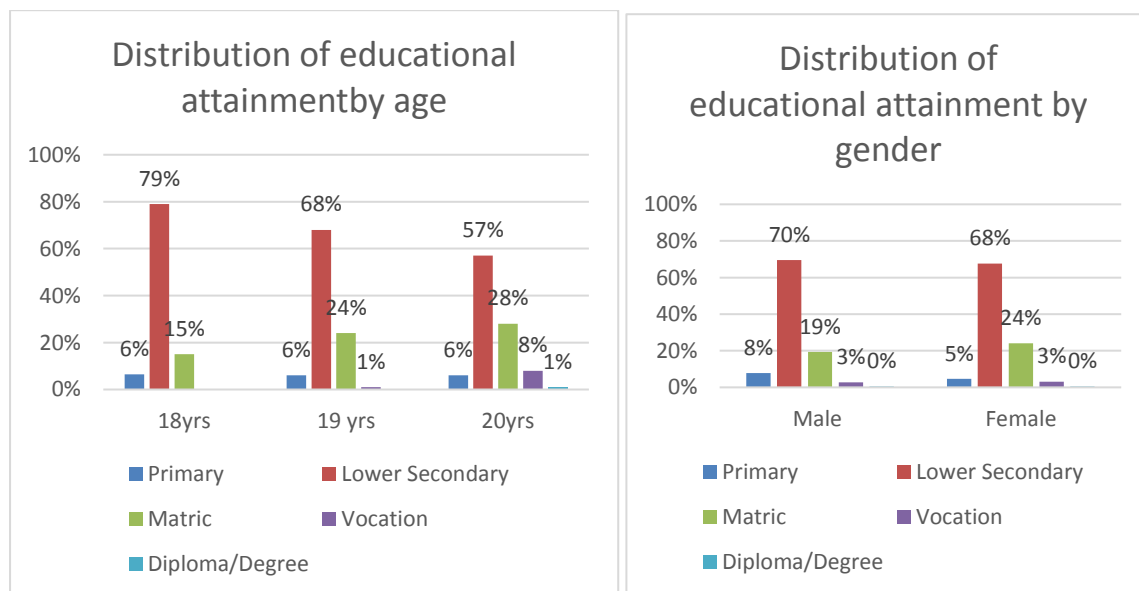
- i) Are there any sex differentials in high school completion rates in South Africa by sex?
- ii) What is the contribution of family background and sex to the overall educational inequality in high school graduation?

The statistical modelling was done in five parts. First, independent logistic regression models are estimated for all the variables. The purpose was to establish the individual effects of the explanatory variables on the two dependent variables, matric completeness and dropping out. This was followed by nested modelling, which allows for group characteristics to be included in the analysis (O'Dwyer and Parker 2015). The nested logistic regression modelling was done in two parts. First,

nested models for the entire sample were estimated. This was followed by the nested models for the female population only. Finally, nested models for the imputed data were estimated. These were also done in two parts- first the entire population and then estimated for the female population. The analysis was based on a sample of 1821 young people aged 18, 19 and 20 which was weighted to be representative of the South African population. All these models were fitted with post stratified sampling weights as recommended by NIDS (Wittenberg 2009).

#### 4.1 Distribution of educational attainment

The first step in answering the three research questions in this study was to establish the highest level of education attained by the 18, 19 and 20 year olds during the survey year. Figure 4.1 summarises the results of the analysis on the highest education level attained. The left panel displays the distribution of educational attainment by age cohort and the right panel by sex. This distinction is important because i) finishing matric on time has age dimension ii) the focus of the study is on the significance of sex in matric completeness.



**Figure 4.1 Distribution of educational attainment by age and sex**

The results show that the majority of the 18, 19 and 20 year olds had the highest level of education as lower secondary school (including grade 11). Seventy-nine percent of the 18 year olds had lower secondary as their highest level of



education by the survey date, while 68% of the 19 year and 57% of the 20 year olds also had lower secondary education. Approximately 15% of the 18 year olds had completed matric, 24% of the 19 year olds and 28% of the 20 year olds. Very few individuals aged 18, 19 and 20 had a highest level of education beyond matric (less than 10% for the 20 year olds and 1% for the 19 year olds. It is possible that some of the individuals who had completed matric were still engaged in post-secondary education. Hence, matric would have been the highest education level at the time of the survey. Equally, fewer individuals had primary education or had no schooling.

When disaggregated by gender, similar trends were observed where the highest level of education was lower secondary education (70% males and 68% females). There was a 5% difference in matric attainment for the males and females in favour of the females. Again fewer individuals had educational attainment beyond matric or below lower secondary education. These findings are consistent with existing literature which indicates that the mean years of schooling in South Africa is 9.9 years (UNESCO 2012). If converted to an interval scale, lower secondary education means that the individual would have been in school for ten years.

## **4.2 Modelling matric completeness**

Having ascertained the distribution of educational attainment, the next step in this inquiry was to document the school completion rates of the 18, 19 and 20 year olds according to the family background and demographic factors. This is presented in Table 4.1 which provides two sets of information. First, distributions and summary statistics of matric completeness as well as the explanatory variables (age, gender, race, place of residence and household income) are given in frequencies and percentages. Second, it presents the binary logistic regression models, where the dependent variable (matric completeness) is an outcome of either 1 (the respondent has matric) or 0 (the respondent does not have matric). The regression results are presented in terms of odds ratios.

**Table 4.1 Summary of matric completeness frequencies and odds from independent models for individuals aged 18, 19 and 20, NIDS 2012**

Characteristics	Frequency	Percentage with matric	Odds of having matric
<b>Age</b>			
18	968344	14.6	0.328***
19	689887	25.1	0.646***
20	826207	34.2	Ref
<b>Sex</b>			
Male	1167561	21.1	0.739***
Female	1316876	26.6	Ref
<b>Population Group</b>			
African	2162862	21.8	Ref
Coloured	202726	35.5	1.865***
Indian	35246	73.9	10.17***
White	83603	34.2	1.979***
<b>Geographic</b>			
Urban	1292632	30.4	2.118***
Rural	1191805	17.1	Ref
<b>Family Structure</b>			
No Parents	915106	23.0	Ref
One Parent	931828	24.5	1.092***
Both Parents	634535	24.9	1.116***
<b>Parental Education</b>			
No Schooling	247782	16.3	Ref
Primary	449855	10.0	0.571***
Lower Secondary	271554	26.9	1.887***
Upper Secondary	288962	37.1	3.003***
<b>Log Income</b>	2486460		1.561***

\*p<.10, \*\*p<.05, \*\*\*p<.005

Within the age cohort (Table 4.1, Figure 4.1) it is clear that the majority did not have matric as only 14.6% of the 18 year olds, 25.1% of the 19 year olds and 34.2 % of the 20 year olds had completed matric by the survey year. Sex also presented similar trends of matric completeness, where the majority had not completed matric. Within each gender category, 79% and 73% of the males and females respectively had not completed matric. The log odds of the 18 year olds having matric on time were significantly lower (odds ratio 0.328) when compared to the 20 year olds while for the 19 year olds, the odds decreased by 35% (odds 0.646). The sex control variable showed a female advantage, with males less likely to complete matric on time relative to females (odds 0.739).

Revealing from Table 4.1 is that matric completeness varies by population group with the highest rate of completion observed amongst the Indians (73.9%),

followed by the Coloureds (35.5%), Whites (34.2%) and Africans 21.8%. These differences in rate of matric completion were also reflected in the odds ratios where relative to Africans, Indians were up to 10 times more likely to have matric, while for the Coloureds and Whites the odds of having matric increased by a factor of approximately 2. These large odds ratios (Indian) can be attributed to the small sample sizes for the Indian population (10 out of 1821) (Greenland, Schwartzbaum, and Finkle, 2000). When one group is as small as in this case, there is a possibility that the regression co-efficients might under or overestimate the effect. Hence, it was useful and instructive to run further analyses, excluding Indian and also collapsing the other three race categories into one category named 'Other'. In the model that compared African and other, the results illustrated that 'Other' were up to two times more likely to have matric while the model which excluded Indian presented similar comparisons between Africans and Coloureds and Africans and Whites.

As indicated in Chapter 3, geotype was chosen as an indicator of residence and was recoded into urban and rural. The results revealed that 30.4% of the 18, 19 and 20 year olds in urban areas had matric as opposed to 17.1% of those in the rural areas. These differences were reflected in the odds ratios which showed that urban dwellers were twice as likely to have matric when compared with rural dwellers.

The theoretical framework adopted in this study sees cultural capital as a major explanatory variable for making the successful initiation to post-secondary schooling. The following indicators were included in this study as measures of cultural capital: whether the individual lived with one, both or no parent; parental education and household income. Family structure had a very low impact on matric completeness given there was less than a one percentage difference in the matric completeness rate of individuals who live in a two parent family (24.9%), one parent family (24.5%) and a no parent family (23%). Regarding the logistic regression, the presence of both parents increased the probability of finishing matric by a factor of 1.116 (that is 11.6%) when compared to living with no parents and by about 9% when living with one parent.

Approximately 37% of the individuals who had a parent with upper secondary education had matric, while only 27% of the offspring of parents with lower secondary education, 10% with primary and 16% with no schooling had completed matric by the survey year. The logistic regression to predict the effect of parental education on matric completeness results are consistent with the literature (Lam and Branson 2014; Chevalier, Harmon, O'Sullivan and Walker 2013; Bernadi and Requena 2010), and indicate that individuals whose parents at least have upper secondary education are significantly more likely to have matric than those whose parents have lesser education. There was high level of matric completion among those individuals from households with high income. (odds 1.561). In essence, the models estimated in Table 4.1 give the same substantive conclusion that higher parental education level and higher household income influences the likelihood of completing matric on time. Further, matric completion increases with age and females are more likely to have matric as relative to males.

Understanding the individual effects of the family background and demographic variables was the first step in understanding factors affecting matric completion among the 18, 19 and 20 year olds in this inquiry. However, simply focussing on individual effects might lead to conclusions on variations that do not exist, or mask differences which do exist amongst the factors being investigated. In order to consider the joint compositional effects, nested models were estimated. The results from the nested models are presented in Tables 4.3-4.7.

### **4.3 Nested Models**

Table 4.2 below presents findings from the eight logistic models that were explored to examine the impact of family capital on the likelihood of completing matric on time and dropping out. The nested logistic models yielded largely statistically significant results. The aim for exploring nested models was to examine changes in the effect of family capital on educational attainment as more explanatory variables were controlled. The interpretation of the findings of Models 2-7 is linked to the results observed in the independent models presented in Table 4.1 as well as Model 1 which includes age and gender indicators only.

**Table 4.2. Nested logistic model on the odds for matric completeness, NIDS 2012**

Variable	Model I (N=2484438)		Model II (N=2484436)		Model III (N=2484437)		Model IV (N=2481470)		Model V (N=2481481)		Model VI (N=1258151)		Model VI (N=1258161)	
	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE
<b>Age</b>														
20(ref)	0.323***	0.004	0.315***	0.004	0.321***	0.004	0.317***	0.004	0.268***	0.004	0.391***	0.005	0.393***	0.005
18	0.647***	0.004	0.668***	0.004	0.677***	0.004	0.661***	0.004	0.620***	0.004	0.697***	0.006	0.690***	0.006
19														
<b>Sex (Female (ref))</b>														
Male	0.715***	0.003	0.745***	0.003	0.756***	0.003	0.754***	0.003	0.651***	0.004	0.473***	0.005	0.456***	0.005
<b>Population Group</b>														
African(Ref)														
Other			2.406	0.004	1.938***	0.004	2.054***	0.004	1.266***	0.005	1.974***	0.008	1.726***	0.008
<b>Place of Residence</b>														
Rural (Ref)														
Urban					1.808***	0.003	1.826***	0.003	1.688***	0.003	2.256***	0.005	2.238***	0.005
<b>Family Structure</b>														
No Parent(ref)														
One Parent							1.121***	0.004	0.961***	0.004				
Both Parents							0.854***	0.004	0.599***	0.004				
<b>Income log</b>									1.611***	0.002			1.157***	0.002
<b>Parental Education</b>														
No Schooling(ref)														
Primary											0.541***	0.008	0.516***	0.009
Lower Secondary											1.919***	0.007	1.835***	0.007
Upper Secondary											3.156***	0.007	2.912***	0.007
<b>Log-likelihood</b>	<b>2631296.83</b>		<b>2587827.60</b>		<b>2550658.63</b>		<b>2549411.21</b>		<b>2401246.18</b>		<b>1201812.92</b>		<b>1198349.99</b>	

\*p<0.10, \*\* p<0.05, \*\*\*\* p<0.005

Model 1 estimated the odds of completing matric on time while controlling for age and gender and shows that the odds of having matric were significantly lower for youngest cohort when compared to the 20 year olds (odds 0.323) while for the 19 year olds, the odds of having matric decreased by a factor of 0.647. However, the age effects for the 19 year olds slightly increased from the first model when the population group, place of residence, family structure and parental education variables were added to the model while they decreased for household income. The sex control variable revealed a female advantage, with males less likely to complete matric on time relative to females (odds 0.715 in model 1) and this increased in models 2 and 3 and 4, and decreased when parental education and household income were added to the model.

Given the unequal distribution of the population group variable, the following categories were truncated into one category labelled other: White, Indian and Coloured. Hence, from this point onwards, all the regression models estimated used the truncated measure for population group. In model 2, there was a higher likelihood (2.406) of the other races having matric when compared to Africans controlling for all other variables in the model. This trend continued when the other variables were added to the model, although this effect (1.266 in model 5) decreased drastically when household income was added to the model, indicating the probable correlation between income and population group. Likewise, individuals who live in urban areas were up to 1.8 times more likely to have matric and this increased to up to 2.2 times when parental education was controlled for. However, the effect decreased in model 5 (when compared to model 3 and 4) when household income was added (1.688).

Model 3 included indicators of whether the individual lived with one, both or no parent. In this model, there was an unusual effect, namely that the presence of both parents reduces the likelihood of having matric by about 15% compared to those living with none of their parents, while living with one parent increases the likelihood by about 12% relative to living with none of the parents. Noteworthy, is the fact in the independent model, co-residence with both parents or one parent had a positive effect on high school completion relative to not living with parents. Hence, this

variation in the effect could be due to the influence of other variables such as gender, population group and place of residence.

The addition of parental education altered the size and significance of the family structure variable. This was largely because of the large missing values in the parental education variable which when cross tabulated with family structure had only one subject co-resident with both parents. Hence, there was underreporting on parental education from individuals who lived in two parent families. Therefore, the two variables were not added to the same model. Consequently, model 5 included the income variable of interest, and the results in model 5 show that individuals in better off households were significantly more likely to complete matric (61% more) than those in poorer households.

The final two models included parental education, and excluded family structure. There was a strong positive effect of parental education on matric completion and this is clearly demonstrated for individuals whose parents have at least have upper secondary or lower secondary education. This effect was consistent in models 6 and 7, in terms of magnitude and direction. However, for the offspring of parents with at least a primary education, the odds decreased by 46% (model 6) and 48% (model 7). The effect of Household Income reduced when parental education was included. In model 7, the effect of household income reduced to a factor of 1.157 from 1.611 in model 5. However, and in spite of the reduction in effect, there is still some evidence that high household income has a protective effect on high school completion, even when other factors are taken into consideration. Revealing from models estimated in Table 4.2 is that the influence of age, gender, race, place of residence and household income remain key in predicting the probability of completing matric on time, net and inclusive of all the other sources of variation in the population.

Given the aim of the study was to explore the significance of sex in the high school completion, a separate regression analysis was conducted for the female and male population. The rationale for doing the separate regression was to explore the issue of socio-economic ubiquity. As indicated in **Chapter 2**, most analyses of educational inequality have focused on differences between boys and girls. Such analyses, albeit relevant, makes the assumption that sex differences in educational

attainment are ubiquitous among girls in all socio-economic groups. Further, this study acknowledges that the options and decisions regarding education differ significantly for males and females. Hence, by running separate regression analyses for the female population, the study raises the relative importance of sex vis a viz socio-economic background.



**Table 4. 3Nested model Matric Completeness for the female population**

Variable	Model I (N=1316876)		Model II (N=1316877)		Model III (N=1316876)		Model IV (N=1316875)		Model V (N=1316880)		Model VI (N=639693)		Model VII (N=639692)	
	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE
Age														
20(ref)														
18	0.278***	0.005	0.272***	0.005	0.275***	0.005	0.276***	0.005	0.254***	0.005	0.264***	0.008	0.256***	0.008
19	0.715***	0.005	0.761***	0.005	0.778***	0.005	0.751***	0.005	0.764***	0.005	0.620***	0.007	0.611***	0.007
Population Group														
African(ref)			2.178***	0.005	1.753***	0.006	2.008***	0.006	1.421***	0.006	1.760***	0.011	1.827***	0.012
Other														
Place of Residence														
Rural(ref)					1.806***	0.004	1.843***	0.004	1.769***	0.005	2.635***	0.006	2.641***	0.006
Urban														
Family Structure														
No parents(ref)														
One Parent							0.899***	0.005	0.859***	0.005				
Both parents							0.638***	0.006	0.518***	0.006				
IncomeLog									1.552***	0.002			0.938***	0.003
Parental education														
No Schooling (Ref)											0.520**	0.010	0.532**	0.010
Primary											0.869*	0.009	0.883**	0.009
Lower Secondary											2.563**	0.009	2.651**	0.009
Upper Secondary														
<b>Loglikelihood</b>	<b>1451681.58</b>		<b>1431010.98</b>		<b>1412824.67</b>		<b>1405940.64</b>		<b>1305041.88</b>		<b>665670.929</b>		<b>665304.109</b>	

\*p<0.10, \*\* p<0.05, \*\*\*p<0.005

In general, and just like in the combined model, the analysis produced results with odds ratios in the same direction and with generally similar magnitudes for the female population. The 18-year-old females were predicted to be less likely to have matric (odds 0.278) than the older cohorts while for the 19 year olds the odds were 0.715 relative to the 20 year olds. Similarly, the trend was consistent when the other variables are added to the model. Perhaps, what is worth noting is that the age effects were slightly lower for the female population alone (0.278), than for the combined population (0.323), while for the 19 year olds, the age effects slightly increased from the full model (0.647 vs. 0.715). However, parental education seemed to further lower the negative age effects for the 19 year olds from the first model where they were only 28.5% less likely to have matric, and in the seventh model where the effect became 38.9% less likely to have matric. Race also exhibited similar effects to the combined model, where the combined White, Indian and Coloured group was up to two times more likely to have matric than the Africans across all models, although the addition of household income significantly decreased the race effect. It is important to also note that this reduction in the parameter estimate for race when household income was added is consistent with the combined model.

Regarding place of residence, urban dwellers had better odds of having matric, which increased the most when parental education was added by a factor of 2.635. The family structure indicator illustrated those individuals residing with both parents or with one parent were less likely to have matric when compared to those who did not reside with their parents. The odds were 0.899 (one parent families) and 0.638 (for two parent families). The effect of family structure was also consistent when household income added.

The income measure presented similar findings to the independent and combined models, suggesting that higher income has both an independent and nested positive effect of high school completion. Nevertheless, this effect was significantly reduced by the parental education measure to a factor of 0.938. Parental education revealed that the odds of having matric increase by a factor of 2.563 if the parent has at least upper secondary education and decreased for both lower secondary (0.869) and primary (0.520) when moving from the lowest level- no schooling. Hence, parental lower secondary education behaved differently from the

combined model where the odds of completing matric for the offspring of lower secondary educated parents was positive with a factor of 1.919. These parameter effects were also sustained (both direction and magnitude) in Model 7 when the household income indicator was added to the model.

In spite of the slight variation, the findings from the female only model reinforce the effect of age, race, residence and parental upper secondary education on matric completion. Hence, being 18 or 19, African, and living in a rural area are factors negatively correlated with completion of matric, while having a parent with upper secondary increases the likelihood of having matric.

**Table 4. 4 Nested model Matric Completeness for the male population, NIDS 2012**

Variables	Model I (N=1167562)		Model II (N=1167560)		Model III (N=1167565)		Model IV (N=1164596)		Model V (N=1164597)		Model VI (N=618463)		Model VII (N=618468)	
	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE
Age														
20(Ref)														
18	0.397***	0.006	0.385***	0.006	0.396***	0.006	0.391***	0.006	0.337***	0.006	0.571***	0.008	0.502***	0.009
19	0.567**	0.006	0.556**	0.006	0.557***	0.006	0.554**	0.006	0.460**	0.006	0.863**	0.009	0.710**	0.010
Population Group														
African (Ref)			2.950**	0.007	2.379**	0.007	2.178**	0.007	1.279**	0.008	1.879**	0.012	1.196**	0.013
Other														
Place of Residence														
Rural (Ref)														
Urban					1.842**	0.005	1.852**	0.005	1.525**	0.005	1.982**	0.008	1.894**	0.008
Family Structure														
No parents(Ref)														
One Parent							1.305**	0.006	1.305**	0.006				
Both parents							1.474**	0.006	0.843**	0.007				
Income log									1.726	0.003			1.493	0.004
Parental education														
No Schooling (Ref)											0.206**	0.026	0.200**	0.026
Primary											5.776	0.012	5.180**	0.013
Lower Secondary											5.182**	0.012	4.042**	0.012
Upper Secondary														
<b>Loglikelihood</b>	<b>1174291.92</b>		<b>1148616.38</b>		<b>1132919.30</b>		<b>1126991.95</b>		<b>1086058.21</b>		<b>498883.757</b>		<b>489878.074</b>	

\*p<0.10, \*\*p<0.05, \*\*\*p<0.005

The results from the nested models for matric completion for the male population show that males aged 18 were 60% were less likely to have matric while the 19 year olds were about 43% less likely relative to the 20 year olds. Thus, the negative age effects were greater in magnitude for the females (in tabled 4.3) than the males (Table 4.4). Further, there were larger differences between the age cohorts for the female population (0.278 for 18 year olds; 0.715 for 19 year olds) than for the male population (0.397 for 18 year olds; 0.567 for 19 year olds) or the combined model (0.323 for 18 year olds; 0.647 for 19 year olds). The parameter estimates for population group illustrate that the males from the combined race group were approximately 3 times more likely to have matric relative to African males if controlling for age and gender alone. This effect was however significantly reduced by the income measure. Place of residence was also a significant predictor of matric completion for the male population as for the female and combined models and reveals higher probabilities of not having matric for males who live in rural areas relative to those who live in urban areas. However, and unlike for the females, having co-resident or single parents had a positive effect on matric completeness. Where both parents were resident, the probability of having matric was about 30% more while for those who lived with single parents the odds were 47% more compared to those with non-resident parents. Household income shifted the direction of this effect for the co-resident parent structure. Males with co-resident parents were 16% less likely to have completed matric when compared to those whose parents were non-resident. However, the lone parenthood effect remained positive and reveals that males living with single parents are 30% more likely to have matric relative to those with non-resident parents.

Unlike in the combined and female only models, household income had a strong discernible relationship with matric completeness even when parental education was brought into the model. A unit increase in household income increased the likelihood of having matric for the male population by up to 73% in model 5 and 49% in model 7 which includes parental education. The parental education variable behaved differently for the male population and shows the strongest influence of the three models (combined, female and male). The male offspring of parents with upper secondary were up to five times more likely to have matric relative to those whose parents had no schooling, while the children of

parents with at least lower secondary education had a high school completion probability of close to six times. However, parental primary education exhibited a negative effect (the weakest of the three models, combines, female and male only models). Males whose parents had primary education were 79% less likely to have matric relative to those whose parents have no schooling. The effect of parental education was consistent when household income is added.

Overall, the regression analyses for the male population presents similar findings to the combined and female only models which differ in magnitude for age, population and, residence effects. Family structure behaved differently in the male model, while parental education showed the strongest effect when compared to the other two nested models. Household income also behaved differently in the male only nested model and exhibited a stronger positive effect in all models. Consistent across the three nested models is that there was a strong and positive relationship between parental upper secondary education and high income with matric completeness.

#### **4.5 Regression Models with imputed data**

As indicated in **Chapter 3**, there were large amounts of missing data on some of the variables used in this investigation. The analysis presented so far used the default method in SPSS where only complete cases were included in the analysis. Some of the challenges involved in using listwise deletion were discussed in Chapter 3. The ensuing analysis addresses the question:

- What influence does missing data have on the models estimated in Tables 4.1-4.3?

To address the likely bias resulting from missing data, Multiple Imputation was used. In the absence of supplementary information on the missing data, the missing values for the family structure and parental education were imputed using several variables available in the full data set:

age, gender, population group, place of residence, whether the individual was currently enrolled, family structure and the dependant variable, high school completion.

Von Hippel (2007) recommends including the dependent variable in multiple imputation. This is because when the dependent variable is excluded from the imputation model, the imputed values will not have the same relationship to the dependent variable that the observed values do, a situation which artificially reduces the strength of the relationship between the independent and dependent variables". Moreover, to avoid further biases, he recommends not using the imputed values of the dependent variable as they do not provide additional information, and introduces additional error.

Multiple imputation uses a series of chained equations to insert a value into the missing item based on the existing information in the data set (Schafer and Graham 2002). This process is repeated  $M$  times to produce a series of complete datasets which vary slightly on the value estimates for the missing data. Although there is no agreed upon limit of imputations to produce stable and accurate p-values- a few guidelines are provided. Roystone and White 2011; Bodner (2008), and Allison 2002 advise that the number of imputations should be proportionate with the percentage of missing data in the sample. Graham (2012) advises that at least 40 imputations should be used for data with 50% missing cases. Using these guidelines, 50 imputations were estimated and the pooled effect reported. The Pseudo R Squares from the 50 imputations were also averaged to get the final  $R^2$ .

**Table 4.5 Logistic regression for matric completeness with imputed data, combination model (NIDS 2012)**

Variable	Model I (N=2484437)		Model II (N=2484437)		Model III (N=2484437)		Model IV (N=2484437)		Model V (N=2484437)		Model VI (N=2484437)		Model VII (N=2484437)	
	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE
<b>Age</b>														
20 (Ref)														
18	0.323***	0.004	0.315***	0.004	0.321***	0.004	0.316***	0.004	0.283***	0.004	0.297***	0.039	0.272***	0.043
19	0.647***	0.004	0.668***	0.004	0.677***	0.004	0.661***	0.004	0.617***	0.004	0.680***	0.044	0.643***	0.045
<b>Sex (Female, Ref)</b>														
Male	0.715***	0.003	0.745***	0.003	0.756***	0.003	0.752***	0.003	0.666***	0.003	0.728***	0.027	0.653***	0.031
<b>Population Group</b>														
African (Ref)			2.406***	0.004	1.938***	0.004	2.059***	0.004	1.357***	0.005	1.910***	0.119	1.264***	0.083
Other														
<b>Place of Residence</b>														
Rural (Ref)					1.808***	0.003	1.824***	0.003	1.648***	0.003	1.705***	0.029	1.573***	0.029
Urban														
<b>Family Structure</b>														
No Parents (Ref)														
Both Parents							0.853***	0.005	0.632***	0.005				
One Parent							1.119***	0.004	1.037***	0.004				
<b>Log of income</b>														
									1.613***	0.002			1.516***	0.035
<b>Parental Education</b>														
No Schooling (Ref)											0.738	0.314	0.681	0.266
Primary											1.727**	0.197	1.630**	0.217
Lower Secondary											2407***	0.211	2.097***	0.254
Upper Secondary														
<b>Loglikelihood</b>	<b>2631296.83</b>		<b>2587827.60</b>		<b>2554729.31</b>		<b>2550207.11</b>		<b>2469677.75</b>		<b>2477989.68</b>		<b>2416375.28</b>	

\*p<0.10, \*\*\*p<0.05, \*\*\*\*<0.005



***Continuation of imputed model including parental education and family structure***

Variable	Model VII		Model IX	
	OR	SE	OR	SE
Age				
20 (Ref)				
18	0.289***	0.032	0.264***	0.027
19	0.674***	0.032	0.630***	0.029
Sex				
Female( Ref)				
Male	0.721***	0.022	0.643***	0.026
Population				
Group				
African (Ref)	1.906***	0.042	1.314***	0.039
Other				
Place of				
Residence				
Rural (Ref)	1.689***	0.031	1.564***	0.026
Urban				
Family Structure				
No Parents (Ref)				
Both Parents	1.072	0.578	0.805	0.530
One Parent	1.134***	0.040	1.041	0.037
Parental				
Education				
No Schooling	0.698	0.285	0.628	0.295
(Ref)	1.872***	0.205	1.674**	0.205
Primary	2.808***	0.201	2.319***	0.197
Lower				
Secondary				
Upper				
Secondary				
Log of Income			1.539	0.016
<b>Loglikelihood</b>	<b>2463305.28</b>		<b>2400925.70</b>	

\*p<0.10, \*\*\*p<0.05, \*\*\*\*p<0.005

**Table 4.6 Logistic regression for matric completeness with imputed data, female population, (NIDS 2012)**

Explanatory variable	Model I (N=1316875)		Model II (N=1316875)		Model III (N=1316875)		Model IV (N=1316875)		Model V (N=1316875)		Model VI (N=1316875)		Model VII (N=1316875)	
	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE
Age														
20 (Ref)														
18	0.278***	0.005	0.272***	0.005	0.275***	0.005	0.276***	0.005	0.254***	0.005	0.252***	0.056	0.234***	0.054
19	0.715***	0.005	0.761***	0.005	0.778***	0.005	0.751***	0.005	0.764***	0.005	0.759***	0.052	0.773***	0.051
Population Group														
African(Ref)														
Other			2.178***	0.005	1.753***	0.006	2.008***	0.006	1.421***	0.006	1.760***	0.122	1.256**	0.101
Place of Residence														
Rural (Ref)														
Urban					1.806***	0.004	1.843***	0.004	1.769***	0.005	1.722***	0.030	1.676***	0.031
Family Structure														
No parents (Ref)														
Both parents							0.638***	0.006	0.518***	0.006				
One Parent							0.899***	0.005	0.859***	0.005				
Log of income									1.552***	0.002			1.471***	0.031
Parental education														
No Schooling (Ref)														
Primary											0.731	0.222	0.667	0.260
Lower Secondary											1.141	0.205	1.076	0.247
Upper Secondary											2.170**	0.303	1.930*	0.365
<b>Loglikelihood</b>	<b>1451681.58</b>		<b>1431010.98</b>		<b>1412824.67</b>		<b>1405940.64</b>		<b>1366698.01</b>		<b>1373686.53</b>		<b>1343693.29</b>	

\*p<.10, \*\*p<.05, \*\*\*p<.005

***Continuation of imputed model including parental education and family structure***

Variable	Model VIII (N=1316875)		Model IX (N=1316875)	
	OR	SE	OR	SE
Age				
20 (Ref)				
18	0.248***	0.048	0.231***	0.044
19	0.744***	0.038	0.754***	0.036
Population Group				
African (Ref)				
Other	1.884***	0.050	1.369***	0.050
Place of Residence				
Rural (Ref)				
Urban	1.721***	0.033	1.688***	0.031
Family Structure				
No Parents (Ref)				
Both Parents	0.733	0.509	0.592	0.482
One Parent	0.947	0.051	0.889**	0.049
Parental Education				
No Schooling (Ref)				
Primary	0.682	0.267	0.601*	0.276
Lower Secondary	1.122	0.201	1.005	0.207
Upper Secondary	2.410***	0.235	2.038***	0.238
Log of Income			1.510	0.020
<b>Loglikelihood</b>	<b>1364210.67</b>		<b>1331239.44</b>	

\*p<.10, \*\*p<.05, \*\*\*p<.005

**Table 4.7 Logistic regression for matric completeness with imputed data, female population, (NIDS 2012)**

Explanatory variable	Model I (N=1167562)		Model II (N=1167562)		Model III (N=1167562)		Model IV (N=1167562)		Model V (N=1167562)		Model VI (N=1167562)		Model VII (N=1167562)	
	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE
Age														
20 (Ref)														
18	0.397***	0.006	0.385***	0.006	0.396***	0.006	0.387***	0.006	0.335***	0.006	0.358***	0.044	0.321***	0.061
19	0.567***	0.006	0.556***	0.006	0.557***	0.006	0.554***	0.006	0.460***	0.006	0.582***	0.062	0.493***	0.067
Population Group														
African (Ref)			2.950***	0.007	2.379***	0.007	2.193***	0.007	1.280***	0.008	2.265***	0.115	1.307***	0.060
Other														
Place of Residence														
Rural (Ref)														
Urban					1.842***	0.005	1.845***	0.005	1.521***	0.005	1.752***	0.055	1.498***	0.055
Family Structure														
No parents (Ref)														
Both parents							1.297***	0.008	0.838***	0.006				
One Parent							1.470***	0.007	1.302***	0.005				
Log of Income									1.731***	0.003			1.625***	0.060
Parental education														
No Schooling (Ref)														
Primary											0.568	0.928	0.539	0.790
Lower Secondary											2.903***	0.354	2.736***	0.322
Upper Secondary											2.840***	0.328	2.373***	0.285
<b>Loglikelihood</b>	<b>1174291.93</b>		<b>1148616.38</b>		<b>1132919.30</b>		<b>1128052.37</b>		<b>1086594.99</b>		<b>1079686.92</b>		<b>1046027.10</b>	

\*p<.10, \*\*p<.05, \*\*\*p<.005

***Continuation of imputed model including parental education and family structure***

Variable	Model VIII (N=1167562)		Model IX (N=1167562)	
	OR	SE	OR	SE
Age				
20 (Ref)				
18	0.351***	0.035	0.314***	0.032
19	0.589***	0.054	0.495***	0.053
Population Group				
African (Ref)				
Other	2.023***	0.068	1.272***	0.061
Place of Residence				
Rural (Ref)				
Urban	1.731***	0.055	1.484***	0.050
Family Structure				
No Parent (Ref)				
Both Parents	1.871	0.818	1.269	0.757
One Parent	1.353***	0.067	1.222***	0.061
Parental Education				
No Schooling (Ref)				
Primary	0.517	0.703	0.489	0.710
Lower Secondary	3.478***	0.362	3.114***	0.361
Upper Secondary	3.486***	0.201	2.772***	0.315
Log of Income			1.607	0.027
<b>Loglikelihood</b>	<b>1066855.06</b>		<b>1037760.91</b>	

\*p<.10, \*\*p<.05, \*\*\*p<.005

To evaluate the fit of the MI models estimates, the results were compared to the models fitted in Tables 4.1-4.4. The purpose was to assess if there was any deviation in the results in terms of odds ratios and standard errors. Large deviations in these parameters would indicate the inadequacy of MI for the analysis of this data set.

From the data sets with multiple imputations, the models which included age, gender, race and place of residence and household income were generally consistent in terms of statistical interpretation with models estimated in Tables 4.1-4.4, even when the imputed variables were added to the models. There was little statistical difference in the odds ratios and standard errors between the models with incomplete data and those with complete data on these variables. However, the imputation significantly altered standard errors and p-values for the parental education variable. The effect on the p-values was more prominent for parental primary education and lower secondary education which became insignificant in both the female only and the combined models. In the models estimated with missing data, the parental education variable had a net effect which was not affected by the addition of other variables. It is also important to note that parental education was not included in the same models with family structure in the models estimated in tables 4.1-4.4, since it significantly reduced the sample size and therefore affecting the significance of these two variables. Thus, the insignificant results when parental education was added to the models with imputed data could be attributed to the nature of missing data on this variable. The inconsistencies in the significance of the predictors and the standard errors could also result from the non-random pattern in which cases are dropped for the complete case analysis in SPSS. Essentially, this has the potential to alter the joint distribution among the variables. Further, listwise deletion produces unbiased estimates if the data is MCAR (Schafer and Graham 2002). Unfortunately, missing data is rarely MCAR and in this analysis, the logistic regression of missingness illustrated that the missing mechanism could be explained by the associations in the dataset. This element could also explain the differences in standard errors as well as significance levels.

Despite the shortcomings, the conclusions for the models estimated using the imputed data were broadly the same as for the models with missing data in tables 4.1-4.4. The factors associated with matrix completeness were similar in the

independent, nested with missing data as well as with imputed data models. Age, gender, race, residence, household income and parental upper secondary education had a both an independent and joint effect on matric completeness while family structure is a non-significant model. Parental education, especially primary and lower secondary education were not significant with imputed data. It must be noted that these insignificant insignificant results, do not necessarily mean a null effect on matric completeness. Rather, this should be interpreted to mean that the data does not provide credible evidence that offspring of parents with primary or lower secondary education have better odds of completing matric relative to children of parents with no schooling.

#### **4.6 Concluding remarks**

It is apparent from the analysis in this chapter that there are many sources of variation in matric completion. The findings are consistent with the literature presented in Chapter 2 regarding sex convergence in education, with females attaining higher levels of education up to matric than males. There is increased matric completeness from individuals from more advantaged socio-economic backgrounds as observed in the models estimated in this chapter. Thus in essence, the findings provide insight into 'who' completes matric on time and the effect of family background on this transition. These findings are consistent for both the combined population and when females are compared against each other.

# Chapter 5

## Discussion and Conclusions

### 5.0 Introduction

The purpose of this inquiry was to address the principle question of the significance of sex in high school completion in South Africa. Family background variables such as parental education, family structure and household income as well as demographic factors such as race and place of residence were used as explanatory variables. In general, the analysis revealed that high school completion is stratified by these factors, as well as other demographic factors such as sex, race and place of residence. The literature reviewed in Chapter 2 has highlighted empirical associations between parental education, socio-economic status and sex in children's educational outcomes. Using the NIDS 2012 dataset, the present inquiry has provided a comprehensive analysis of the factors affecting matric completion on time amongst individuals aged 18, 19 and 20 in South Africa.

The following specific questions framed the study:

- iii) Are there any sex differentials in high school completion rates in South Africa by sex?
- iv) What is the contribution of family background and other socio-demographic factors to the overall educational inequality in high school completion?

These questions were answered by examining the relationship between socio-cultural factors such as parental education, family structure and household income, focusing on how these affect educational attainment differently for males and females. The study looked at the extent to which completing matric, was due to variations in parental education, and income, while controlling for gender and age. It has been consistently demonstrated by the models fitted in Chapter 4 that the association between sex and matric completion favours females. This effect was consistent even when other factors were controlled for. Chapter 5 discusses the findings in detail and provides links with the literature discussed in Chapter 2. The results can be summarised as follows:



## General

- Most the 18,19 and 20 year olds do not complete matric on time.

### Research Question 1: Are there sex differences in high school completion?

- There is a female advantage in high school completion.

### Research Question 2: What is the contribution of family background and other socio-demographic factors to the overall educational inequality in high school completion

- Africans and those who live in rural areas are less likely to complete matric on time.
- Family structure has a minimal effect on matric completion which disappears when other factors are controlled for.
- Parental education, especially upper secondary has both an independent and joint effect on matric completion.
- Higher household income increases the chances of completing matric on time.

## 5.1 High School Completion

Since the demise of apartheid in South Africa, the government has made concerted efforts to redress the past inequalities in access to education. Access to basic education up to grade 9 was made a constitutional right (South Africa Constitution 1996, Section 29). Consequently, participation at primary and secondary school levels has improved. Despite such interventions, the analysis in this study reveals many learners do not complete matric on time with only 27% of the population having completed matric on time. Age was also a significant explanatory factor, as out of the three age cohorts, the 18 year olds were the least likely to have completed matric on time. As indicated in **Chapter 2**, the age of a child entering grade 1 is age five turning six by 30 June in the year of admission (Education Laws Amendment Bill, section 5 of Act 50, 2002). Thus, if a child does not repeat a grade, he or she should be 17 or 18 years old when he or she matriculates (Strassburg et al. 2010). In the absence of other measured potential sources of variation, the

following assumptions are made. First, this inquiry seems to suggest that many learners probably start school much later, perhaps at ages seven or even eight. Second, there is a possibility that some learners repeated grades hence, they did not manage to complete high school on time. Lam and Branson (2014) argue that grade repetition is a significant feature of the South African education system which has socio-cultural and socio-economic aspects. As such, it would be important to investigate the effect of grade repetition on completing matric on time. However, and although this data was available, it was beyond the scope of the present inquiry study.

In general, high school graduation or completion is inherently linked to success in later life. This is because matric completion in South Africa is a requisite for tertiary education (Stats SA 2014), which as indicated in Chapter 2, has higher economic returns (Branson et al. 2012; Temine and Levine 2009). Thus, the low high school completion rate is of concern to this study because it is an indication that many young people do not make the transition from secondary to post-secondary education. Such young people face an uncertain future without work and life skills (Lynch et al. 2014; Inoue et al. 2013). By consequence, their lack of work and life skills affect their ability to get good jobs in desirable occupations, resulting in low and unstable incomes while exposing them to potentially long periods of unemployment (Ibid). It is generally accepted that high school dropouts and those with less than a matric education earn significantly less than those who have completed high school and or have a tertiary qualification. The survey by Stats SA (2010) revealed that in 2010, the median monthly earnings for those with primary education was R1500, high school drop outs, R1993, secondary education, R3500 and while those with a tertiary education the median was R10 000. Moreover, data from Stats SA (2014) also shows that those with less than matric are three times more likely to be unemployed than individuals who have matric or have a tertiary qualification. Thus, people who do not have at least matric are likely to live in poverty.

This *status quo* does not only affect the individual learners, but as has been highlighted in **Chapter 2**, the cumulative effect is felt at the familial and national level. In times of accelerated technological change, modern societies respond to economic competition by increasing the proportion of higher education graduates and this can be done if access to post-secondary education is widened (Muller and

Schneider 2013). Currently, South Africa experiences an intractable phenomenon of NEETs estimated to constitute 50% of the population aged 18-24 (Stats SA 2015; Kraak 2013). Phaahla (2015) also notes that the number of people who receive social grants has doubled from 8 million in 2004 to 16 million in 2014. This status quo is largely attributed to unemployment and is estimated to cost 3.8% of the Gross Domestic Product. The Youth unemployment subsidy covering those aged 18-29 was announced to cost more than R5 billion in tax expenditure between 2011 and 2014. (Novendwe and Odeku 2014; National Treasury 2011). Thus in essence, people who do not complete matric present an economic burden to the country, rather than becoming productive and contributing members of the society (Lynch et al. 2014; Kraak 2013). As well, not completing high school also produces and reproduces cycles of poverty. “The adverse effects of staying out of school will also be felt by the next generation, since these youth’s poor economic outcomes will hurt their ability to provide favourable opportunities for their own children” (Inoue et al. 2013, 1).

## **5.2 Female advantage**

The notion of the sex differentials, the poorer access to education for girls often dominates debates about education equality. This is largely because, and especially in the developing world, fewer girls than boys have historically enrolled in primary school, and most dropped out frequently, creating a widening gap in secondary education (Njogu and Orchardson Mazrui 2005; Kinias and Kim 2012). Further, the South African society is largely patriarchal, and women and girls have had a lower status which was reflected in education (Akala and Divala 2016; Njogu and Orchardson-Mazrui 2005). Although South Africa was part of the international conventions to eradicate gender inequality before it became a democracy, it was not until 1994 that concerted efforts were made to redress gender and other forms of inequality. The increasing commitment to education, affirmed under various policies and legislations such as ‘no fee’ schools and compulsory education up to grade 9 (South African Schools Act, no. 84 of 1996) have not only contributed to the high enrolment rates in compulsory education (grade 1-9), but have seen the growth of the secondary education system and now a seeming commitment to post-secondary education. Consequently, significant progress has been made towards achieving this

mandate. In fact, if participation only is used as a measure of equality, the gender gap in education has not only closed in South Africa, but a slight reversal is witnessed with more females persisting to higher grades than their male counterparts; 33% females with lower secondary education compared to 32% for males and 14% with matric compared to 10% males. While this reversal is not significantly high, it is a sign that the education of girls is being taken seriously in South Africa. Based on the log odds, the probability of females completing matric on time is generally higher than males, and seems to increase when other variables are added to the model. These findings are supported by Lam and Branson (2014) who found, using the NIDS data that females progress through education faster than males, although the gender differences are small.

Broadly speaking, these findings suggest the efforts to reduce gender inequality have paid off. Eloundou-Enyegue et al. (2009) and Grant and Berman (2010) note that such a *status quo* raises new questions about the continued relevance of gender for educational inequality. When faced with such evidence that favour rather than discriminate against females, the temptation is to conclude that gender is no longer significant. However, Eloundou-Enyegue et al. (2009) as discussed in **Chapter 2**, caution against such a shift, especially in SSA. This is because, for such a shift to be justified, the magnitude of the gender gap, should be taken into consideration, as well as whether such as a gap is irreversible. Regarding magnitude, both the percentile and odds differences are very small. It is only when family background factors (discussed below) are brought into account that very huge differences in the odds are observed. In other words, focusing on gender alone does not adequately reveal the magnitude of the inequality and hence co-exists with other forms of inequality (Blau et al. 2008). This finding confirms the hypothesis that family background of an individual has a significant bearing on the likelihood of completing high school on time. **Section 5.3.3** provides further explanations of this co-existence. The reversibility of the gender gap was beyond the scope of this study as it requires a longitudinal inquiry rather than the cross-sectional analysis conducted in this study.

### 5.3 Ubiquity of educational inequality

Research on educational equality has often focused on differences between males and females (Eloundou-Enyegue et al. 2009). As discussed in Chapter 2, the polarisation of the sexes excludes the differences among girls and among boys from different backgrounds. Thus, it assumes all girls or all boys experience educational inequality ubiquitously. To mitigate this point, the analysis in this study also looked at possible differences among girls and among boys. This level of analysis also had a further advantage of comparing boys and girls who had the same background characteristics ((Eloundou-Enyegue et al. 2009).

Although in general, this level of analysis produced results which have similar interpretation to the model which compared girls against boys, there were some internal inequalities among girls and among boys, which were masked in the combined model. The results show that there is approximately a 20% difference in the likelihood of completing high school between boys aged 18 and 19 (odds for 18 year olds 0.397; 19 year olds, 0.567). For the female population, the difference in odds between the 18 and 19 year olds is double (approximately 40%) that between their male counterparts. Thus, the effect of age is greater for the 18 year olds females when compared with their 19 and 20-year-old counterparts, yet this is masked when they are females are compared to males. Moreover, for the female population it mattered not that they resided with either one or both parents as the odds were lower relative to not living with both parents. For the male population having a co-resident parent was generally associated with a 30% likelihood of having matric, while having both parents increased the odds by about 47%. However, this effect only disappeared when household income was controlled for. Parental Education had a positive independent effect for the female population as for the male and combined population. However, the strongest effect is observed for the male population who are up to 6 times more times more likely to have matric when one of the parents has a similar level of education. For the females, the highest factor was 2.6, which was lower than the combined and male only models. Residing in rural areas also affected females more, that in did the males or when both males and females are combined.

Essentially, what these findings reveal is that while comparing boys to girls in general points to a female advantage, there are internal inequalities that are masked

by such an inquiry. For instance, girls who live in rural areas, are aged 18 are worse off than their male counterparts from the same backgrounds. Moreover, residence with parents has advantages for males and not for females. This finding supports the notion that parents, when faced with austerity provide social and perhaps financial support for boys than for girls (Levine et al. 2009; Unicef 2015). This is mainly due to inherent prejudices seem to favour males over females.

## **5.4 Explaining the gaps in the transition to post-secondary education- socio-economic status**

### **5.4.1 Socio-demographic issues**

#### *Population group and place of residence*

Residence in urban or rural areas is complicated by racial and socio-economic stratification reflecting South Africa's history. In general, the rural population of South Africa, is overwhelmingly African, while most White and Asian people live in urban areas (Muntingh 2013). The available evidence shows that rural residents are far worse on many indicators such as education, income, school accessibility and even household responsibilities relative to those who live in urban areas (Seekings 2011). In this study, residence in rural areas was negatively associated with failure to complete matric on time. Hence, differences in education attainment between rural and urban dwellers are attributed to racial and socio-economic differences discussed in the ensuing sections.

Race is a contentious issue in South Africa, especially considering its multicultural nature. Research on the 'race effects' on academic achievement in South Africa is robust. It is commonly accepted that pervasive racial disparities in education seem to follow a pattern in which Africans consistently underperform relative to the other racial groups. The results from the present inquiry seem to also lend support to this and show that both African males and females are less likely to complete high school than their counterparts from other racial groups. Moreover, race effects in South Africa are often decentred by their intersection with other forms of inequality. This is because education which is a key to leading a productive life

has a history of disadvantage orchestrated by the apartheid system. Under the apartheid system, education policies were weighted in favour of the white minority, while the Blacks, Coloureds and Indians received an education that was inferior (Timeaus et al. 2013). Moreover, and by extension, this education disadvantage relegated the non -whites, especially of African origin non-white racial groups to the bottom of the income and wealth distributions (Seekings 2011; Lienbrandt, Woolard and Woolard 2007). Although more than twenty years have passed since the demise of apartheid, this previous fragmentation continues to manifest itself (Timeaus et al., 2013). In other words, education during the apartheid was characterised by the under-development of the African population's human capital, which by extension affected their cultural and economic capital. For instance, Stats SA (2010) reports that Africans earned 22% of what their white counterparts earned in 2010. In the context of this study, this cyclic effect of previous inequalities is manifested through African young people not completing high school on time relative to their counterparts from other racial groups. This could be due to African parents not being educated enough and in consequence they fail to be in high paying jobs. From a Bourdieusian point of view, these inequalities created by the apartheid system differently positions individuals in the acquisition of a cultural capital such as high school completion. Simply put, race and class strongly overlap in South Africa.

#### **5.4.2 Family background issues**

The literature reviewed in Chapter 1 and 2 has indicated that household conditions are pivotal in the determining the academic achievement of children (Akee et al. 2010). The following household based characteristics were investigated to determine the strength and nature if the role they play in play in influencing high school completion: family structure, household income and parental education. Following Bourdieu and Coleman's cultural and social capital theories, it was anticipated that:

1. Residence with parents would have a strong positive effect on high school completion
2. High levels of parental education would be linked to high school completion
3. Individuals from better off households were more likely to complete high school

## *Family Structure*

The discussion in Chapter 2 introduced the notion of family structure as a form of social and cultural capital. The argument brought forward was that family structure “moderates the association between parents’ socio-economic status (SES) and their children’s educational attainment (Martin 2012). Thus, the physical presence of both parents is a strong social capital which can transmit human, cultural and financial capital to their offspring. However, the findings in this study were rather disappointing and did not support the theoretical framework adopted. The family structure variable behaved differently in the independent, nested and female only model. In the independent model, individuals with co-resident parents had borderline returns to education (3.5% more likely to have matric) than those whose parents were non-resident, this effect diminished when other factors were controlled for. Interestingly, the lone parent effect on matric completeness was lower relative to the non-resident parent in the independent model but this effect shifted when multilevel modelling was used and became insignificant in the models which used imputed data. Co-resident and lone parent family structures also had lower returns to education for the female population.

Previous research has made a distinction between whether the mother and father lived with the child. Some studies have shown that children in step parent and single father families have lower educational attainment than those who lived with biological parents (Martin 2012; Strohschen et al. 2009). Branson et al. (2012), using the first two waves of the same data set as in the current study, (NIDS 2008 and 2010) found that the mother’s presence had a marginal effect of dropout (lowered the probability of dropping out by three percentage points), while the presence of the father had an insignificant effect. Taken together, the results from the present study, seem to corroborate Branson et al.’s study as they, in general reveal also a marginal effect of both the two-parent family (independent model) and the lone parent family (nested model). Also, importantly, this effect disappears in the combined and female models when nested with parental education and household income (female only model). A few explanations can be brought forward for this status quo. First, having co-resident parents does not necessarily mean high socio-economic status or family stability. For instance, biological parents could have low socio-economic status and hence might not be in a position to transmute this social capital into human,



economic and cultural capital (Martin 2012). Second, there could be other unobserved personality traits that could affect family stability and the transmission of capital to their offspring. For instance, several studies have shown that parental behaviours are significantly associated with children's educational outcomes (Topor, Keane Shelton and Calkins 2010). These behaviours include motivating children to succeed and participating in the educational lives of the children (Topor et al. 2010; Martin 2012). Third, the residence with parents was captured in this study when the individuals were aged 18 and above (NIDS 2012 used as a cross sectional study). Thus it does not adequately capture the dynamics of the family structure during the course of an individual's childhood (Strohschen et al. 2009). Research has shown that it is residency with parents in the first 15 years of life that has an influence on child outcomes. While information on the death of the parent was available and could shed more light on effect of family structure on high school completion, the analysis would have still been limited as it does not address other reasons for parental absence such as divorce, separation or work related immigration. Moreover, and since family structure is volatile, due to divorce and especially death in South Africa, the probability of income shifting during the course of one's childhood are very high (Martin 2012). Thus family structure is an endogenous measure of SES which is affected by other factors such as parental education, income and even occupation (not investigate in this study). For this reason, the analysis also looked at parental education, an exogenous measure of SES, which is not affected by family structure.

#### *Household Income*

Another household characteristic that was measured in this study is household income. This measure consistently showed that individuals from better off families have better odds of completion matric (except for the female population when parental education was included). Consequently, this finding raises the question: Does having more money in the household produce better child outcomes over time? And if this is the case, then the most intuitive explanation for this difference is that rich parents can spend more than poor parents on their children and that these "investments" lead to better outcomes for their children. (Mayer 2010). Taking the history of disadvantage into consideration, poor parents are likely to be African in South Africa. Thus, if household income has direct effects on academic achievement and in particular high school completion, then the South African

education system is implicated in the reproduction of circles of privilege (Ramphela, 1996) because it favours those from better off families. This is a speculative point and it would be interesting to examine through longitudinal studies whether there is a cumulative and intergenerational effect of household income on matric completion.

However, household income is not an exogenous measure of socio-economic status. This is because it is affected by other parental or household factors such as parental education, including some unobserved characteristics (Akee et al. 2010). In other words, while an effect is observed, and the evidence shows that increase in income has positive educational outcomes, Akee et al. (2010) contend that this information tells us little about the actual causation. This caveat notwithstanding, the results seem to suggest that children living in poverty are likely not to graduate from high school and by extension continue the poverty cycle.

### *Parental Education*

As indicated in Chapter 3, there was significant underreporting on the parental education variable. The initial analysis was done with 46% of the data missing. Hence, an acknowledgement is made that the findings from the incomplete data sets could have underestimated or overestimated the effects. To mitigate this, multiple imputation was used. Although there was little statistical difference in the odds ratios and standard errors between the models with incomplete data and those with complete data on these variables, MI, significantly altered standard errors and p-values of the parental education variable. This was attributed to the large amount of missing data and the nature of missingness between family structure and parental education variable. It is important to reiterate that the two were not included in the same model when the listwise analysis was applied. Hence, it is acknowledged that the treatment of the parental education variable was less than ideal.

This caveat notwithstanding, the same interpretations can be made from both analyses. Independently, parental lower secondary and upper secondary education had a strong positive effect of matric completion. In fact, parental education exhibited the strongest influence of all the familial variables. Young males whose parents had matriculated from high school were up to six times, young females 2.5 times more

likely and combined, 3 times more likely to have matric. This effect was also consistent in the nested models when other factors (excluding family structure) were included. The variable performed differently in the female only model where parental lower secondary education has lower returns relative to no schooling, while upper secondary education maintained its strong positive effect on matric completion. The imputed models produced insignificant results for parental primary and lower education, but the effect of parental upper secondary was consistent. Having a parent with an upper secondary education increases the chances of completing matric. However, this does not affect the age and sex effects on matric completeness. The parental education effects were also consistent for the female population and hence lend support to the idea that social groups reproduce themselves through education.

This positive independent effect lends support to prior research both locally and internationally. For instance, Dubow et al. (2009, American study), Baxter (2002, Australian study), Tieben and Wolbers (2010, Netherlands study) found that parents' level of education was linked to their offspring's academic success while Cherian (2001) found a significant relationship between academic achievement and parental education amongst Xhosa children from South Africa regardless of whether their families were polygamous or monogamous. Another South Africa study by Mutodi and Ngirande (2014) established that parents' education level, especially the mothers' had a direct effect on mathematics achievement. Thus in essence, the findings in this study corroborate the extant research and theory on the positive effect of parental education.

However, Branson et al. (2012) using the NIDS 2008 and 2010 data sets found weak associations between maternal and paternal education and dropping out of school in South Africa. A possible explanation given was that the effect of parental education was already captured in the type of school an individual attended. This is because parents with higher education are more likely to send their children to better schools. Important for this study is that the parental measures in Branson et al. (2012) and in the present inquiry are different. The present study used parental highest grade, that is 'no schooling up to Grade 12', while Branson et al.'s study used parental highest education level which looked at post-secondary education qualifications. Moreover, Branson' study looked at drop out while this study

examined high school completion. Thus, the difference in findings could be attributed to the measures used.

There are many reasons why parental education might have a strong influence on high school completion. As indicated in Chapter 2, parental education is an index of socio-economic status, which potentially leads to better children outcomes (Baxter 2002; Martin 2012). Thus, the cultural capital previously invested in the child, through the parent's educational attainment, ultimately redounds his or her educational opportunities. At the same time, their children feel the familial pressure of having to pass and feel obligated to not waste the money being invested in their education. These children are influenced by "aspirational effects", hence when they observe a better life around them (cultural and social capital), they are incentivised to invest in their own human and by extension economic capital by staying in school (Bernadi and Requena 2010). This interpretation is also supported by Bourdieu's cultural capital and habitus. In Bourdieu's theory- an individual's way of thinking and acting is influenced by and embodied in his upbringing (Tzanakis 2011; Goodman and Gregg 2010; Bourdieu 1986). Thus, the wider structural forces (historical and present) shape an individual's present and future sphere of influence (Albright, 2008). In other words, cultural capital is the skills and information one acquired through experience which one needs in order to succeed in life. Existing research evidence has also shown that parents may influence their offspring's educational pathways and decisions through a number of ways such as genetic transmission, role modelling, preferences as well as creating a conducive environment for academic success (Mutodi, 2014; Martin 2012).

Social selectivity between the effect of parents with no schooling and those with up to 7 years of schooling on children's odds of completing high school presented results that seemed to deviate from the norm. The results showed that children whose parents had some primary education were less likely to complete matric relative to those with no schooling. This could be interpreted to mean that in general, seven years of schooling have no effect on the probability of completing high school relative to parents with no schooling. However, this interpretation must be taken with caution, as already indicated the parental education used variable was less than ideal. Despite this weakness, there is a possibility that this a specific South African dynamic that require further analysis. In the absence of evidence based

potential explanations for this phenomenon, justifications are derived from the theoretical and literature framework adopted in this study. There is a possibility that parents without schooling are likely not to be working or to be working for low wages (Stats SA 2010; 2014). Such parents might see their children's education opportunities as a way of elevating the family out of poverty. This is characteristic of Caldwell's wealth flow theory, where in primitive societies, parental investment in children's education has other motives such as family honour and security against future income shocks (Caldwell 2006). From a Bourdieusian's perspective, while the upbringing is a potent indicator of future success, this effect should not be necessarily static. He reasoned that individuals could mediate their social spaces, even to the point of resisting embodied beliefs. By extension, individuals whose parents have no schooling, might be using this habitus as a tool to resist the *status quo*, and work hard to disrupt the cycle of disadvantage by completing matric. Simply put, the explanation of the finding that there is a higher likelihood of dropping out for individuals whose parents have some education as compared to those with no education could lie in the amount of pressure these parents may be placing on their children to succeed.

## 5.5 Tying together

In general, the results of the logistic regression shown in the form of predicted probabilities in **Chapter 4** largely support the second hypothesis that class of origin has an effect on the probability of making the transition to post-secondary schooling. Taken together with the existing literature, the findings in this study show that there is a positive relationship between the socioeconomic status of the family and the children's academic achievement.

It is acknowledged that measuring the precise effects or mechanisms through which parental socio-economic status (as explained by education or household income education) or family structure may affect children's outcomes is more difficult than establishing if there is an effect. Hence, the purpose of this study was not to demonstrate how these mechanisms interact, but to establish if there was an effect. In terms of the theoretical framework adopted in this study, the findings underscore the strong links between cultural capital and educational achievement while. Most

importantly, they present a unique scenario where individuals whose parents have no schooling persist in school. From a Bourdieusian perspective- such individuals resist the *status quo* and prove that socio-economic background, while playing a significant role in producing and reproducing disadvantage, can also be challenged.

## **5.6 Conclusions**

The estimates of logistic regressions strongly suggest that academic progression is segmented by gender and age, in favour of the females. The analysis in this study reveals a female advantage in matric completeness. Thus, there is support for the literature which points to a gender convergence in educational attainment and participation in the South African example. Moreover, parental education more important in as far as completion of matric. This finding is in line with the hypothesis that socio-economic background of an individual has a significant bearing on the likelihood of making the transition to post-secondary school on time. In sum, the empirical analysis in this study demonstrated that socio-economic background effects are present in the transition decisions to post-secondary education, beginning with matric completeness to the actual transition to post-secondary education. Further, the analysis revealed that gender alone, is no longer a significant measure of educational inequality in South Africa, given the gender gap has closed and in some cases females are outdoing their male counterparts. Yet, caution should be taken when one considers the barriers or reasons why individuals drop.

# Chapter 6

## Conclusions

### 6.0 Introduction

The purpose of this study was to ascertain the extent to which gender and age interacts with the probability of making the transition to post-secondary education, relative to the family background factors such as parental education, and household income. This chapter seeks to reiterate the processes that were employed in the attempt to answer the main research questions and purpose of this study. Broad conclusions are also provided and the implications for the current research appraised. To test the social and cultural reproduction model of completing schooling, the analysis focused on demographic and background factors such as gender and age variables.

Parental education was measured as the highest grade completed by either parent, which was merged into four category variable: primary education, lower secondary education, upper secondary education and no schooling while household income was transformed into a natural logarithm.

### 6.1 Revisiting the research questions

The following questions were addressed in this study:

- i) Are there any sex differentials in high school completion rates in South Africa by sex?
- ii) What is the contribution of family background and sex to the overall educational inequality in high school completion?

To answer these questions, the 2012 wave of the National Income Dynamics Study was used. Individuals aged 18, 19 and 20 by the survey date were isolated. Data on their highest level of education, current enrolment and reasons why they were not enrolled was extracted to come up with the four dependent variables – matric completeness, drop out, barriers and education pathways. To identify the effects of socio-cultural capital, defined as the effect of the resources that parents

bequeath on their children, parental education, residence with parents and household income were modelled on these variables. Both descriptive statistics in the form of frequencies and counts and multivariate in the form of logistic regressions models were employed.

Although the link between educational attainment and socio-cultural factors in South Africa has been ascertained, there is a paucity of research studies that have attempted to bring together the different variables (parental education, family structure, household income, sex and age) in an attempt to understand their effect of high school completion. Through bringing together all these variables, it has been possible to present a more comprehensive and nuanced analysis of the processes that lead to high school completion. The findings from this inquiry are summarised in Table 6.1.

## 6.2 Summary of results

**Table 6.1 Summary of the results**

Descriptor	General and Age effects	Gender
Matric Completeness	Majority of students do not complete matric on time Most 18 year olds are still in school	Females are more likely to have matric than males
Effect of Parental Education	There is social selectivity in matric completion. Offspring of parents who completed matric are more likely to have complete matric as well. Effect of parental education is stronger for males than for females.	
Family Structure		
Effect of Household Income	Higher household income levels increase the likelihood of completing matric on time. The effect of household income is lowered by parental education	

### 6.2.1 Summary of findings

The findings reveal that high school completion is indeed stratified by factors such as parental education, population group, sex, place of residence and household income. Sex favours females as they are more likely to have matric on hand than their male counterparts. It was also consistently demonstrated by the models fitted in Chapter 5 that parental education has the strongest effect on matric completion, and in particular, parental Grade 12 education. However, this finding must be interpreted in light of the study's weaknesses. This is mainly because the measure did not go beyond upper secondary education and further had a large amount of missing data.



Thus, the measure of parental education proved somewhat limited. Family structure behaved contrary to expectations. Independently, residence with parents (one or both) had an advantage on matric completion. However, this disappeared when sex, population group and place of residence were controlled for in the combined model and the female only model. However, for the male population residence with one parent had a significant positive effect even when other variables were included while co-residence with both parents had a strong positive effect only when age, population group and place of residence were included. This effect disappeared when household income was added. Having one or both parents has an advantage for boys while there is no advantage for girls. Household was consistent for the combined, male and female models and showed that higher levels of income increase the likelihood of having matric. However, as with the family structure model, the income effects were lessened when parental education was added for the female only model. The findings reveal that the strength and significance of the association between parental education, household income and matric completeness suggests that the cultural capital and reproduction their discussed in Chapter 2 accounts for educational inequality in these processes (Bourdieu 1984; Coleman 1988). Thus inequality in family background has the potential to translate into inequality in children's educational outcomes and by extension, opportunities for social mobility (Bernadi and Requena 2010). Further, the results also speak to the intersection between race and socio-economic status. Africans and those who stay in rural areas are less likely to complete high school. In South Africa, rural dwellers are generally of African origin and have low socio-economic status. If this is the case, it can be concluded that the South African society is not open enough to allow individuals to move out of their historically defined socio-economic status (Timeaus et al. 2013).

### **6.3 Limitations of the study**

A major limitation of this study was the use of secondary data. This limited the opportunities to refine the data collection process to suit specific needs of the study. Another limitation is that the data focuses on national level data and the relationship between the key variables at that level. The challenge is that the complexity of inequality at the individual level is potentially obscured. Further, survey data as in the case of the NID study, is drawn from self-reported responses. The study adopted a

research design, which cannot be used to interpret causal relationships. Finally, the use of the quantitative methodology does not allow for a full exploration of unobservable factors that may have affected the transition to post-secondary education. For instance, sexual violence, which is not captured in the NIDS data, has been shown to be an important factor influencing decisions to progress with education.

#### **6.4 Recommendations**

While the empirical analysis managed to establish the causal effect of family background characteristics on high school completion, there is need to understand the mechanisms by which these variables affect children's educational success. In this study, speculative reasons were given, but there is need to examine with data how parental attitudes and the quality of endowments passed on to children affect educational success. Further, and although the gender profile in education attainment has changed, and the enrolment favour women, there is need to look at other factors where imbalances might still exist. These include the transition to post-secondary education, post-secondary qualification level, field of study just to mention a few. Research could also look at the extent to which such gains are reversible or not. This can be done through longitudinal studies which examine if present female generations surpass the gains of the parental generation.

The results of this study also have implications for government. The persistence of low educational attainment for Africans is a cause of concern. There is need for concerted government efforts to promote the persistence of African learners in the schooling system. Although the government has a pro-poor policy for learners who cannot afford to pay school fees, this could be extended to other educational costs which might hinder the progression and educational attainment of Africans.

#### **6.5 Concluding Remarks**

The principle focus of this study was to explore the influence of family background on high school completion for male and females in South Africa. The findings demonstrated that gender effects favour females, even when family background

variables are introduced. Females seems to do better than males in high school completion. It also emerged that age is a significant explanatory variable for inequality in the transition in high school completion. Parental education and household income are also important in understanding the effect of family background in predicting educational success of offspring although the effect was varied across the processes.

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## **Appendices**

### **Ethical Clearance**