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Exploring the social and cognitive correlates of early school leaving and alcohol and tobacco use

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Exploring the social and cognitive correlates of early school leaving and alcohol and tobacco use

Thesis

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Contents

In memory of my friend and brother, Manish Patel.

Thank you for your kindness and always making me laugh.

Chapter 1

General Introduction

Background

Tobacco use and excessive use of alcohol results in millions of deaths annually (1), and is associated with dependence, the risk of leaving school, poor educational outcomes, diminished work capacity, non-communicable diseases, and premature morbidity (2-8). An important challenge for South Africa, like many other countries, is the high prevalence of alcohol and tobacco use among adolescents (9, 10). Health risk behaviours, once established during adolescence, often persist into adulthood (9). According to the latest South African Youth Risk Behaviour Survey (YRBS), school-going learners initiated alcohol and cigarette use between the ages of 10-14 years (9). Furthermore, over a quarter of school-going learners between the ages of 13 and 20 years reported smoking cigarettes and half of them had consumed at least one alcoholic drink in their lifetime (9). Past month cigarette smoking was reported by a quarter of learners and a third of the learners used alcohol on one or more days in the past month (9). Males have been found to drink and smoke more than females (9). Significantly more Coloured (mixed race), White, and Indian learners had consumed alcohol or reported smoking in their life when compared to Black African learners[1]. Learners aged 14 years or younger had lower rates of smoking and alcohol use compared to those 16 years and older (9). Thus, there is evidence of vulnerability of South African adolescents to initiate and use alcohol and tobacco, placing them at risk for tobacco and alcohol related morbidity and mortality.

While numerous studies have focused on South African school-going learners and their use of alcohol and tobacco, out of school youth (OSY) have received less attention (5, 11). The aim of this thesis is to understand the social and cognitive correlates that place OSY in South Africa at risk of the negative consequences of alcohol and tobacco use.

Out of school youth

Out of school youth are described as those individuals between the ages of 13-20 years, who have not completed their senior high school certificate, and have not been enrolled in secondary or high school for the current academic year. Globally, by the end of the 2013 school year, 124 million children and adolescents (aged 7-19 years) had either never started school or dropped out, and nearly half of these individuals were living in sub-Saharan Africa (12). In South Africa, an estimated 4% dropped out of primary school (age 13 years and below) and 12% dropped out of high school (from age 15 years) by the end of the 2014 school year (13). Only 52% of the age appropriate population remained enrolled until the last grade of high school (14).

Students who fail to complete their schooling may experience negative social, health and economic consequences such as unemployment, delinquency, and poor mental and physical health (5, 11). OSY are also more vulnerable to the experimentation and uptake of alcohol and tobacco use, as they do not have the protective factor of the school environment, such as supervision and positive mentoring by teachers and peers (5, 15-18). A systematic review found that, in developed and developing countries, OSY had higher rates of alcohol and tobacco use compared to school-going learners (5). OSY are therefore more vulnerable to tobacco and alcohol related morbidity and mortality.

[1] Racial categories in South Africa defined by the Department of Labour allow for the investigation of ongoing health disparities that have endured post-Apartheid and were not used with the intention of reifying social constructions developed during the Apartheid era.

Reasons for leaving school

The reasons for youth to leave school are often multidimensional and complex (19). Quantitative South African and international studies have shown that there are multiple reasons for drop out which include poverty (11, 20, 21), high use of substances (4, 5, 11, 21), bullying (22), boredom (4, 23), family needs (helping support the families, being pregnant, traditional family role expectations) (11, 19, 21, 24-26), illness (21, 27), absenteeism (11, 28-30), disability (21, 26), community violence (21), and school-related factors (academic performance, disliking school, not getting along with teachers, being too old for school and disciplinary consequences) (5, 11, 19, 21, 24). In addition, respondents tended to cite non-specific terms such as "other" reasons for leaving school (27).

These studies demonstrate that the reasons why young people leave school are diverse, however, a number of reasons are still not well known. To my knowledge, only one South African study examined reasons for drop out. Results of this qualitative study showed that physical (poor living conditions, inability to meet school costs), social (unemployment among caregivers and single headed families) and psychological (feelings of disempowerment and despair) factors contributed to children (aged 7-15 years) dropping out of school (31).

The relationship between reasons for leaving school and alcohol and tobacco use

Alcohol and tobacco use during adolescence have been associated with school dropout, and poor educational outcomes (4, 5, 7, 8, 32-35). However, once students drop out of school, their alcohol and tobacco use may vary according to the reason for dropping out. To the best of my knowledge, only few international studies investigated the relationship between reasons for leaving school and risky behaviour, namely crime and substance use (36-38). These studies found that those who leave school to be with their friends, or drop out due to poor school performance, were more likely to engage in substance use, smoking and delinquency than those who leave school for family-related reasons (36-38). These previous studies focused on substance use in general (encompassing the use of tobacco, inhalants, hallucinogens, and alcohol use), making it impossible to draw specific conclusions for alcohol and tobacco use. Examining the relationship between reasons for leaving school and tobacco or alcohol use separately may provide valuable insight into the profile of OSY at risk for alcohol and/or tobacco use.

The role of the social network environment of OSY in early school leaving

Adolescence is a critical time during which the nature of network interactions may facilitate the uptake and spread of resources and behaviours (39-41). Adolescent friendships have been shown to play a significant role in educational attainment (42-46). The literature has shown that in-school and out of school friends play different roles in the adolescents' decision to drop out of school. In-school friends, who tend to value education and school attendance, may motivate their peers to stay in school. OSY who value education less are more likely to encourage early school leaving by their friends (47). Moreover, studies have shown that OSY and those at risk of dropping out tend to have more friends who are dropouts (48, 49). The family social network has also been shown to play a role in early school leaving. Those with older siblings who have dropped out of school are more likely to leave as well (47). Parental involvement and parenting style are also factors, which contribute towards early school leaving among adolescents (47, 50, 51). Studies conducted in South Africa tend to focus on demographics (race, gender, location and substance use) (5, 52) and household characteristics (family composition, socio-economic status) (31, 52) as predictors of school dropout. However, to the best of my knowledge, no studies have explored the nature and quality of

relationships with family and friends and its association with early school leaving in the South African context. In this thesis, qualitative methods are used to understand the role of the wider social network on adolescents' decision to leave school. Insight into the influence of the social network may assist in formulating recommendations for friends and family to engage with adolescents and discourage school dropout.

The role of the social network environment of OSY in alcohol and tobacco use

The social network approach has previously been used to understand how an individual's health and behaviour is affected by people they know and interact with (53, 54). Adolescent friendships play a significant role in the initiation and maintenance of one's own smoking and drinking behaviour (39, 55-61). The literature has shown that adolescent smoking and drinking behaviour tends to be similar to their friends' drinking (40, 62-64) and smoking behaviour (55, 56, 58-61, 65-70). Research suggests that alcohol and tobacco use is associated with having a greater number of friends in the social network who smoke (58, 59, 61, 65, 66, 69, 71) and drink (62-64, 71, 72) respectively. Previous studies also found that partners (73-77) and family such as siblings and parents (41, 58, 78-83) played a role on adolescent alcohol and smoking behaviour. There is a paucity of studies that have explored the role of the social network in alcohol and tobacco use among hard to reach youth populations (84, 85). This thesis used quantitative and qualitative methods to understand the complex nature of the social network environment and its role in alcohol and tobacco use among South African OSY. Understanding the characteristics of the wider social network of adolescents may be useful to identify vulnerable OSY.

Gender and racial differences

Gender differences exist in the reasons for leaving school and alcohol and tobacco use. South African and international studies have found that adolescent males tend to smoke and drink more than females (1, 9). Male students more often drop out of school due to perceptions of poor academic performance and disciplinary problems (21, 28, 86). Males may also be more likely to experience pressure to contribute to the family income and need to secure employment (11, 19, 21), whereas females are more likely to leave for family and caretaking responsibilities (11, 19, 28, 87). A South African study reported that girls are more likely to drop out of school due to bullying (22). More South African studies are needed to focus on gender differences when studying determinants of early school leaving and alcohol and tobacco use among OSY.

In South Africa, there are disparities in educational attainment, and alcohol and tobacco use between the different race groups (as classified during the Apartheid era) (88, 89). The extreme inequality in education for those of African, Coloured and Indian descent from that of their white peers continues to date (90), resulting in racial differences in progress through school and ultimate educational attainment (26, 88, 91). Racial differences in household attributes such as family structure (92, 93), socioeconomic status (27, 94), as well as school-level attributes such as poor educational quality, resources and infrastructure have been determinants of high school dropout, particularly among African and Coloured students (26, 89). Moreover, significantly more Coloured, White, and Indian learners had drunk alcohol or reported smoking in their lifetime when compared to African learners (9).

This thesis will take into consideration the gender and racial differences when investigating the social and cognitive correlates of early school leaving, alcohol and tobacco use within the South African context.

Project Overview

This thesis consists of several studies that collectively aim to explore the social and cognitive determinants of early school leaving, and alcohol and tobacco use, using quantitative and qualitative methods. Using a combination of quantitative and qualitative research methods offers insight into complex relationships as well as explains, expands and informs these findings.

Research questions

The following research questions on tobacco and alcohol use among South African OSY are explored after considering gender and racial differences:

1. What are the reasons for leaving school?
2. What are the relationships between the reasons for leaving school, and alcohol and tobacco use?
3. What is the role of the social network environment in early school leaving and alcohol and tobacco use?

Outline of the thesis

In **Chapter 2**, an in-depth understanding of why OSY leave school and gender differences in the reasons for leaving school are explored. **Chapter 3** and **Chapter 4** examine the relationship between reasons for leaving school and past month alcohol and tobacco use, respectively, while accounting for possible gender differences. **Chapter 5** examines whether OSY smoking behaviour is associated with the smoking behaviour of their OSY friends. **Chapter 6** explores the role of social network relationships in alcohol and tobacco use among a sample of OSY. Lastly, in **Chapter 7**, the main findings of the five studies are summarized and discussed, their theoretical and practical implications addressed, and directions for future research suggested.

Chapter 2

Understanding why youth drop out of school in South Africa

Submitted for publication as:

Desai R, Ruiter RAC, Magan A, Reddy SP, Mercken LAG. Understanding why youth drop out of school in South Africa.

Chapter 3

Reasons for leaving school and alcohol use among out of school youth in South Africa

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Abstract

After students drop out of school, their alcohol use may vary according to the reason for dropping out. In this paper, out of school youth (OSY) are those between 13-20 years old, have not completed their schooling, and have not enrolled in secondary or high school for the current academic year. OSY are at heightened risk of alcohol use. This study examined the relationship between reasons for leaving school and alcohol use, taking into account gender differences. Survey data from 4222 OSY (mean age = 17.4 years, SD = 1.9; males = 59.4%) were analysed using ordinal regression. Leaving school for "not having enough money to pay for school fees" was associated with more alcohol consumption, among females living specifically in rural areas of Gauteng. However, in urban areas of KwaZulu Natal and Mpumalanga, females who left school for the same reason as their rural counterparts were less likely to consume alcohol in the past month. Males were more likely to consume higher levels of alcohol if they reported leaving school due to making someone pregnant, but only when they resided in peri-urban areas. Understanding the relationship between reasons for leaving school and alcohol use may give us insight into the profile of school dropouts at risk for alcohol use. This information is useful for intervention development across the school, home and community.

Introduction

Heavy use of alcohol results in approximately 2.5 million global annual deaths (1). Recent World Health Organization (WHO) data indicates that South Africa has one of the highest alcohol consumption rates in the world, with an annual average of 9.46 litres per capita among populations aged 15 years and older, which is above the global average of 6.13 litres per capita, and the regional average of 6.2 litres for Africa. Alcohol use is related to various individual and social issues. Alcohol dependence, liver cirrhosis, cancers and permanent brain damage are some of the negative long-term health consequences of heavy alcohol consumption (1). The negative short-term social and behavioural impacts of alcohol use include violence, crime, road traffic accidents, suicidal behaviour, injuries and unsafe sex (1, 116, 117).

Adolescents are particularly prone to risky behaviours under the influence of alcohol, with both immediate and long-term consequences, as they are exposed to high-risk environments and are also vulnerable to experimentation (118). According to the Youth Risk Behaviour Surveillance survey of the USA, national adolescent lifetime alcohol consumption (ever having drunk alcohol in their life) was 63.2% (119). In South Africa, a relatively high number of learners aged 13-19 years reported lifetime alcohol use (49.2%), past month drinking (32.3%), and binge drinking (having an average of five alcoholic drinks on at least one occasion in the past month) (25.1 %) (9). It also appears that 12% of youth in South Africa start to drink before the age of 13 years (9). This data demonstrates the vulnerability of South African adolescents.

While there are studies that have focused on school-going learners and alcohol consumption in South Africa, out of school youth (OSY) have received less attention. OSY are described as those between the age of 13-20 years, not having completed their senior high school certificate, and have not been enrolled in secondary or high school for the current academic year. OSY reported significantly higher rates of alcohol use compared to school-going learners (5, 16, 17). Approximately 120 million children are out of school globally, with almost half (45%) residing in sub-Saharan Africa. In South Africa, approximately 4% drop out of primary school (age 13 years and below). From grade nine onwards (from age 16 years) an estimated 12% drop out of school (13, 14). OSY are at higher health risk for alcohol related death, disease, disability and negative behavioural and social outcomes, as they do not have the protective factor of school, such as school based interventions and the supervision and mentoring of teachers and peers (15). These high rates of drop out combined with the increased risk of heavy alcohol use among OSY calls for the development of alcohol prevention interventions for this population.

The reasons for youth to stay out of school are often multidimensional and complex (120). Cross-sectional and longitudinal analyses conducted in high-income countries have identified a number of factors that relate to high school dropout. These include low socioeconomic status (5, 20, 31), single headed families (22, 24, 31), high use of substances, and low academic performance (19, 20, 22, 24, 31). The South African literature states that reasons for dropping out have also been attributed to bullying (22), boredom (11, 23) family needs (helping support the families, being pregnant, getting a job) (11, 31), illness (27), and school-related factors (academic performance, disliking school, not getting along with teachers and disciplinary consequences) (11, 31). These studies suggest that OSY are diverse in the factors that lead them to leave school.

Alcohol use during adolescence has been associated with educational attainment and the likelihood of not completing school (5-8, 33). However, once students drop out of school, their alcohol use may vary according to the reason for dropping out. Understanding this relationship may give us insight into the profile of school dropouts at risk for alcohol use. From a prevention

perspective, this may provide insight into intervention strategies to keep these individuals in school, as well as prevent further alcohol use. To date, only one study explored the relationship between different reasons for leaving school and subsequent substance use. Aloise-Young and Chavez (2002) reported that substance use was highest among Mexican-American adolescents who dropped out to be with friends and lowest among those who left due to family-related reasons (36). However, this previous study did not focus on alcohol use specifically, but focused on substance use in general, encompassing the use of tobacco, inhalants, hallucinogens, and alcohol use. This study will explore the relationship between reasons for leaving school and alcohol use among OSY. Understanding these differences can enable program developers to implement differential alcohol prevention and cessation programs to help all types of dropouts.

Specific reasons for drop out and their association with alcohol use may differ across genders. Males consume alcohol significantly more than females worldwide, as well as in South Africa (1, 9). However, some longitudinal studies reported higher rates of alcohol use among female OSY compared to males (121). Reasons for leaving school also differ for males and females. A comparative analysis of seven representative studies concluded that male students more often dropout of school due to perceptions of poor academic performance and disciplinary problems (86). Males may be more likely to experience pressure to contribute to the family income and need to secure employment, whereas females are more likely to leave for family formation and caretaking responsibilities (11, 19). In South Africa, Townsend et al. (2008) found that females compared to males were more likely to drop out of school because of bullying. Based on these previous studies, we expect that the relationship between reasons for leaving school and alcohol use will also differ between males and females.

The present study will explore the following research question: What is the relationship between reasons for leaving school and alcohol use, taking into account possible gender differences? The knowledge gained will help health promotors understand those OSY at risk for alcohol use in South Africa, in order to formulate future effective alcohol prevention and cessation programs for this population.

Methods

Participants and sampling

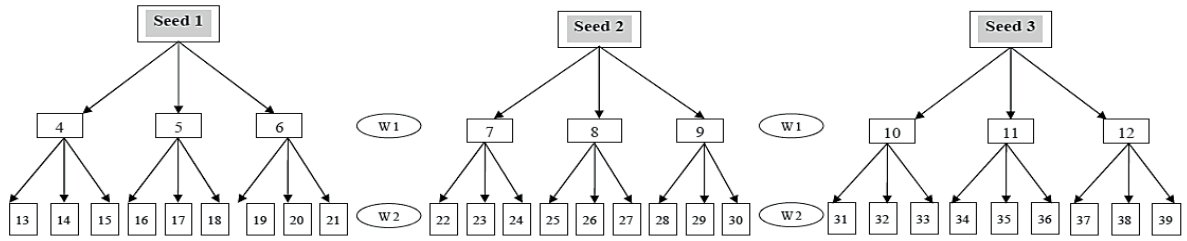
A non-probability technique was used to select four of the nine provinces (KwaZulu Natal, Western Cape, Mpumalanga and Gauteng) in South Africa to conduct the study. The provinces selected represented all racial (Black African, White, Indian, Coloured and Other) and language groups of South Africa. The inclusion criteria for this study were as follows: being between the ages of 13-20 years, not having completed their senior high school certificate and have not been enrolled in secondary or high school for the current academic year. The researchers were unable to identify a register consisting of OSY, and therefore decided that respondent driven sampling (RDS) was an appropriate method for recruiting OSY (122).

A nationally representative set of schools (n = 85) using a stratified cluster sample design served as a starting point for recruiting the initial OSY participants or "seeds." These initial "seeds" for the RDS process were recruited by obtaining a list of OSY from the schools. The target was twenty "seeds" per school site. All seeds that met the OSY criteria were contacted. If schools were unable to provide lists of OSY, survey administrators had to recruit seeds directly from the community, such as approaching young people walking the street who appeared to meet the predetermined criteria.

Each seed was required to identify and refer a maximum of three OSY in their community to participate in the study. Participants that were recruited in this "first wave" of sampling were themselves asked to identify and refer a further three OSY, and so on. Up to four waves of recruitment were conducted to gain 4432 OSY participants (Figure 1) (123). Survey administrators made use of the coupon system to help them track the RDS recruitment chain. Each respondent was given three coupons and invitation cards to recruit three other OSY whom they know of to participate in the survey. The coupons were designed to tear off so the recruiter could retain the left half of the coupon, and the potential recruit the right half. The potential recruit had the option of coming to the survey site (local community hall or school), with his/her half of the coupon and to participate in the survey if interested. The recruiter also returned to the survey site with their half of the coupon as proof of recruitment, and to collect monetary incentives for each OSY they successfully recruited into the survey (Heckathorn, 2002).

Once participants arrived at the survey site consent procedures were completed, followed by each participant completing a paper based self-administered questionnaire in one of the five languages (English, isiZulu, Xhosa, Afrikaans, and Sesotho). The questionnaire was designed in English and translated into four languages, namely isiZulu, Xhosa, Afrikaans and Sesotho, and then back translated from these official languages to English to check for consistency and correct translation. The self-administered questionnaire was designed to obtain socio-economic and demographic data as well as prevalence data of several behaviours that place out of school youth at risk, which include intentional and unintentional injury, substance use, sexual behaviour, nutrition and weight perception, physical activity and hygiene. The measures used in the present study are specified below.

Figure 1 Respondent driven sampling for out of school youth – a schematic illustration of two sampling waves (123).



W 1 indicates - 1st Wave (4-12)
W 2 indicates - 2nd Wave (13-39)

*Multiple Stage Cluster Sampling (MSCS) was utilized at school level using schools

Measures

Past month alcohol use. Alcohol use in the past month was the main outcome variable. Participants were asked to pick a statement that best described their alcohol consumption such as a beer, glass of wine or a "tot" of brandy in the past 30 days using 5 ordinal categories: "never" (0 days), "rarely" (1 to 5 days), "sometimes" (6 to 9 days), "often" (10 to 19 days) and "very often" (20 to 30 days).

Demographics. Demographic characteristics of the participants were obtained by asking their gender (1 = male, 2 = female), the province (1 = Gauteng, 2 = KwaZulu Natal, 3 = Mpumalanga and 4 = Western Cape), the area that they reside in (1 = rural, 2 = urban, 3 = peri-urban), and their age. Participants race was classified according to the Department of Labour designated categories (1 = Black African, 2 = Coloured, 3 = Indian, 4 = White, 5 = Other). The racial

categories were not used with the intention of reifying social constructions developed during the Apartheid era, but rather were employed to allow investigation of ongoing health disparities that have endured post-apartheid (124).

Timing of the drop out. Participants were asked to state the last grade they were in at school (grade 7-12).

Reasons for leaving school. Reasons for leaving school were measured with eight binary items (0 = No, 1 = Yes). Seven items each represented a different specific reason to leave school (i.e., no reason for leaving school, being pregnant or made someone pregnant, working to help the family, not enough money to pay school fees, had to help with looking after the house and siblings, problems with school work, teachers or the learners, and the school was too far) and one item represented other not yet mentioned reasons. Participants were allowed to answer yes to more than one reason. Each reason was treated as a dichotomy in the analysis.

Analysis

IBM SPSS Statistics version 25 was used to analyse the data (125). Descriptive statistics were first explored to gain a clearer picture of the data, as well as to summarise the characteristics of the overall sample. Gender was cross-tabulated against reasons for leaving school and the demographic variables. Fisher's Exact test was used to explore the association between gender and reasons for leaving school (see supplementary analysis). Chi-Square analyses were conducted with the main outcome variable being alcohol use and independent variables. Univariate and ordinal regressions were used to investigate the association between reasons for leaving school and alcohol use. In addition, the moderating effect of gender was tested in the model. In the case of significant interactions, simple effects analyses were conducted to further probe the nature of the interaction (126). All estimates were considered to be statistically significant if their p-value was below 0.05.

Results

Characteristics of the sample

In total, 4222 respondents completed the survey with all the questions used in this study[2]. As seen in Table 1, participants reported drinking as never (45.3%), rarely (24.1%), followed by drinking sometimes (17.9%), often (7.2%) and very often (5.5%). More than half the participants were males (59.4%) and the majority described themselves as Black African (72.3%). The mean age was 17.4 years (SD = 1.9) and the average timing of the dropout was grade 9.3 (ages 15-17) (SD = 1.6). Less than half (46%) resided in rural areas and 27.8 % resided in the Western Cape. Respondents' most common reasons for dropping out of school were: no reason for leaving school (males = 20.8 %,

[2] *We computed the power of our study for a binary logistic regression analysis (i.e., a two-category outcome variable). Prior to data collection, power was computed assuming that we would be conducting a binary logistic regression. However, when data collection was completed we observed that there was not a clear binary division in the outcome responses as we had expected to find, and we recognised that an ordinal regression was more suitable. We may expect the power for our ordinal regression analysis, which makes full use of the ordinality in the data, to be larger than this estimate. We further assumed a medium effect size (OR = 1.3), a mean probability of being a drinker (compared to no drinker at all) equal to 0.3, a significance level of 0.05, a total sample size of 4322 and an R^2 equal to 0.49. The latter implies that the multiple correlation between the predictor of interest and all other predictors is assumed to be as high as 0.7, which is reasonable considering the large number of predictors in our exploratory model. Finally, assuming a binary predictor of interest with a binomial distribution parameter equal to 0.5, we used G-power to determine the power of the regression test, for a single regression coefficient is equal to 0.89.*

females = 18.9%), they were pregnant or made somebody pregnant (males = 17.8%, females = 19.8%), or they did not have enough money to pay school fees (males = 18.1%, females = 18.8%).

Table 1 Characteristics of the sample and reported reasons for leaving school per gender

	Total		Gender			
			Male		Female	
Characteristics	**%/Mean (SD)**	**n**	**%/Mean (SD)**	**n**	**%/Mean (SD)**	**n**
Total	100	4222	59.4	2506	40.6	1716
Alcohol Use						
Never (0 days)	45.3	1832	36.1	859	58.5	973
Rarely (1 to 5 days)	24.1	973	26.5	631	20.6	342
Sometimes (6 to 9 days)	17.9	724	21.6	513	12.7	211
Often (10 to 19 days)	7.2	292	8.6	205	5.2	87
Very often (20 to 30 days)	5.5	223	7.2	172	3.1	51
Province						
Gauteng	23	971	26.6	667	17.7	304
KwaZulu Natal	27.3	1153	24.1	603	32.1	550
Mpumalanga	22	930	19.9	498	25.2	432
Western Cape	27.7	1168	29.4	738	25.1	430
Race						
Black African	72.5	2995	70.2	1716	75.9	1279
Coloured	21.8	899	23.7	580	18.9	319
Indian	1.7	70	2.2	54	0.9	16
White	1.4	58	1.2	29	1.7	29
Other	2.6	108	2.7	65	2.6	43
Area						
Rural	46.1	1673	44.6	953	48.3	720
Urban	30.4	1103	32.7	699	27.1	404
Peri urban	23.5	855	22.8	487	24.7	368
Reasons for leaving school						
No reason for leaving	20	845	20.8	520	18.9	325
You were pregnant or made somebody pregnant	18.6	787	17.8	447	19.8	340
Working to help the family	16.8	708	17.4	435	15.9	273
Not enough money to pay for school	18.4	777	18.1	484	18.8	323
Had to help with looking after the house and siblings	5.1	214	4.9	123	5.3	91
Problems with school work, teachers or the learners	10.4	441	10.7	267	10.1	174
The school was too far	4.4	185	4.5	112	4.3	73
Other	12.3	518	12.4	311	12.1	207
Age	17.4 (1.6)	4215	17.4 (1.9)	2458	17.6 (1.7)	1683
Timing of the drop out						
Grade 7 or lower	18.5	747	19.4	461	17.3	286
Grade 8	16.8	677	17.5	416	15.8	261
Grade 9	17.2	691	18.7	45	14.9	246
Grade 10	20	805	19.6	465	20.6	340
Grade 11	16.8	678	15.6	370	18.7	308
Grade 12	10.7	429	9.2	219	12.7	210

Model development of ordinal logistic regression model

The association between past month alcohol use and reasons for leaving school, moderated by gender was examined. Covariates that showed significant differences on the alcohol variable were also included in the model. It was found that "gender x reasons for leaving school" interaction terms were non-significant (p> 0.05). Since there were significant variations of alcohol use across the various provinces and areas, additional analyses were conducted by including province and area in a four-way interaction model: "gender x reasons for leaving x province x area". The model was further reduced by eliminating higher order non-significant terms based on omnibus tests, followed by eliminating lower order non-significant terms. Due to the initial hypotheses, the terms "reasons for leaving school" and "reasons for leaving x gender" were kept in the models, regardless of their significance.

Ordinal regression results for model including interactions

The final model revealed in Table 2[3] showed the following significant three-way interactions: "gender x being pregnant or made someone pregnant x area"; "gender x not enough money to pay school fees x province"; and "gender x not enough money to pay school fees x area". For simplicity, Table 2 contains only the significant predictors and interaction effects. The full regression table is included in the supplementary file. Simple effects analyses, shown in Table 3, revealed significant two-way interactions of gender with not enough money to pay the school fees in rural areas of Gauteng (OR = 0.33, p = 0.04) and urban areas in KwaZulu Natal (OR = 3.47, p = 0.02) as well as urban areas in Mpumalanga province (OR = 0.44, p = 0.04). Significant two-way interactions were also found with "gender x being pregnant or made someone pregnant" in peri-urban areas (OR = 3.80, p = 0.00). To investigate these significant two-way interaction effects involving gender in-depth, separate analyses for males and females were performed, as shown in Table 3. The odds for this study are defined as the odds of being in a higher alcohol use category, say C, (e.g., drank 20-30 days) versus being in category C-1 (e.g., drank 10 -19 days). As seen in Table 3, we found that those living in rural areas of Gauteng, the odds ratio (OR) of leaving school due to "not having enough money for school fees" is smaller for males than for females (i.e., OR = 0.84 vs OR = 2.58, p = 0.04), if all other variables in the model are held constant. However, the opposite is true for those residing in urban areas of KwaZulu Natal (i.e., OR = 1.33 vs OR = 0.28, p = 0.02) and Mpumalanga (i.e., OR = 1.71 vs OR = 0.44, p = 0.04). In peri-urban areas, if all other variables in the model are held constant, the odds ratio of leaving school due to "being pregnant or making somebody pregnant" is greater for males than for females (OR = 1.76 vs OR = 0.48, p = 0.00).

[3] *The three-way interaction term tested in Table 3 (with p-value 0.08) is not the full interaction involving area. If we choose a different reference area (e.g. Urban) and run the regression again, the three-way interaction term: Not enough money to pay for school fees x Rural (Ref urban) x gender would be comparing the two-way interaction not enough money to pay for school fees x gender between Rural and Urban. Here we found the significant three-way interaction (Est = -1.361; p = 0.002). The same logic can be applied to the three-way interaction term not enough money to pay for school fees x province x gender*

Table 2 Ordinal regression results for the model including interaction terms with province, area, and gender

			95% Confidence Interval			
	Estimate	**S.E**	**Lower**	**odds ratio**	**Upper**	**P-value**
KwaZulu Natal (ref Gauteng)	0.11	0.37	-0.61	1.12	0.83	0.76
Mpumalanga	-0.50	0.38	-1.24	0.61	0.24	0.18
Western Cape	-0.69^{+}	0.41	-1.50	0.50	0.12	0.09
Reason for leaving: Being pregnant or made somebody pregnant	-0.81^{+}	0.37	-1.53	0.44	-0.09	0.03
Rural (ref peri-urban)	-1.82^{+}	0.47	-2.74	0.16	-0.90	0.00
Urban	-0.75	0.50	-1.73	0.47	0.24	0.14
Black African (ref Other)	-0.06	0.24	-0.53	0.94	0.41	0.80
Coloured	0.26	0.26	-0.24	1.30	0.77	0.30
Indian	0.67^{+}	0.37	-0.05	1.95	1.38	0.07
White	0.02	0.40	-0.75	1.02	0.80	0.96
Gender x Being pregnant or made somebody pregnant	1.33^{+}	0.47	0.42	3.80	2.25	0.00
Gender x Rural (ref peri-urban)	1.97^{+}	0.61	0.78	7.16	3.16	0.00
Not enough money to pay for school fees x KwaZulu Natal (ref Gauteng)	-0.29	0.40	-1.08	0.75	0.50	0.48
Not enough money to pay for school fees x Mpumalanga	-0.98^{+}	0.42	-1.80	0.37	-0.16	0.02
Not enough money to pay for school fees x Western Cape	-0.65	0.46	-1.55	0.52	0.24	0.15
Being pregnant or made someone pregnant x Rural (ref peri-urban)	0.82	0.36	0.12	2.28	1.52	0.02
Being pregnant or made someone pregnant x Urban	0.88^{+}	0.39	0.12	2.40	1.64	0.02
Not enough money to pay for school fees x Rural (ref peri-urban)	1.03^{+}	0.36	0.32	2.79	1.73	0.00
Not enough money to pay for school fees x Urban	0.11	0.38	-0.64	1.12	0.86	0.76
Not enough money to pay for school fees x KwaZulu Natal (ref Gauteng) x gender	-0.07	0.50	-1.04	0.93	0.91	0.89
Not enough money to pay for school fees x Mpumalanga x gender	0.99	0.52	-0.03	2.69	2.00	0.06
Not enough money to pay for school fees x Western Cape x gender	0.94	0.56	-0.16	2.55	2.03	0.09
Being pregnant or made someone pregnant x Rural (ref peri-urban) x gender	-1.62^{+}	0.46	-2.53	0.20	-0.72	0.00
Being pregnant or made someone pregnant x Urban x gender	-1.37^{+}	0.50	-2.34	0.26	-0.39	0.01
Not enough money to pay for school fees x Rural (ref peri-urban) x gender	-0.80	0.46	-1.70	0.45	0.10	0.08
Not enough money to pay for school fees x Urban x gender	0.56	0.48	-0.38	1.75	1.50	0.24

$^{+}p < 0.05$ indicates significance

Table 3 Simple effects analyses for interaction effects models with gender as moderator

Gender x reasons for leaving: Not enough money to pay for school fees			
	Rural	**Urban**	**Peri-urban**
Gauteng	Est = -1.11 (0.55)$^{+}$ OR = 0.33 (0.04) CI [-2.18- -0.03] Females only Est = 0.95 (0.45)$^{+}$ OR = 2.58 (0.03) CI [0.09-1.86] Males only Est = -0.17 (0.32) OR = 0.84 (0.59) CI [-0.80-0.45]	Est = 0.26 (0.53) OR = 1.29 (0.63) CI [-0.78-1.29]	Est = -0.31 (0.54) OR = 0.73 (0.57) CI [-1.36-0.75]
KwaZulu Natal	Est = -0.12 (0.49) OR = 0.89 (0.81) CI [-1.08-0.85]	Est = 1.24 (0.51)$^{+}$ OR = 3.47 (0.02) CI [0.24-2.25] Females only Est = -1.08 (0.40)$^{+}$ OR = 0.34 (0.01) CI [-1.87- -0.29] Males only Est = 0.28 (0.32) OR = 1.33 (0.38) CI [-0.35-0.92]	Est = 0.68 (583) OR = 1.98 (0.21) CI [-0.37-1.73]
Mpumalanga	Est = -0.17 (0.50) OR = 0.84 (0.17) CI = [-1.15-0.81]	Est = 1.19 (0.58)$^{+}$ OR = 3.29 (0.04) CI [0.60-2.32] Females only Est = -0.82 (0.48)$^{+}$ OR = 0.44 (0.09) CI [-1.76-0.11] Males only Est = 0.54 (0.33) OR = 1.71 (0.10) CI [-0.10-1.18]	Est = 0.63 (0.58) OR = 1.88 (0.28) CI [-0.51-1.77]
Western Cape	Est = 1.18 (0.47) OR = 3.25 (1.18) CI [-2.10-0.25]	Est = 0.19 (0.48) OR = 1.20 (0.70) CI [-0.76-1.13]	Est = -0.38 (0.53) OR = 0.69 (0.45) CI [-1.42-0.66]
Gender x reason for leaving: Being pregnant or made someone pregnant			
	Rural	**Urban**	**Peri-urban**
	Est = -0.29 (0.38) OR = 0.75 (0.45) CI [-1.04-0.46]	Est = -0.03 (0.42) OR = 0.97 (0.94) CI [-0.86-0.80]	Est = 1.34 (0.47)$^{+}$ OR = 3.80 (0.00) CI [0.42-2.25] Females only Est = -0.73 (0.37)$^{+}$ OR = 0.48 (0.05) CI [-1.13-0.49] Males only Est = 0.57 (0.29)$^{+}$ OR = 1.76 (0.05) CI [-1.45- -0.13]

$^{+}p < 0.05$ indicates significance, Est refers to Estimate (S.E), OR (p value), CI refers to 95% Confidence interval
Significant interaction effects were split for females and males

Discussion

The goal of this paper was to examine the relationship between reasons for leaving school and alcohol use, taking into account possible differences based on gender among OSY. We found several significant associations between reasons for leaving school and alcohol use when demographic factors were incorporated into the analysis, in particular geographic location.

This study found that higher alcohol use due to leaving school for not having enough money for school fees was more likely among females living in rural areas of Gauteng. A previous national study found that a high number of females from rural areas cited financial constraints as their reason for leaving school in South Africa. This group of adolescents tend to be more socioeconomically disadvantaged and live in households where the average per capita household income is low (27). Another study conducted in a rural school in Gauteng province found that both males and females drank high amounts of alcohol in the past month (127). Yet, this study did not take into consideration the association between financial difficulties and alcohol use. In this study, the added stress of financial constraints and the use of alcohol as a coping mechanism for school dropouts may account for alcohol use being more prominent among females residing in rural areas of Gauteng.

In urban areas of KwaZulu Natal and Mpumalanga, our findings demonstrate that females who left school for the same reason (not having enough money for school fees) as their rural counterparts were less likely to consume higher amounts of alcohol. Previous studies found that traditionally among African communities, alcohol use was limited to males and to special occasions (128). Alcohol use may be less prominent among females in these regions due to the prevailing traditional cultural norms towards alcohol use among females. Moreover, various dimensions of urban poverty such as poor living conditions, financial stressors and unemployment among parents or guardians (129, 130) may be factors contributing to adolescent school dropout due to poverty and financial difficulties in urban areas.

In peri-urban areas, males were more likely to consume higher levels of alcohol if they cited leaving school due to making somebody pregnant. Peri-urban areas in South Africa are often characterised by poverty, crime, violence and unemployment (131), which can increase the likelihood of alcohol use and sexual risky behaviours. Previous studies conducted in South Africa found that risky sexual behaviour, such as having sex with multiple partners and engaging in unprotected sex was associated with harmful uses of alcohol, particularly among males (117, 131-133). Moreover, among males, the negative perceived norms, expectancies and lack of behavioural control are key determining factors of alcohol use and risky sexual practices (131, 132).

Several limitations of this study must be considered when interpreting its findings. Data in this survey are based on self-report, and are therefore subject to the limitations of self-report bias. Given that the legal age for drinking in South Africa is 18, participants in this study were underage and may have also underreported or reported less drinking, impacting maybe negatively on our ability to find an association between some of the independent variables and alcohol use. Finally, the cross-sectional nature of the study does not allow for causal relationships to be addressed. Yet, despite these limitations, this study provides valuable insight into the associations of alcohol among OSY in South Africa. Further investigation into other substance use such as hallucinogens and tobacco smoking may also prove beneficial. Future longitudinal and national studies will be needed to better elucidate causal mechanisms.

Conclusion

A wealth of research exists on the reasons why learners leave school. The literature has also shown that school dropouts are at heightened risk for alcohol use. The present study was the first study in South Africa to examine the relationship between reasons for leaving school and alcohol use. In this study, dropping out of school due to 'not being able to pay school fees', and 'making somebody pregnant' were found to be associated with alcohol use, but the strength and direction of these associations were dependent on gender, geographical area (urban, peri-urban or rural), as well as the province in which participants resided. This knowledge will help researchers target and identify those students that are at risk for dropping out of school and subsequent alcohol use, while also paying attention to the geographical and gender differences in South Africa. Such findings could also help implement interventions that combine career education, drug and alcohol resistance skills, counselling and other academic and personal guidance strategies targeting at-risk youth across schools, neighbourhoods and the home. At the policy level, attempts should be made to register all those who drop out of school to allow for tracking of school dropouts for intervention. Future research should address the methodological problems mentioned earlier. For instance, using standardised measures of alcohol use and possibly including a biological component of alcohol use to improve the reliability of self-report. Qualitative research would be particularly valuable in exploring the various reasons for dropping out and alcohol consumption in South Africa using other demographic variables as effect moderators, and reasons for leaving school that were not considered in this study.

Ethics and Consent

The South African Medical Research Council gave ethics approval for the study. Consent was obtained from the relevant Provincial Departments of Education and school principals to use the schools as initial points of contact, to establish the RDS process. Informed written assent/consent was obtained from all participants, as well as from the parent/guardians of participants younger than 18 years.

Chapter 4

Cigarette smoking and reasons for leaving school among school dropouts in South Africa

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Abstract

School dropouts are at heightened risk of tobacco use compared to in-school learners. School dropouts are described as those not currently enrolled in school for the academic year, have not completed their schooling, and are between 13-20 years old. This paper examines the relationship between reasons for leaving school and past month cigarette smoking, taking into account gender differences. Multiple logistic regression was used to analyse survey data (n = 4185). Geographical location was also incorporated into the analysis as effect moderators. Although no significant main effects between reasons for leaving school and tobacco use were found, results showed that those who leave school early smoke more. When examining interaction effects with gender, leaving school due to 'not being able to pay for school fees' was significantly associated with smoking, but only among girls residing in urban areas (OR = 0.327, p = 0.023). More research is needed to understand why learners leave school and their subsequent tobacco use. This knowledge will help researchers identify and target those students that are at risk for dropping out of school and using tobacco.

Introduction

Tobacco use remains the largest preventable cause of premature deaths, accounting for over 6 million deaths each year, worldwide (134). In addition to the death that smoking causes, tobacco use is a risk factor for a range of disease and disability, such as lung cancer, stroke, heart disease, and chronic respiratory disease (2, 3). According to the latest data from the WHO, the average global tobacco smoking among populations aged 15 years and older was 21% (134). Moreover, South Africans aged 15 years and older reported past month tobacco smoking as high as 31.4% (135) . Globally, cigarette smoking is common among adolescents (136). According to the Global Youth Tobacco Surveillance results, the prevalence of past month cigarette smoking among adolescents aged 13-15 years ranged from a low of 3.8% in Uganda to a high of 17.9% in Namibia (137). In South Africa, the Global Youth Tobacco Survey (13-15 years) and Youth Risk Behaviour Survey (13-20 years) reported adolescent past month cigarette smoking as high as 12.7% and 17.6%, respectively (9, 138). Adolescents are also more likely to initiate cigarette use between the ages of 12-14 years (9, 10, 138). Therefore, it appears that adolescents in South Africa are at heightened risk for tobacco use.

Most tobacco smoking studies in South Africa have focused on adolescents attending school. Those who have never enrolled in school or students leaving before attaining their high school diploma are often overlooked (5). Globally, data at the end of the 2013 school year showed 124 million children and adolescents either never started school or dropped out, with nearly half living in sub-Saharan Africa (12). In South Africa, an estimated 4% dropped out of primary school (age 13 years and below) and 12% dropped out in high school (from age 15 years) at the end of the 2014 school year (13, 14). The literature suggests that school dropouts reported cigarette smoking as high as 58% in the U.S and 22.6% in a small South African urban area (5, 11, 139). School dropouts are more likely to take up tobacco smoking, as they are not guided by school-based interventions and the supervision and mentoring of teachers and peers (5, 16-18). Therefore, school dropouts may be more vulnerable to developing tobacco-related diseases and disability than their school-going counterparts.

Reasons to stay out of school are often complex and multifaceted (120). A number of studies conducted in high income countries identified various reasons related to school dropout such as low academic performance (19, 20, 22, 24, 31), single headed families (19, 20, 22, 24, 31), low socio-economic status (5, 20, 31), and substance use and abuse (5). In South Africa, reasons for dropping out of school have also been attributed to boredom (11, 23), bullying (22), illness (27), community violence (31) family support (pregnancy or getting someone pregnant, seeking employment to support the family) (11, 31), and school-related issues (disciplinary consequences, poor academic performance, disliking school, and conflict with teachers) (11, 31). These studies suggest that there are various reasons contributing to school dropout.

Drug and tobacco use among adolescents has usually been associated with school dropout, risk of leaving school, and poor educational outcomes (4, 5, 34, 35). Compared to in-school learners, school dropouts reported significantly higher rates of cigarette smoking (11, 22). To our knowledge, only two studies have investigated the relationship between reasons for leaving school and risky behaviour, namely crime and substance use (36-38). These studies found that those who leave school to be with their friends, or dropout due to poor school performance, were more likely to engage in substance use, smoking and delinquency than those who leave school for family-related reasons (36-38). Previous studies have focused on substance use in general, encompassing the use of tobacco, inhalants, hallucinogens, and alcohol refs. There has been limited focus on understanding the relationship between the various reasons for leaving school and cigarette smoking specifically. Understanding these differences can inform

programme developers to formulate differential cessation programmes for school dropouts or those at risk for dropping out.

Gender differences may be found when examining the relationship between reasons for leaving school and cigarette smoking. Studies have shown that boys smoke more than girls, globally as well as in South Africa (134, 140). Reasons for leaving school are also known to vary across gender. A review of the literature concluded that boys often dropout of school due to disciplinary problems, low academic achievement (86), or to seek employment to contribute towards the family income (11, 19). Girls are more likely to leave school due to pregnancy and caretaking responsibilities (11, 19). A South African study reported that girls were more likely to drop out of school due to bullying (22). Therefore, based on the literature we also expect gender differences in the relationship between reasons for leaving school and cigarette smoking.

The goal of this study was to investigate the association between various reasons for leaving school and cigarette smoking, taking into account possible gender differences. The knowledge gained in this study can contribute towards understanding the profile of school dropouts at risk for tobacco use in South Africa.

Methods

Participants and sampling

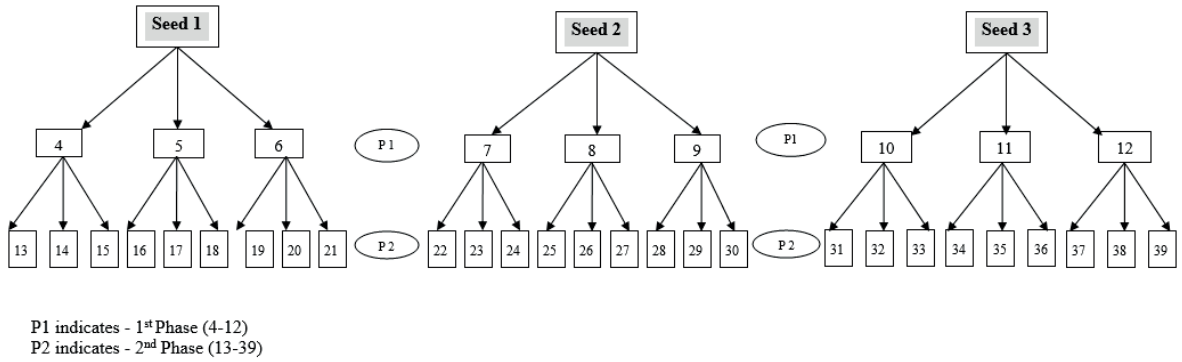
Data collection took place between 2010 and 2011 and followed a cross-sectional design. Four of the nine provinces (KwaZulu Natal, Western Cape, Mpumalanga, and Gauteng) in South Africa were selected using non-probability sampling. The various language and racial groups (Black African, White, Indian, Coloured, Other) of South Africa are represented by these provinces. In this study, participants were school dropouts who met the criteria of not currently being enrolled in school for the entire academic year, have not completed their schooling, and are between 13-20 years old. School dropouts are considered to be a "hidden population" with no existing register or national database for locating them. Therefore, respondent driven sampling (RDS) was an appropriate method for recruiting school dropouts (141).

A stratified cluster sample design was used to select schools (n = 85) as a starting point for recruiting the initial school dropouts or "seeds." Lists of school dropouts from the schools were obtained. Those on the list who met the criteria were contacted and formed the initial seeds. The goal was twenty "seeds" per school site. If schools were unable to provide lists of school dropouts, survey administrators recruited seeds directly from the community, such as approaching young people in the community who appeared to meet the initial criteria.

Each seed was required to identify up to three school dropouts to participate in the study. These participants formed the "first phase" of sampling and were themselves asked to identify and refer a further three school dropouts, and so on. Up to four phases of recruitment were conducted (Figure 1) (123). A coupon system was used to keep track of the RDS recruitment chain. Each respondent received three coupons and invitation cards to recruit three other school dropouts to participate in the survey. The coupons were designed to tear off so the recruiter could keep the left half of the coupon, and the potential recruit the right half. The potential recruit was required to arrive at the survey site with their half of the coupon to complete a survey if interested. As proof of recruitment, the recruiter also returned to the survey site (in a local community hall or school) with their half of the coupon to collect monetary incentives for each participant they successfully recruited into the survey (100). Each participant completed a self-administered questionnaire in one of the five languages (English, Afrikaans,

isiZulu, Xhosa, and Sesotho). The questionnaire was initially designed in English and translated into four languages, namely Afrikaans, isiZulu, Xhosa, and Sesotho. To check for consistency and correct translation, the survey was back translated from these languages to English. The self-administered questionnaire measured a range of socio-demographic characteristics and risk behaviour. All measures used in the current study are stated below.

Figure 1 Respondent driven sampling for out of school youth-a schematic illustration of two sampling phases (123)



P1 indicates - 1st Phase (4-12)
P2 indicates - 2nd Phase (13-39)

Measures

Past month cigarette smoking. Cigarette smoking in the past month was the main outcome variable. Participants were asked to pick a statement that best described their cigarette smoking patterns in the past 30 days. For the statistical analysis, the participants were then recoded as non-smokers (smoked 0 days) and smokers (smoked 1-30 days).

Demographics. Demographic characteristics of the participants were provided by stating the province (1 = Gauteng, 2 = KwaZulu Natal, 3 = Mpumalanga and 4 = Western Cape), the area that they reside in (1 = rural, 2 = urban, 3 = peri-urban), gender (1 = boy, 2 = girl), and their age. The racial categories defined by the Department of Labour were used to classify participant's race (1 = Black African, 2 = Coloured, 3 = Indian, 4 = White, 5 = Other). Racial categories allow investigation of ongoing health disparities that have endured post-Apartheid and were not used with the intention of reifying social constructions developed during the Apartheid era (124).

The timing of the dropout. Participants were asked to indicate the last grade they were in before leaving school (grade 7 – 12).

Reasons for leaving school. Eight items were used to measure reasons for leaving school (0 = No, 1= Yes). Seven items represented each a different specific reason to leave school (i.e., no reason for leaving school, being pregnant or made someone pregnant, not enough money to pay school fees, working to support the family, had to help with looking after the house and siblings, the school was too far, and difficulties with school work, teachers or the learners) and one item represented other reasons not mentioned. Participants were allowed to select more than one reason. Each reason was treated as a dichotomy in the analysis.

Analysis

Statistical analysis was conducted using IBM SPSS version 25 (125). Descriptive statistics were used to describe the sample. Gender was cross-tabulated against study measures. A Spearman's correlation analysis was used to assess the association between study measures. The strengths for the Spearman's correlation were classified as weak ($0.1 \leq r \leq 0.3$), moderate ($0.3 \leq r \leq 0.5$), or strong ($r \geq 0.5$) (142). The prevalence of past month cigarette smoking was also examined against study measures. The prevalence of past month tobacco use was examined against demographic variables, reasons for leaving school, and timing of the dropout. A Chi-square analysis of equal proportions was used to determine significant differences between categories. A pairwise check of overlapping confidence intervals was conducted to determine significant differences within categories. Logistic regression analysis was used to investigate the association between reasons for leaving school, covariates, and cigarette smoking. Moreover, the moderating effect of gender was examined in the model[4]. In the case of significant interactions, simple effects analyses were conducted to further examine the nature of the interaction (126). All estimates were considered to be statistically significant at the 5% level of significance ($p < 0.05$).

Results

Characteristics of the Sample

Of the total 4432 respondents who completed the survey, 137 respondents did not answer the tobacco smoking question and a further 110 respondents did not indicate a reason for leaving school. Therefore, the final sample was 4185. As seen in Table 1, respondents most common reasons for dropping out of school were: no reason for leaving (boys = 20.8%, girls = 18.9%), they were pregnant or made someone pregnant (boys = 17.8%, girls = 19.8%), and they did not have enough money to pay school fees (boys = 18.1%, girls = 18.8%). More than half (58%) were boys and the majority classified themselves as Black African (72.5%). The mean age was 17.4 years (SD = 1.6) and 20% had left school in grade 10 (age 16 onwards). Less than half (46.1%) resided in rural areas and 27.7 % resided in the Western Cape. In addition, bivariate correlation analysis was used to assess associations between study measures (see supplementary materials). At the $p = 0.05$ level of significance, the correlation coefficients were mostly weak and non-significant.

[4] Similar analyses were conducted that tested the moderating effect of timing of the dropout, however, these analyses did not result in significant outcomes

Table 1 Characteristics of the sample and reported reasons for leaving school per gender

	Total		Gender			
			Boy		Girl	
Characteristics	**%/Mean (SD)**	**n**	**%/Mean (SD)**	**n**	**%/Mean (SD)**	**n**
Total	100	4222	58	2506	39.7	1716
Past month cigarette smoking						
Smoker	50.2	2056	61.6	1488	33.9	568
Non-smoker	49.8	2037	38.4	928	66.1	1109
Reasons for leaving school						
No reason for leaving school	20	845	20.8	520	18.9	325
Being pregnant or made somebody pregnant	18.6	787	17.8	447	19.8	340
Working to help the family	16.8	708	17.4	435	15.9	273
Not enough money to pay for school	18.4	777	18.1	484	18.8	323
Had to help with looking after the house and siblings	5.1	214	4.9	123	5.3	91
Problems with school work, teachers or learners	10.4	441	10.7	267	10.1	174
The school was too far	4.4	185	4.5	112	4.3	73
Other	12.3	518	12.4	311	12.1	207
Province						
Gauteng	23	971	26.6	667	17.7	304
KwaZulu Natal	27.3	1153	24.1	603	32.1	550
Mpumalanga	22	930	19.9	498	25.2	432
Western Cape	27.7	1168	29.4	738	25.1	430
Race						
Black African	72.5	2995	70.2	1716	75.9	1279
Coloured	21.8	899	23.7	580	18.9	319
Indian	1.7	70	2.2	54	0.9	16
White	1.4	58	1.2	29	1.7	29
Other	2.6	108	2.7	65	2.6	43
Area						
Rural	46.1	1673	44.6	953	48.3	720
Urban	30.4	1103	32.7	699	27.1	404
Peri-urban	23.5	855	22.8	487	24.7	368
Age	17.4 (1.6)	4215	17.4 (1.9)	2458	17.6 (1.7)	1683
Timing of the drop out						
Grade 7 or lower	18.5	747	19.4	461	17.3	286
Grade 8	16.8	677	17.5	416	15.8	261
Grade 9	17.2	691	18.7	45	14.9	246
Grade 10	20	805	19.6	465	20.6	340
Grade 11	16.8	678	15.6	370	18.7	308
Grade 12	10.7	429	9.2	219	12.7	210

Standard deviation (SD)

Prevalence of past month tobacco smoking

Overall, the prevalence of past month tobacco smoking among school dropouts was 50.2%. As shown in Table 2, boys (61.6%, [95% CI: 59.6-63.5]) had a significantly higher prevalence of past month cigarette smoking than girls (33.9%, [95% CI: 31.6-36.2]). Those residing in Western Cape (69.5%, [95% CI: 66.7-72.1]) significantly smoked more than those living outside the Western Cape. Participants living in urban areas (56.8%, [95% CI: 53.9-59.8]) also smoked more than those in rural areas (44.4%, [95% CI: 42-46.8]). The prevalence of tobacco smoking was high among those who left school in grade eight (56.8%, [95% CI: 53-60.4]) and grade nine (58.2%, [95% CI: 54.5-61.9]) compared to those leaving school later (Table 2).

Table 2 Prevalence of past month tobacco smoking by demographic characteristics, the timing of drop out and reasons for leaving school

Characteristics	Past month tobacco smoking			
	%	95% confidence interval		n
Total	50.2			4222
Gender			p<.05	
Boy[a]	61.6	[59.6-63.5]	a>b	2416
Girl[b]	33.9	[31.6-36.2]		1677
Age			>.05	
13 years	48.2	[41.4-55.2]		199
14 years	52.5	[46.4-58.5]		261
15 years	51.5	[45.5-57.6]		260
16 years	50.2	[45.4-55.0]		414
17 years	54.9	[50.5-59.1]		505
18 years	49.6	[45.9-53.4]		681
19 years	49.5	[47.2-51.8]		1772
Province			p<.05	
Gauteng [a]	57.7	[54.5-60.8]	a>b; a>c; a<d	955
KwaZulu Natal[b]	34.4	[31.7-37.2]	b<d	1157
Mpumalanga	39.5	[36.4-42.6]	c<d	930
Western Cape[d]	69.5	[66.7-72.1]		1143
Race			p<.05	
African[a]	42.8	[41.0-44.5]	a<b; a<c; a<d	2975
Coloured[b]	74.6	[71.6-77.3]	b>e	881
Indian[c]	65.2	[53.3-75.5]		69
White[d]	59.3	[46.4-71.0]		59
Other[e]	45.8	[36.6-55.3]		107
Area			p<.05	
Rural[a]	44.4	[42.0-46.8]	a<b	1659
Urban[b]	56.8	[53.9-59.8]		1089
Peri – urban[c]	50	[46.6-53.4]		844
Timing of drop out			p<.05	
Grade 7 or lower[a]	49.3	[45.8-52.9]	a<b; a<c; a>f	746
Grade 8[b]	56.8	[53.0-60.4]	b>d; b>e; b>f	680
Grade 9[c]	58.2	[54.5-61.9]	c>d; c>e; c>f	682
Grade 10[d]	48.3	[44.8-51.8]	d>f	797
Grade 11[e]	46	[42.3-49.8]		667
Grade 12[f]	37	[32.5-41.7]		427
Reasons for leaving school			p>.05	
No reason for leaving school	49.9	[46.6-53.3]		843
Being pregnant or made somebody pregnant	51.1	[47.6-54.6]		775
Working to help the family	53.3	[49.6-56.9]		704
Not enough money to pay for school fees	49.2	[45.7-52.8]		768
Had to help with looking after the house and siblings	50.9	[44.3-57.5]		216
Problems with school work, teachers or the learners	46.4	[41.8-51.1]		435
The school was too far	47.6	[40.5-54.8]		185
Other	52.5	[48.1-56.8]		507

Development of the logistic regression model

The relationship between past month smoking and reasons for leaving school, moderated by gender was investigated. Covariates that were significantly associated with the smoking variable were included in the model. Further, it was found that the "gender x reasons for leaving school" interaction terms were non-significant (p> .05). Since the various provinces and areas showed significant differences on the smoking variable, these variables were included in a four-way interaction model: gender x reasons for leaving x province x area. The model was reduced by removing higher order terms based on non-significant omnibus tests, followed by eliminating lower order non-significant terms. In line with our original hypotheses, the terms "reasons for leaving school" and "reasons for leaving x gender" were kept in the models, irrespective of their significance.

Reasons for leaving school and cigarette smoking

The final model shown in Table 3, revealed a significant three-way interaction of "gender x not having enough money to pay for school fees x area". Simple effects analysis, shown in Table 4, revealed a significant two-way interaction of gender with "not enough money to pay for school fees" in urban areas as opposed to rural and peri-urban areas (OR = 0.297, p = 0.016, [95% CI: 0.110-0.800]). To investigate this significant two-way interaction in depth, separate analysis for boys and girls were performed. Results showed that leaving school due to "not having enough money to pay for school fees" was associated with less cigarette smoking, but only among girls living in urban areas (OR = 0.327, p =0.023, [95% CI: 0.158-0.872]). The final model, as shown in Table 3, further implied the following significant two-way interactions: The effect of being pregnant or made someone pregnant in urban areas (OR = 0.542, p = 0.011, [95% CI: 0.338-0.867]) is different compared to that effect in rural areas (OR = 1.810, [95% CI: 0.614-5.336]). The effect of "other" reasons for leaving in Mpumalanga (OR = 3.761) is different (p = 0.00, [95% CI: 1.858-7.616]) from that effect in Gauteng (OR = 0.82, [95% CI: 0.252-2.671]). Further simple effects analysis revealed non-significant effects[5]

[5] Similar analyses were conducted that tested the moderating effect of timing of the drop out, however, these analyses did not result in significant outcomes.

Table 3 Logistic regression results for the model include interaction terms with province, gender and area

			95% Confidence Interval (CI)			
	β	**S.E.**	**Lower**	**Exp (B)**	**Upper**	**p-value**
KwaZulu Natal (ref Gauteng)	-1.082+	.328	0.178	.339	0.644	.001
Mpumalanga	0.595	.360	0.896	1.813	3.667	.098
Western Cape	-0.786+	.343	0.233	.456	0.893	.022
Urban (ref rural)	0.406	.312	0.815	1.501	2.765	.193
Peri-urban	0.511	.337	0.861	1.667	3.229	.130
Timing of the drop out	-0.089+	.025	0.872	.915	0.960	.000
Coloured (ref Black African)	1.020+	.127	2.163	2.772	3.553	.000
Indian	0.245	.332	0.667	1.277	2.447	.461
White	0.388	.337	0.761	1.474	2.856	.250
Other	0.205	.269	0.724	1.227	2.080	.447
Boys versus Girls	-0.903+	.416	0.179	.405	0.917	.030
No reason for leaving school	-0.376	.565	0.227	.687	2.079	.506
Being pregnant or made someone pregnant	0.593	.552	0.614	1.810	5.336	.282
Working to help the family	0.033	.520	0.373	1.034	2.863	.949
Not enough money to pay for school fees	-0.065	.631	0.272	.937	3.227	.918
Had to help with looking after the house and siblings	0.072	.654	0.298	1.074	3.870	.913
Problems with school work, teachers or the learners	0.159	.571	0.383	1.172	3.591	.781
The school was too far	-0.356	.672	0.188	.701	2.615	.596
Other	-0.198	.602	0.252	.820	2.671	.742
Gender x No reason for leaving school	0.159	.411	0.524	1.173	2.625	.699
Gender x Being pregnant or made someone pregnant	-0.288	.390	0.349	.750	1.611	.461
Gender x Working to help the family	-0.079	.378	0.441	.924	1.936	.834
Gender x Not enough money to pay for school fees	-0.116	.446	0.371	.890	2.135	.795
Gender x Had to help with looking after the house and siblings	-0.049	.462	0.385	.952	2.355	.916
Gender x Problems with school work, teachers or the learners	-0.329	.422	0.315	.720	1.647	.437
Gender x The school was too far	0.064	.485	0.412	1.066	2.759	.895
Gender x Other	-0.326	.409	0.323	.721	1.610	.425
Being pregnant or made someone pregnant x Urban (rural ref)	-0.613+	.240	0.338	.542	0.867	.011
Being pregnant or made someone pregnant x Peri-urban	-0.246	.262	0.468	.782	1.308	.349
Not enough money to pay for school fees x Urban (rural ref)	1.449	.734	1.011	4.259	17.942	.048
Not enough money to pay for school fees x Peri-urban	-0.221	.747	0.185	.801	3.464	.767
Other x KwaZulu Natal (ref Gauteng)	0.595	.336	0.939	1.814	3.505	.077
Other x Mpumalanga	1.325+	.360	1.858	3.761	7.616	.000
Other x Western Cape	0.353	.341	0.729	1.423	2.778	.302
Gender x Kwazulu Natal (ref Gauteng)	0.125	.225	0.728	1.133	1.761	.580
Gender x Mpumalanga	-0.996+	.255	0.224	.369	0.609	.000
Gender x Western Cape	0.532+	.231	1.083	1.703	2.676	.021
Gender x Urban (rural ref)	0.059	.212	0.701	1.060	1.605	.781
Gender x Peri-urban	-0.219	.231	0.511	.803	1.263	.342
Gender x Not enough money to pay for school fees x Urban (rural ref)	-1.098+	.511	0.123	.334	0.907	.032
Gender x Not enough money to pay for school fees x Peri-urban	0.283	.500	0.498	1.328	3.541	.571
Constant	1.401	.569		4.057		.014

Multivariate logistic regression used to generate p-values, +p<.05 indicates significance, Beta (β), Standard error (S.E)

Table 4 Simple effects analysis for significant interaction effects in the model with gender as a moderator

Gender x Not enough money to pay for school fees	B	S.E	Wald	p-value	Odds ratio	95% CI
Simple effects in different areas						
Urban	-1.214	.506	5.769	.016	0.297	[0.110 – 0.800]
Girls	-0.990	.435	5.172	.023	0.327	[0.158 – 0.872]
Boys	0.193	.270	0.511	.476	1.213	[0.715 – 2.057]

Discussion

The results of this study confirm that cigarette smoking was common among school dropouts in this sample. Past month cigarette smoking was reported by 50.4% of the respondents with boys smoking twice as much compared to girls. Earlier studies also confirm that school dropouts exceeded the rate of cigarette smoking compared to in-school learners who reported 17.6% and 13.6% according to two national studies (9, 138). In comparison to in-school learners who reported 25% smoking in the Western Cape province, cigarette smoking among school dropouts is as high as 69.5% in the Western Cape and 56.8% in the urban areas. Those leaving school in grade 8 and 9 appeared to smoke more than those leaving school later. In contrast, in-school learners appear to smoke more in the later grades compared to those in grades 9 and lower (9). These findings are worrying, particularly the fact that school dropouts are at higher risk for tobacco-related morbidity and mortality, posing a serious public health threat (5, 16-18).

This paper investigated the relationship between various reasons for leaving school and cigarette smoking. Surprisingly, no significant main effects were found between the reasons for leaving school and subsequent cigarette smoking. The few studies conducted among school dropouts have either focused on substance use in general (36) or problem behaviour (37) as a function of reasons for leaving school. Some of our findings are in line with Aloise-Younge 2002, who found that substance use did not differ among adolescents who left school due to problems with teachers or poor school performance. Aloise-Younge 2002 only found significant effects between reasons for leaving and substance use when ethnic differences were taken into account (36). Moreover, Jarjoura (1996) found that dropping out for school-related reasons (poor grades and problems with teachers) was more strongly related to delinquency, but only among adolescents from higher income households (37).

The present study was the first study that focused solely on the relationship between reasons for leaving school and cigarette smoking. The lack of significant relationships between both concepts may be accounted for by the lack of a standardised measure used for cigarette smoking. Given that the legal age for tobacco use in South Africa is 18, participants in this study were underage and may have also underreported their cigarette smoking behaviour. Studies have furthermore shown that tobacco use in the form of waterpipe, snuff, pipes, cigars, and cigarillos are increasing in popularity among adolescents in South Africa, but were not considered in this study (143). Moreover, the South African literature cited reasons for leaving school such as bullying (22), boredom (23) illness (27), and community violence (31), which were also not incorporated into this study. Future studies may find it useful to consider a qualitative approach to understanding the reasons for leaving school and the impact on tobacco use among school dropouts.

The second aim of this paper was to investigate the relationship between reasons for leaving school and cigarette smoking, taking into account possible gender differences. Surprisingly, no significant effects were found when only gender differences were considered. Therefore, we examined how reasons for leaving school differed by geographical location, as well as gender.

Contrary to our expectations, we found that leaving school for not having enough money to pay for school fees was associated with less cigarette smoking, but only among girls living in urban areas. A qualitative study confirm our findings and indicated that physical (poor living conditions, inability to meet school costs), social (unemployment among caregivers and single headed families) and psychological (feelings of disempowerment and despair) poverty is a contributing factor to why adolescents leave school in three poor and marginalised urban communities in South Africa (31). This is not surprising, given that more than two out of every five youth live below the poverty line in South Africa (94). Moreover, the HIV/AIDS pandemic has severely affected the poor communities in South Africa (93). School expenses cannot be met due to reduced income, possibly from the illness of the highest income recipient in the household, and an increased expenditure of health services, and funerals (93, 144). In many households affected by HIV and AIDS, girls tend to be the first to be taken out of school and the first to take on increased family responsibilities, including caring for an ailing guardian (144). Boys may be more likely to seek employment to contribute towards the family income (19). Consequently, boys may be able to afford purchasing cigarettes compared to girls who leave school for the same reason.

The present study is not without its limitations. Respondent driven sampling was conducted in four of the nine provinces of South Africa and therefore the results cannot be generalised to the entire population. However, bias that the non-random choice of seeds may have introduced is overcome through the sufficient number of phases of peer recruitment, which stabilises the composition of the sample, thereby becoming independent of the seeds from which recruitment began (100). Data in this survey are also based on self-report and are therefore subject to the limitations of self-report bias. Although extensive literature exists on the correlates of friend and family smoking, we unfortunately did not have information on friend smoking, and a large amount of missing or unknown data was found on parent/guardian smoking. Finally, causal relationships could not be addressed due to the cross-sectional nature of the study. These limitations notwithstanding, this study provides valuable insight into the associations of cigarette smoking among school dropouts. To better elucidate causal mechanisms, future longitudinal and national studies will be needed.

Conclusion

The present study was the first study to examine the relationship between reasons for leaving school and cigarette smoking. This study found a significant effect between reasons for leaving school and cigarette smoking when demographic factors were incorporated into the analysis, in particular, gender and geographic location. Future research should closely explore the various reasons for dropping out of school and tobacco use in South Africa not considered in this study, possibly using qualitative methods to target the correct reasons for leaving.

This knowledge will help researchers identify and target those students that are at risk for dropping out of school and tobacco smoking. Such findings will inform the recommendations made for future research efforts, as well as the development of specific policies and interventions pertaining to tobacco use among high-risk school dropouts.

Ethics and Consent

The South African Medical Research Ethics Committee granted ethics approval for the study. Permission was additionally obtained from the relevant Provincial Departments of Education and school principals to use the schools as initial points of contact. Participants, as well as the parent/guardians of participants younger than 18 years, gave written consent and assent to participate in the study.

Chapter 5

Tackling smoking among out of school youth in South Africa: An analysis of friendship ties

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Abstract

Friendships during adolescence play a significant role in the initiation and maintenance of tobacco use. Smoking behaviour among adolescent friends has not been explored among out of school youth (OSY) in South Africa. Out of school youth (OSY), described as those between 13-20 years old, have not completed their schooling and are not currently enrolled in school, are at greater risk for tobacco use. The main aim of this study is to examine whether the smoking behaviour of OSY is associated with that of their OSY friends. Respondent driven sampling was used to recruit OSY and their OSY friends. A mixed effects logistic regression with a random intercept across school-province combinations was used to analyse survey data. Race and gender were also incorporated into the analyses as effect moderators (n = 391). Results of this study confirm that cigarette smoking was common among OSY and their OSY friends, with 53.5% of the respondents smoking in the past month (SD = 0.44). When OSY friends were either all non-smokers or half their friends were non-smokers, Coloured OSY were less likely to smoke compared to Black African and Other (mostly Asian descent) OSY. Cultural norms and values associated with the different race groups may play a role on the smoking behaviour of out of school youth friends More studies are needed to investigate the OSY friend social network and their tobacco use. Understanding this relationship is useful for identifying those OSY that are vulnerable to the behaviours that place them at risk of tobacco related morbidity and mortality.

Introduction

Adolescence is a critical period of development marked by the exploration of various identities and experimental behaviour within the personal and social environment. These behaviours could have a negative impact on health and once established in adolescence, often persist into adulthood (9). An important challenge for South Africa, like many other countries, is the high prevalence of tobacco use among adolescents leading to dependence, school dropout, poor educational outcomes, diminished work capacity, disability, and premature death (4-8). Adolescents in South Africa are likely to initiate cigarette use between the ages of 12-14 years (9, 10). According to the recent South African National Youth Risk Behaviour Survey, 17.6% of school-going learners (aged 13-20 years) reported smoking cigarettes in the past month (9).

Most of the research in South Africa on tobacco use has been concentrated on school-going learners, with minimal focus on out of school youth (OSY). The UNESCO Institute for Statistics (UIS) considers OSY as those between 13-20 years old, have not completed their schooling and are not currently enrolled in school (145). Globally, approximately 124 million children are out of school, with almost half (45%) residing in sub Saharan Africa. From grade nine onwards (age 16 years), an estimated 12% drop out of school and only 52% of the age appropriate population remain enrolled by grade twelve (Department of Basic Education, 2011; FHI360., 2014). In South Africa, 51% of OSY reported smoking in the past month (96), which is 33.4% higher than the prevalence rates reported by in-school learners (9). Compared to their school-going counterparts, OSY are at higher risk for developing tobacco related morbidity and mortality, as they do not have the protective factor of school, such as school based interventions and the supervision and positive mentoring by teachers and peers (15).

Adolescent friendships play a significant role in the initiation and maintenance of smoking behaviour. It is well known that friends exhibit similar smoking behaviour to each other (146, 147). Research suggests that tobacco use is associated with having a greater number of friends who smoke in a social network (56, 65-69, 71).The friendship ties as a determinant of tobacco use has been extensively explored among in-school learners (39, 55-61), however, the focus on the hard to reach youth populations is considerably less (84, 85). To my knowledge, no studies have explored associations between smoking behaviour of OSY and their OSY friends.

Most studies on adolescent friend smoking rely on the respondents' reports of friend smoking, rather than direct reports of smoking from friends themselves (79, 147, 148). This can result in adolescents projecting their own smoking behaviour onto their friends, resulting in smoking behaviour among friends seeming more similar than it actually is (56, 149, 150). In the present study, we use smoking behaviour as reported by OSY friends themselves, thereby overcoming possible projection bias (151-153).

The main goal of this study is to examine whether and how the smoking behaviour of OSY is associated with the smoking behaviour of their OSY friends, taking into account that this association may depend on gender and, in the South African context, race. Understanding this relationship may be useful for identifying those that are vulnerable to the smoking behaviours that place them at risk of morbidity and mortality.

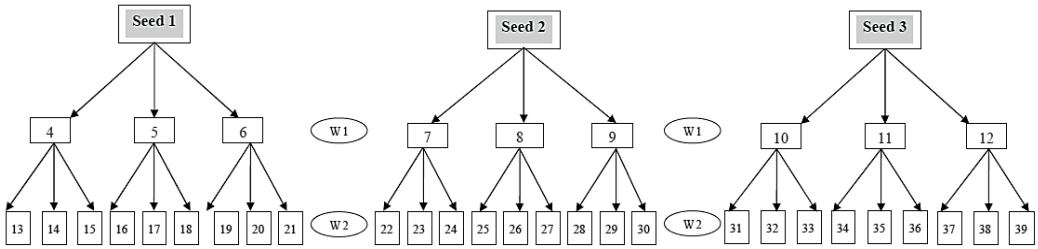
Method

Participants and sampling

Four of the nine provinces (KwaZulu Natal, Western Cape, Mpumalanga and Gauteng) representing the various language and racial groups (Black African, White, Indian, Coloured (mixed race), Other) of South Africa were selected using non-probability sampling. The provinces selected represented all racial and language groups of South Africa. Participants had to meet the predetermined criteria of being between the ages of 13-20 years, not having completed their senior high school certificate and have not been enrolled in secondary or high school for the current academic year. The researchers were unable to identify an existing register or database consisting of OSY, and therefore decided that respondent driven sampling (RDS) was an appropriate method to recruit OSY (100, 122).

The starting point for recruiting the initial school dropouts or "seeds" began by selecting a set of nationally representative schools (n = 85) using a stratified cluster sample design. Up to twenty "seeds" per school site were gathered. If schools were unable to provide the contact details of school dropouts, survey administrators recruited seeds in the community, by approaching young people who appeared to meet the predetermined criteria. Each seed was required to recruit up to three other OSY to participate in the survey. These participants formed the "first wave" of sampling, and in turn were required to recruit a further three OSY, and so on. Up to four waves of recruitment were conducted (Figure 1) (123). Each respondent received monetary compensation for completing the survey. A coupon system was used to track the recruitment process to determine who recruited whom. The coupons were designed to tear off so the recruiter could keep the one-half of the coupon, and the potential recruit the other half. The potential recruit was required to arrive at the survey site (community hall or public library) with their half of the coupon. If the potential OSY recruit met the predetermined criteria, they were asked about their social relationship with their recruiter and then proceeded to complete a self-administered survey. As proof of recruitment, the recruiter also returned to the survey site with their half of the coupon to be compensated (monetary) for each successful recruit who was enrolled into the study (100). Each participant completed a self-administered questionnaire in one of the five languages (English, Afrikaans, isiZulu, Xhosa, and Sesotho). The questionnaire was initially designed in English and translated into four languages, namely Afrikaans, isiZulu, Xhosa, and Sesotho. To check for consistency and correct translation, the survey was back-translated from these languages to English. The self-administered survey measured a range of socio-demographic characteristics and risk behaviour. Only relationship ties with OSY friends were used in this study as 74% of the respondents described their relationship with their recruits as a friend. Furthermore, only those seeds who recruited at least one friend were included in the study. All measures used in the current study are stated below.

Figure 1 Respondent driven sampling for out of school youth – a schematic illustration of two sampling phases (123)**.**



W 1 indicates - 1st Wave (4-12)
W 2 indicates - 2nd Wave (13-39)

*Multiple Stage Cluster Sampling (MSCS) was utilized at school level using schools

Measures

Cigarette smoking. Participants were asked to describe their cigarette smoking pattern over the last 30 days by selecting one of the following statements: never smoked, smoked either 1 to 2 days, 3 to 5 days, 6 to 9 days, 10 to 19 days, 20 to 29 days, or smoked on all 30 days. Those who never smoked were coded as "0 = non-smoker" and all those who smoked at least once in the past month were coded as "1 = smoker". Participants with missing tobacco use were excluded. This classification was used because evidence suggests that non-daily/ experimenters as well as daily smokers are substantially more vulnerable to the negative health effects of cigarette smoking compared to non-smokers (154).

Smoking of OSY friends. OSY friendship ties were based on the relationships identified during the recruitment process explained earlier. In the present study, only recruited OSY friends participating in the study themselves were included as they also completed the questionnaire. Since the smoking behaviour of the OSY friends was known, the proportion of smoking friends was calculated in UCINET 6 (155). Participants who did not recruit at least one OSY friend were excluded from the study.

Parent tobacco use. Participants were asked to indicate if their parents or guardians smoke (0 = no parents/guardians smoke, 1 = "both parents/guardians smoke", 2 = "only my father/male guardian smokes", 3 = "only my mother/female guardian smokes", and 4 = "I don't know"). This variable was recoded as 0 = "no parents/guardians smoke" and "I don't know", 1 = "one parent/guardian smokes", 2 = "two parents/guardians smoke".

Background characteristics

Geographical characteristics of the participants were provided by stating the province (1 = Gauteng, 2 = KwaZulu Natal, 3 = Mpumalanga, and 4 = Western Cape), and the area that they reside in (1 = rural, 2 = urban, 3 = peri-urban, 4 = I don't know). School area was measured as the area in which the participant may have previously attended school, which was also the recruitment site. Those who did not know the area in which they resided in were coded as missing. Gender (1 = boy, 2 = girl), age and race of participants defined by the Department of Labour (1 = Black African, 2 = Coloured, 3 = Indian, 4 = White, 5 = Other) were obtained. Due to the low number of Indian, White and Other participants, race was recoded as 1 = Black African, 2 = Coloured and 3 = Other. Racial categories allow investigation of ongoing health disparities that have endured post-Apartheid and were not used with the intention of reifying social constructions developed during the Apartheid era (124).

Analysis

All statistical analyses were performed using SPSS version 25 (125). Due to missing values for some variables, we performed Little's Missing Completely at Random (MCAR) test to verify that these values were missing completely at random. To examine the association between OSY smoking and proportion of smoking of OSY friends, a mixed effects logistic regression was used with a random intercept across school-province combinations to take into account the hierarchical structure of the data: OSY nested in school area nested in a province. If the variances of the random intercepts at the province and school level were zero, these random effects were removed. Additional predictor variables were gender, race, age, area and parent smoking. Furthermore, the moderating effect of gender and race on the effect of proportion of OSY smoking friends was tested. Step-by-step, the model was reduced by eliminating higher order non-significant interaction terms based on omnibus tests. In the case of significant interactions, simple effects analyses were conducted to further probe the nature of the

interaction (126). Main effects were considered significant if $p \leq 0.05$ and interaction effects were considered significant if $p \leq 0.1$.

Results

Socio-demographic profile of the participants

Of the total 4432 respondents who completed the survey, 2683 respondents had their coupon numbers correctly recorded. Only those respondents who had a friendship tie with at least one of their OSY recruits were included in the study, leading to a final sample size of 391 OSY. Table 1 shows that 53.5% of participants reported smoking at least once in the past month. More than half the participants (55%) were males, the majority (61.4%) described themselves as Black African, and the mean age was 17.83 years (SD = 1.6). Less than half (39.9%) of participants resided in rural areas, whilst 40.2 % resided in the Western Cape province. The average proportion of OSY smoking friends was 54% (SD = 0.44).

Table 1 Socio-demographic characteristics of participants

Characteristics	%/Mean (SD)	n
Past month cigarette smoking		
Smoker	53.5	209
Non-smoker	46.5	182
Gender		
Male	55	213
Female	45	174
Province		
Gauteng	15.9	62
KwaZulu Natal	37.6	147
Mpumalanga	6.4	25
Western Cape	40.2	157
Race		
Black African	61.4	239
Coloured	33.4	130
Other	5.1	20
Area		
Rural	39.9	131
Urban	31.1	102
Peri-urban	29	95
Age	17.83 (1.6)	382
Parent smoking	0.51 (0.73)	382
Proportion of smoking friends	0.54 (0.44)	387

OSY and their OSY friends' tobacco use

We investigated whether the smoking behaviour of OSY is associated with the smoking behaviour of their OSY friends. Little's Missing Completely at Random (MCAR) test showed that missing values on covariates were missing completely at random (chi-square = 2.45, p = 0.87). The random effect of province was removed as the variance was zero. The final model had two levels with OSY nested in school area (variance = 0.04). Moreover, the final model shown in Table 2, revealed a significant interaction between race (Black African vs Coloured) and the proportion of OSY friends who smoke (OR = 0.14, p = 0.05, [95% CI: 0.02-0.96]). As shown in the upper part of Table 3, none of the simple effects of proportion of smoking friends per level of race were significant. Further simple effects analysis of race per level of proportion of smoking friends did reveal significant results, as shown in the bottom part of table 3. When all OSY friends were non-smokers, participants who classified themselves as Coloured OSY

were significantly less likely to smoke compared to Black African (OR = 15.84, p <0.01 [95% CI: 3.11-80.72]) and Other OSY (OR = 23.36, p = 0.02, [95% CI: 1.65-330.45]). When half of OSY friends were non-smokers, Coloured OSY were still significantly less likely to smoke compared to Black African OSY (OR = 5.96, p <0.01 [95% CI: 2.52-14.18]) and Other OSY (OR = 1.63, p = 0.03, [95% CI: 1.14-22.72]). When all OSY friends were smoking, racial differences were no longer significant. We also found that the odds of OSY being a smoker is lower (OR = 0.46, p < 0.05 [95% CI: 0.30-0.69]) when their parents were smokers. Boys (OR = 0.32, p < 0.05) were less likely to smoke cigarettes in the past month compared to girls. Those residing in urban areas (OR = 0.48, p = 0.04) were also less likely to smoke compared to those residing in peri-urban areas, respectively

Table 2. Logistic regression results for the model including interaction terms

					95% CI	
	β	**S.E.**	**p-value**	**Odds ratio**	**Lower**	**Upper**
Boys (ref Girls)	-1.13[+]	0.28	0.00	0.32	0.19	0.56
Black African (ref Coloured)	2.76[+]	0.83	0.00	15.84	3.11	80.72
Other	3.15[+]	1.35	0.02	23.35	1.65	330.45
Parent smoking	-0.78[+]	0.21	0.00	0.46	0.30	0.69
Rural (ref Peri-urban)	-0.26	0.33	0.45	0.78	0.40	1.50
Urban	-0.74[+]	0.36	0.04	0.48	0.24	0.96
Age	-0.15	0.09	0.08	0.86	0.72	1.02
Proportion of smoking OSY friends	1.38	1.54	0.12	3.99	0.68	23.28
Proportion of smoking OSY friends x Black African (ref Coloured)	-1.95[+]	0.97	0.05	0.14	0.02	0.96
Proportion of smoking OSY friends x Other (ref Coloured)	-3.05	1.78	0.09	0.05	0.00	1.58

[+]Significance at 1% level; β (beta); S.E (Standard error); CI (Confidence Interval)

Table 3 Simple effects analysis for significant interaction effects in the model

Proportion of OSY smoking friends x race	**β**	**S.E**	**t**	**p-value**	**Odds ratio**	**95% CI**
Simple effects of proportion of smoking friends, per race						
Black African	-0.57	0.38	-1.50	0.14	0.57	0.27-1.20
Coloured	1.38	0.90	1.54	0.12	3.99	0.68-23.28
Other	-1.66	1.54	-1.08	0.28	0.19	0.01-3.92
Simple effects of race at different proportions of friend smoking						
No smoking friends						
Black African (ref Coloured)	2.76	0.83	3.34	0.00[+]	15.84	3.11-80.72
Other (ref Coloured)	3.15	1.35	2.34	0.02[+]	23.35	1.65-330.45
Other (ref Black African)	0.39	1.12	0.35	0.73	1.48	0.16-13.40
50% smoking friends						
Black African (ref Coloured)	1.77	0.44	4.06	0.00[+]	5.97	2.51-14.18
Other (ref Coloured)	1.63	0.76	2.14	0.03[+]	5.10	1.14-22.73
Other (ref Black African)	-0.16	0.67	-0.23	0.82	0.86	0.23-3.71
All smoking friends						
Black African (ref Coloured)	0.81	0.42	1.95	0.52	2.25	0.10-5.09
Other (ref Coloured)	0.11	0.96	0.11	0.91	1.11	0.17-7.39
Other (ref Black African)	-0.70	0.95	-0.74	0.46	0.50	0.08-3.20

[+]Significant at the 5% level; OSY (Out of school youth)

Discussion

The aim of this paper was to investigate the relationship between OSY smoking and the smoking of their OSY friends. Results of this study confirm that cigarette smoking was common among OSY and their OSY friends, with 53.5% of the respondents smoking in the past month. This rate of cigarette smoking exceeded the rate of cigarette smoking reported by in-school learners by 35.9%, according to a South African national study that was simultaneously conducted among in-school learners (9). These findings pose a serious health threat, as OSY are at higher risk for tobacco related morbidity and mortality (5).

Among those participants who classified themselves as Coloured, those OSY friends that were either all non-smokers or half were non-smokers, were less likely to smoke compared to Black African and Other OSY. The differences found in the association between friends and OSY smoking may depend on cultural norms and values (153). South Africa is made up of people who are of African, Asian and Western descent. Those of Eastern and African descent are usually characterised as interdependent and collectivist, where individuals usually act, submit or conform to the choices of the social or reference group to maintain harmony or feel a sense of belonging (156, 157). In line with the South African study by Panday et al (158), the collectivist nature of Black African or Other (mostly characterized as being of Asian descent) participants may account for the smoking behaviour of these OSY being in accordance with that of their friends. Given the significant results of this study, more studies are needed to investigate the smoking behaviour of OSY and their friends, taking into consideration racial differences.

The negative association found between OSY smoking and parent smoking in this study may appear to be contradictory with the literature. However, applying a simple logistic regression with self-smoking as dependent variable and parent smoking as a predictor variable result in a positive zero-order association, confirming what has been found in previous studies (159-166). What our results show is that, once this association is controlled for potential confounders such as OSY friend smoking, the association becomes negative. Hence, between two OSY who are completely equivalent on all confounders but one has parents that smoke whereas the parents of the other do not, the first OSY is less likely to smoke than the second. An explanation could be that any child to some extent does not want to make the same mistakes as its parents. The positive zero-order association then implies that this disposition is not strong enough to compensate for the effects of the confounders in the model. More studies are needed to investigate this relationship further.

To my knowledge, this was the first study focusing on tobacco use among OSY and their OSY friends. More studies are needed on OSY and their friends, with a view to incorporating in-school as well as OSY friend social networks. A major strength of this study was having actual reports of smoking behaviour from OSY and their OSY friends themselves. Qualitative studies may further be useful in understanding friendship smoking behaviour and the composition of the wider social network of OSY.

The following limitations were present in this study. First, OSY are considered a hidden population and capturing all OSY friendships is difficult. In the present study, Respondent Driven Sampling allowed for the recruitment of hidden OSY using a chain-referral method (100). Although this method led to successful recruiting of OSY friends, it is possible that participants have had more OSY friends other than those they recruited. Second, the present study focused only on friends who themselves had also dropped out of school. Future studies should examine OSY friendships together with any possible remaining in-school friends to obtain a more complete understanding of the peer friendship network surrounding an OSY.

Third, the present study was cross-sectional, future studies should consider using longitudinal data to better elucidate causal relationships in the context of OSY tobacco use. These limitations notwithstanding, this study provides valuable insight into the associations between OSY smoking and smoking by their OSY friends.

Ethics and Consent

Ethics approval for the study was granted by the South African Medical Association Ethics Committee. Permission was additionally obtained from the relevant Provincial Departments of Education and school principals to use the schools as initial points of contact. Participants as well as the parent/guardians of participants younger than 18 years gave written consent and assent to participate in the study.

Chapter 6

Alcohol and tobacco use by out of school youth: A qualitative analysis of the social network

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Chapter 7

General discussion

Alcohol and tobacco use result in millions of deaths annually, particularly in low and middle income countries (1). An important challenge for South Africa is the high prevalence of alcohol and tobacco use among adolescents (140). Moreover, South African youth who have dropped out of school are at greater risk of tobacco and alcohol use compared to in-school learners (5).

This thesis aimed to gain more insight into the social and cognitive correlates of early school leaving and alcohol and tobacco use behaviours among OSY in South Africa. The reported studies explored why young people in South Africa dropped out of school, and examined the relationship between reasons for leaving school and alcohol and tobacco use. In addition, the association between the alcohol and smoking behaviour of OSY and that of their OSY friends was investigated to gain insight into the social environment of OSY, and the relationship with the frequency and inclination for OSY to use alcohol and tobacco. In this concluding chapter, the main findings of the five studies presented in this thesis are discussed. In addition, the limitations and directions for future research are addressed, followed by a discussion on the practical implications of the findings.

Reasons for leaving school

The first question posed in the thesis was, "what are the reasons for leaving school?". Findings presented in Chapter 2 showed that respondents stated multiple reasons for leaving school, which were broadly categorised as school performance, vocational aspirations, social interactions at school, and family-related reasons for leaving school. Previous South African studies also found similar reasons for leaving school. Reasons related to school performance included poor grades (21) and being too old for school (27, 98). Vocational aspirations included leaving to pursue specialised skills training to be able to work and contribute towards the family income. Leaving school due to social interactions at school included bullying (22) and conflicts with teachers or peers (11, 27). Family-related reasons for leaving school included financial difficulties (31), having no family support, and pregnancy (21, 27). There were several reasons for leaving school found in Chapter 2 that were not cited in previous South African literature but were in line with other international studies. Studies conducted in the USA and Kenya (104) found that adolescents left school to be with friends (28, 36, 105). Leaving school to pursue skills focused training at a college was also found in a study conducted in Ghana (108).

Gender differences in the reasons for leaving school were found in the study in Chapter 2. In keeping with previous South African findings, OSY males tended to drop out of school due to poor academic performance and vocational aspirations (21), as well as adverse social interactions at school (27, 98). In this study, more males than females reported bullying as a reason for leaving school, which was in contrast to a previous South African study in which the opposite occurred (22). The contradictory results may be due to differences in the South African communities in which these studies were conducted. The study participants were from a community in which gang violence is very prevalent (106, 107). Thus, males may have been more likely to succumb to gang related activities.

Female OSY tended to drop out of school due to family-related reasons such as pregnancy and lack of family support, and is consistent with previous South African studies (87, 110). Although leaving school due to financial difficulties was common among females in previous South African literature (21, 87), this reason was common among both genders in my study.

In sum, this thesis allowed for a better understanding of the experiences of boys and girls leaving school, including reasons not previously considered in the South African literature.

The relationship between reasons for leaving school and alcohol and tobacco use

The second research question examined the relationship between reasons for leaving school and alcohol and tobacco use. Specific reasons for leaving school were associated with alcohol or cigarette use, but the strength and direction of these associations were dependent on gender, geographical area (urban, peri-urban or rural), as well as the province in which participants resided.

The study described in Chapter 3 found that males were more likely to consume high levels of alcohol if they reported leaving school due to making someone pregnant, but only when they resided in peri-urban areas. As seen in previous studies, risky sexual behaviour is usually associated with harmful use of alcohol, particularly among males (117, 131-133). Among those who left school due to the school fees being unaffordable, females residing in the urban areas of KwaZulu Natal and Mpumalanga were less likely to consume high quantities of alcohol, whilst those residing in the rural areas of Gauteng were more likely to consume high quantities of alcohol (Chapter 3). In traditional African communities, alcohol use is usually limited to males and to special occasions (128). The lower alcohol consumption by females in KwaZulu Natal and Mpumalanga may be due to them conforming to prevailing traditional and cultural norms. In contrast, alcohol use was prominent among females residing in rural areas of Gauteng, possibly because alcohol was used as a coping mechanism to deal with their financial difficulties.

In the study described in Chapter 4, females leaving school due to the school fees being unaffordable and living in urban areas of South Africa were less likely to smoke cigarettes than their male counterparts. These females smoke less possibly due to financial constraints. Moreover, a study in the USA found that females are less likely to leave school to seek employment compared to males (19). Consequently, females may be less able to afford cigarettes than males. Interestingly, the findings of the qualitative study reported in Chapter 6 showed that those who could not afford alcohol and cigarettes were financially assisted by their friends or partners and thus continued using cigarettes and alcohol. This finding may explain why those who dropped out of school due to the school fees being unaffordable were able to smoke cigarettes if residing in urban areas.

In sum, the differences found in alcohol and cigarette use for those leaving school due to making somebody pregnant or the school fees being unaffordable may be attributed to poverty, gender and cultural norms presented in the different geographical locations of South Africa.

The role of social network environment in early school leaving and alcohol and tobacco use

The third question posed in this thesis examined the role of the social network in early school leaving and alcohol and tobacco use. OSY reported that their social network usually consisted of their peers (friends, partners and friends' family) and family (parents, siblings and extended family). Friends usually included those that were in-school as well as out of school. Other peer relationships mentioned by OSY included peers and teachers at school (Chapter 2), romantic partners and the friend's family (Chapter 6). Friends' family would usually reside in the same street or neighbourhood as the participant. The family included parents, siblings and extended family. Participants mostly lived with at least one non-parental relative and described their home as consisting of backyard dwellings where the extended family or the children resided. These network members either played a role in early school leaving or tobacco and alcohol use by OSY.

Chapter 2 found that friends, peers and teachers at school and the family played a role in students leaving school. Those that dropped out but performed well academically would leave school to be with their friends who had also dropped out, possibly due to modelling or social norms to conform to those who have already dropped out of school (105). Others dropped out because they were the only ones out of a group of friends who did not pass and progress to the next grade, and therefore felt alienated from the class that they were placed in. Consistent with previous South African findings, negative social interactions at school such as conflicts with peers or teachers (27) or bullying (22) also played a role in students dropping out of school. Chapter 6 furthermore found that the family environment such as the death of a caregiver (87, 110) contributed towards early school leaving, possibly due to the financial, emotional and psychological difficulties, and the need for orphaned youth to assume adult roles (111, 112). In line with other South African studies, gender differences were found in the social environment contributing to early school leaving, with females leaving school because of lack of support from the family, and males leaving school because of negative social interactions at school (27).

This thesis found that friends played a major role in OSY's alcohol and tobacco use. The study in Chapter 6 showed that OSY would initiate and continue to use alcohol and tobacco with their friends. Similar to in-school learners, friends would mostly pressurise, teach, and offer participants alcohol and cigarettes. In a few cases, non-smoking and non-drinking friends would reduce participants' alcohol and tobacco use (59, 60, 70, 147, 169-171). The findings in Chapter 5 furthermore showed that racial differences were found in the relationship between OSY smoking and the smoking behaviour of their OSY friends. Black African and Other (mostly characterised as being of Asian descent) OSY were more likely to smoke with their friends compared to Coloured (mixed race) participants. In line with the South African study by Panday et al (158), Black African or Asian participants usually act, submit or conform to the choices of the social or reference group to maintain harmony or feel a sense of belonging. This collectivist culture may account for the smoking behaviour of these OSY being in accordance with that of their friends.

Other peer relationships mentioned by OSY in Chapter 6 that played a role in the frequency and inclination to use alcohol and tobacco included romantic partners and the friend's family. Similar to in-school learners (77), OSY reported that they drank and smoked less in the company of their romantic partners. In some cases, friends' family would advise on the adverse effects of tobacco and alcohol use, but in another case, also provide opportunities to drink and smoke away from the participant's family.

The family also played a role in alcohol and tobacco use among OSY. Family members of a similar age such as siblings and cousins would facilitate alcohol and tobacco use. Consistent with the findings of previous international studies with adolescents and their siblings in general (181-185), close companionship and modelling of sibling behaviour, access to alcohol and tobacco through siblings, sibling co-use and the siblings' friends may have contributed to the alcohol and tobacco use by OSY. OSY reported that older family members such as parents, aunts, uncles and grandparents would discourage tobacco and alcohol use, even if they themselves used alcohol or tobacco. However, participants thought it did not have an effect in changing their smoking and drinking behaviour. This finding may be explained by members in the household also smoking and drinking, vague in-home smoking rules, poor quality and frequency of caregiver–child communication, as well as how much adolescents value their caregiver's opinions about smoking and drinking (80, 178, 179). OSY furthermore attributed their alcohol and tobacco use to coping with household issues such as not being able to get along with parents, the stress of contributing towards the household income, feelings of neglect by parents or the loss of a parent, as found in a study among school-going learners in Cape Town (180).

Gender and racial differences

This thesis took into consideration the gender and racial differences when investigating the social and cognitive correlates of early school leaving and alcohol and tobacco use within the South African context. Gender differences were found in the reasons for leaving school (Chapter 2) as well as the association between reasons for leaving school and alcohol and tobacco use (Chapters 3 and 4). In Chapter 5, significant racial differences were found in the association between OSY tobacco smoking and the smoking of their OSY friends. These findings demonstrate the importance of considering gender and racial differences in future studies when investigating early school leaving and alcohol and tobacco use. A participatory action approach (PAR) may be useful for future studies. PAR engages communities to develop, implement and evaluate interventions (186). PAR could help gain further insight into designing gender and cultural specific programmes that combine career education, alcohol and tobacco resistance skills, counselling and other academic and personal guidance strategies targeting those who are at risk of dropping out, as well as address those who have already dropped out to return to school (186).

Limitations

There are some limitations associated with the studies conducted for this thesis. Respondent Driven Sampling (RDS) was used in Chapters 3-5. RDS allowed for the recruitment of hidden OSY using a chain-referral method (100). RDS was conducted in four of the nine provinces of South Africa, and therefore the results cannot be generalised to the entire population. However, bias that the choice of seeds may have introduced, is overcome through recruiting samples over a number of waves, which allows the sample to become independent of the seeds from which recruitment began (100). Given that OSY are a hidden population, further attempts should be made to register all those who drop out of school to allow for tracking and targeting of school dropouts. This may be done by developing a software that keeps track of students who drop out of school at the community, district and provincial level.

The chain referral RDS method also led us to successfully recruit OSY friends. However, given that OSY are a hidden population, capturing all OSY friendships was difficult. The present thesis focused only on friends that themselves also dropped out of school. It is possible that participants had more friends than the ones they recruited, including friends that are still going to school. To examine a more complete picture of the peer friendship network surrounding an OSY, future studies could modify the RDS method by allowing OSY to recruit school-going and OSY friends without any limitations on the number of friends recruited.

The studies in this thesis did not include a longitudinal design. Cross-sectional studies are limited as they are carried out at a single time point, and temporal assumptions and casual inferences cannot be confirmed (187). Future studies should consider a longitudinal design to better elucidate causal relationships in the context of OSY alcohol and tobacco use, as well as early school leaving. However, given that OSY are a hidden population, longitudinal studies with an RDS design may incur high dropout rates and challenges in collecting data from participants at fixed time intervals. Nonetheless, future research should still consider conducting longitudinal studies in this vulnerable population.

Alcohol and tobacco use of OSY in Chapters 3-5 are based on self-report and are therefore subject to the limitations of self-report bias. Given that the legal age for drinking and smoking in South Africa is 18 years, participants in this study were underage and may have also underreported or reported less drinking or cigarette smoking, impacting maybe negatively on

our ability to find an association between some of the independent variables and cigarette or alcohol use. Although direct reports of smoking friends themselves were obtained to counter projection bias, these direct reports may have resulted in bias due to the underreporting of smoking among friends. Self-report in this thesis was not validated by biochemical measures, however studies have shown that self-reports of smoking under anonymous conditions have been shown to be reliable (188, 189).

This thesis only assessed tobacco use in the form of cigarette smoking. Studies have furthermore shown that tobacco use in the form of waterpipe, snuff, pipes, cigars, and cigarillos are increasing in popularity among adolescents in South Africa. Further investigation into other substance use such as hallucinogens and tobacco smoking may also prove beneficial to gain a complete picture of tobacco use among OSY.

This thesis used qualitative methods in chapter 2 and 6. Some limitations of the qualitative studies include the fact that respondents were recruited from community youth groups and referrals in a single urban area, resulting in selection bias. The views expressed in the interviews may not be representative of all OSY. Furthermore, transcripts were not returned to respondents for comment and or correction due to limited resources. Notwithstanding these limitations, chapters 2 and 6 gives us an insight into the social and cognitive determinants of school dropout alcohol and tobacco use. Future studies may use these findings to investigate associations between reasons for leaving school and a range of health related behaviours using a mixed methods and social network analysis.

Practical implications

The reasons for leaving school were found to be diverse in this thesis. Interventions are needed to target those who are at risk of dropping out as well as address those who have already dropped out to return to school. Given that financial difficulties and pregnancy was a major contributor of early school leaving, these findings highlight the need for interventions to be grounded within a framework or poverty reduction and social upliftment of young people.

The gender, racial and geographical differences found in the social and cognitive correlates of early school leaving and alcohol and tobacco use allow programme developers to identify vulnerable subgroups and therefore develop tailored interventions to retain students in school and reduce alcohol and tobacco use. This involves targeting the interpersonal, school, community and policy levels, but more research is needed into how these stakeholders can help retain students in school and reduce alcohol and tobacco use among OSY.

There is still a lot to be gained by current South African policy on preventing school dropout and alcohol and tobacco use. Currently, South African policies preventing school dropout include permitting the re-enrolment of pregnant learners (114) and exempting students who do not have the affordability from paying tuition fees (115). National policies on anti-tobacco and alcohol include prohibiting the sale of these substances to minors and increased taxes on cigarettes and alcoholic beverages. Moreover, anti-smoking policies have improved environments through legislation, prohibiting smoking in public places, and ending the advertising of cigarettes and sponsorship of sporting and cultural events (2). More research, however, is needed on how national policies can further reduce and prevent early school leaving and alcohol and tobacco use among OSY.

Early school leaving (19) and alcohol and tobacco use remains an urgent concern worldwide (1). Researchers can use the findings from this thesis to understand the unique social and cognitive correlates of why young people leave school and their alcohol and tobacco use

presented in different settings. Tailored interventions and changes in policy can furthermore alleviate the global crisis of poor educational outcomes and health in young people.

Recommendations for future research

Respondent driven sampling in this thesis has proven to effectively reach large and varied samples of many hard-to-reach OSY populations to obtain interview and survey data. Moreover, as a sampling strategy, the waves of sampling reduce the inevitable bias in convenience sampling from such populations (190). Future studies may find it useful to continue using this sampling strategy to recruit OSY with improvements in the distribution of coupons, reporting of alter relationships and how recruits are able to reciprocate the passing of coupons (191).

This thesis has provided a better understanding of the reasons for leaving school and alcohol and tobacco use. More studies are needed to investigate associations between reasons for leaving school not previously considered and alcohol and tobacco use. Moreover, given that leaving school due to financial difficulties and pregnancy related factors was common in this thesis, future studies should particularly focus on these reasons for leaving school and the association with alcohol and tobacco use, while also incorporating the gender and geographical differences in the South African context. Longitudinal studies are also needed to make casual conclusions between reasons for leaving school and alcohol and tobacco use among OSY.

Overall, the studies in this thesis found that the social environment, which included friends and family, played a role in OSY's early school leaving and alcohol and tobacco use. Further social network research is needed to gain a more theoretically nuanced story of how the social network of OSY plays a role in early school leaving and alcohol and tobacco use. Quantitative studies may be useful to validate the role of friends and family in early school leaving and alcohol and tobacco use among OSY. Family and friend relationships as a component in school dropout, alcohol and tobacco prevention programmes for OSY should also be considered.

Early school leaving, alcohol and tobacco use remains a global challenge. The studies in this thesis should be replicated in different settings with other OSY samples. Testing additional samples in a different context with the same methods provides supporting or contradictory evidence, and therefore strengthens the generalisability of previous findings (192).

Conclusion

The findings of this thesis provide insight into the social and cognitive correlates of early school leaving, alcohol and tobacco use among OSY in South Africa. This research reveals that the reasons why young people leave school are varied, with notable gender differences. Gender and geographical differences were also found in the relationship between reasons for leaving school and alcohol and tobacco use. Moreover, the social environment, which included friends and family, played a role in early school leaving alcohol and tobacco use by OSY. Racial differences were furthermore found in the association between OSY tobacco smoking and the smoking of their OSY friends. The findings of this thesis suggest that preventing school dropout and alcohol and tobacco use would require tailored intervention programmes to be grounded within a framework of poverty reduction and social upliftment of young people. These interventions would also benefit from incorporating the wider social environment, while also considering the gender, racial and geographical differences found in the reasons for leaving school, alcohol and tobacco use.

Summary

Global alcohol and tobacco use account for over 4 and 2.5 million deaths, respectively, every year (1). Adolescents are more prone to use alcohol and tobacco and are therefore at higher risk to alcohol and tobacco related morbidity and mortality (9, 10). According to the Youth Risk Behaviour Survey, school-going learners (aged 13 to 20 years) reported past month smoking and alcohol use as 21% and 35%, respectively (9). While there is data that have focused on school-going learners and risky behaviours in South Africa, little research has been conducted on Out of School Youth (OSY) (5, 11). OSY are those between 13-20 years who have not completed formal schooling, and are not currently enrolled in school. Globally, approximately 124 million children are out of school, with almost half (45%) residing in sub Saharan Africa (12). Students who fail to complete their schooling may experience negative social, health and economic issues such as unemployment, delinquency, and poor mental and physical health (5, 11, 133). Furthermore, OSY are also more vulnerable to the experimentation and uptake of alcohol and tobacco use, as they do not have the protective factor of the school environment, such as supervision and positive mentoring by teachers and peers (5, 15-18). These high rates of dropout combined with increased risks of alcohol and tobacco use call for the investigation of the social and cognitive correlates of early school leaving and alcohol and tobacco use among OSY.

The studies reported in this thesis focus on three main goals. The first is to understand why young people in South Africa leave school. The second aim is to explore the relationship between reasons for leaving school and alcohol and tobacco use. The third is to gain insight into the social environment of OSY. Specifically, the nature and quality of relationships with family and friends and its association with early school leaving, alcohol and tobacco use in the South African context was explored. Results described in a study in Chapter 2 indicated that young people cited a number of reasons for leaving school, which were broadly categorised as school performance and vocational aspirations, social interactions at school, and family-related reasons for leaving school. In chapters 3 and 4, reasons for leaving school such as making somebody pregnant or the school fees being unaffordable were associated with alcohol or cigarette use, but the strength and direction of these associations were dependent on gender, geographical area (urban, peri-urban or rural), as well as the province in which participants resided. OSY reported that their social network usually consists of their peers (friends, partners and friends' family) and family (parents, siblings and extended family). In addition, the social environment plays a role in educational attainment among OSY (Chapter 2) as well as facilitates the uptake and spread of alcohol and tobacco use, with friends playing a major role (Chapter 5 and 6). Lastly, this thesis took into consideration gender and racial differences in early school leaving and alcohol and tobacco use. Gender differences were found in the reasons for leaving school (Chapter 2) as well as the association between reasons for leaving school and alcohol and tobacco use (Chapters 3 and 4). In Chapter 5, racial differences were found in the association between OSY tobacco smoking and the smoking of their OSY friends.

Several conclusions can be drawn from the findings reported in this thesis. The findings suggest that individual and environmental level interventions involving the school and community are needed to target those who are at risk of dropping out as well as those who have already dropped out to return to school. Given that financial difficulties and pregnancy was a major contributor of early school leaving, these findings highlight the need for interventions to be grounded within a framework of poverty reduction and social upliftment of young people. The gender, racial and geographical differences found in the social and cognitive correlates of early school leaving and alcohol and tobacco use allows programme developers to identify vulnerable subgroups and therefore develop tailored interventions to retain students in school and reduce alcohol and tobacco use.

Valorisation

In this current section, the findings of this thesis will be placed in perspective of their usefulness and relevance at the societal level by transferring knowledge gained to a wider audience, as well as translating this knowledge into products and activities with a schedule and implementation plan.

Adolescence is a critical development period marked by the exploration of various identities within the adolescent's personal and social environments. The impact of these identity processes may place young people at risk for experimenting and taking up negative health behaviours, such as alcohol and tobacco use, leading to both immediate and long term social and health consequences. It is therefore in this phase of life that we must intervene to protect young people from harmful influences, but also promote healthy behaviours that will set them up for a long, healthy, and happy life. Studies on alcohol and tobacco use among adolescents in South Africa have focused on in-school learners, however, out of school youth (OSY) or school dropouts are vastly under researched. Globally, approximately 120 million children are out of school, with almost half residing in sub-Saharan Africa. Students who fail to complete their schooling are more likely to experience negative social, health and economic issues such as unemployment, delinquency, and poor mental and physical health. Compared to in-school learners, OSY do not have the protective factor of the school environment and positive mentoring by teachers and peers. The high rates of dropout combined with the increased risk of alcohol and tobacco use among OSY calls for the exploration of social and cognitive correlates of early school leaving in combination with alcohol and tobacco use. Such action is not only critical in terms of reducing inequality and poverty, but also in averting the health and economic impact of the consequences of behaviours that place young people at risk.

The research in this thesis builds on and affects several areas of work, involving a range of stakeholders working across disciplines. The academic beneficiaries that would benefit from this research include those in the field of psychology, public health, sociology, education, social work, anthropology, behavioural health communication and health promotion. The results of this thesis will add to the body of knowledge on youth risk behaviours and forms an evidence base to inform future work for OSY and the behaviours that place them at risk. The thesis features results from original large scale survey data and qualitative data from in-depth interviews obtained from OSY in South Africa, benefiting both quantitative and qualitative researchers in the field of behavioural science. Health promotors and researchers will gain insight into intervention strategies across the school, home and community to discourage school dropout, alcohol and tobacco use among OSY. School counsellors, health practitioners, adolescents in and out of school, NGO's working with adolescents and parents or guardians could benefit from the results of the study by gaining an in-depth understanding of adolescents' reasons for leaving school and the determinants of their alcohol and tobacco use. Furthermore, the findings of the thesis are aligned with the National Youth Policy that the National Department of Health (NDOH) and Education is implementing in South Africa. The National Youth Policy is a framework for youth development across the country. It endeavours to ensure all young people are given meaningful opportunities to reach their full potential, both as individuals and as active participants in society. The findings of this thesis has provided valuable insight into the profile of OSY at risk of early school leaving alcohol and tobacco use. The results of this thesis suggest that preventing school dropout and alcohol and tobacco use would require tailored intervention programmes to be grounded within a framework of poverty reduction and social upliftment of young people. These interventions would also benefit from

incorporating the wider social environment, while also considering the gender, racial and geographical differences found in the reasons for leaving school, and in alcohol and tobacco use.

The study will be communicated to the international community through presentations at international conferences and publications in academic journals. The results of the study will be communicated to the public in the form of a policy brief, electronic and paper based media. Additionally, the research team received a grant to pursue further work in designing and implementing a pilot study exploring the determinants of behaviours that place out of school youth at risk using digital storytelling. This project will expand on the current level of knowledge in understanding the social and cognitive correlates of risk behaviours in this hidden population, and gives rise to many possibilities for the development of novel data collection methods and interventions using technology that target individuals and the community. The research team will also continue to apply for local grants that will enable the team to organise small symposiums or workshops to prompt further discussions and action on the topic.

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Curriculum Vitae

Rachana Desai was born on 14 February 1990, in Johannesburg, South Africa. Rachana graduated with a Masters degree in Research Psychology from the University of the Witwatersrand, South Africa in 2013. Thereafter, Rachana worked at the Centre for Health Policy at University of the Witwatersrand as a National Research Foundation (NRF) intern in 2014. In 2015, Rachana was appointed as researcher and PhD trainee at the Population Health, Health Systems and Innovation (PHHSI) unit of the Human Sciences Research Council (HSRC) in South Africa. In that same year, she enrolled as a Doctoral candidate at Maastricht University in the Netherlands, under the Faculty of Psychology and Neuroscience. In 2019, she received funding from the NRF to pursue a postdoctoral fellowship on tackling alcohol and tobacco use among out of school youth in South Africa using digital storytelling.

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Desai R, Mercken LAG, Ruiter RAC, Schepers J, Reddy PS. Cigarette smoking and reasons for leaving school among school dropouts in South Africa. BMC public health. 2019;19(1):130.

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Other Publications

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