Adolescent Adjustment and Substance Use: Associations with Parent and Grandparent Involvement

Wade Profe

Department of Psychology

University of Cape Town

Supervisor: Lauren Wild

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Abstract

Adolescent psychopathology and substance use are prevalent issues in South Africa, and therefore it is essential to investigate factors associated with these problems. Research in the global North has suggested that adolescents with highly involved mothers, fathers and grandparents have lower rates of adjustment and substance use difficulties, though various limitations cast doubt on the generalizability of these findings to South African adolescents. This study examined whether mother, father and closest grandparent involvement were associated with adolescent adjustment (as measured by the Strengths and Difficulties Questionnaire) and substance use, namely past-month cigarette, past-month alcohol and past-year marijuana use. The sample consisted of 512 grade 8 and 9 learners in Cape Town (mean age = 14) who completed a structured survey. Of the participants, 43% were male and 85.2% identified themselves as coloured. Hierarchical linear multiple regression analyses, controlling for age, sex and socio-economic status, showed that mother and father involvement were negatively associated with adolescent adjustment difficulties ($p<.01$), whereas mother and closest grandparent involvement were positively associated with prosocial behaviour ($p<.01$). Hierarchical logistic multiple regression analyses, controlling for age and sex, revealed a negative association between parent involvement and cigarette smoking ($p<.01$) but no association for other substance use outcomes. These findings suggest the importance of considering close and distal family relations in interventions to improve adolescent adjustment.

Keywords: adolescent; adjustment; parent; mother; father; grandparent; involvement; substance use; prosocial behaviour.

South African adolescents face a number of challenges to their adjustment. Adjustment is a broad term and encompasses aspects such as social skills (Domitrovich & Bierman, 2001), school achievement (Shek, 2002) and general psychological wellbeing (Attar-Schwartz, Buchanan, Tan, Flouri & Griggs, 2009). Adolescence is a time of rapid social and physiological development, and often involves an increase in stress and risk-taking behaviour (Sigelman & Rider, 2011). In South Africa, 15% of adolescents show signs of psychopathology (Patel, Flisher, Hetrick & McGorry, 2007), and this is often exacerbated by high rates of adolescent substance abuse (Florence & Koch, 2011). Twenty per cent of adolescents are current tobacco smokers, nearly 30% have had binge drinking episodes in the past month, and over 10% have taken at least one illicit drug (Reddy et al., 2008). In order to understand adolescent maladjustment, it is important to investigate factors which may put adolescents at risk for, or protect them from, poor adjustment. Research findings have strongly suggested a positive association between parent involvement and adolescent adjustment (Wenk, Hardesty, Morgan & Blair, 1994). Common conceptions of involvement include emotional involvement, such as high amount of communication, shared love and closeness (Wenk et al., 1994); and behavioural involvement, such as spending time together during various activities (Harris, Furstenberg & Marmer, 1998).

In South Africa, less than 40% of children live with both of their parents, whilst over 20% live with neither of their parents (ChildTrends, 2013**)**. Consequently, grandparents are becoming increasingly involved in the lives of their grandchildren. Around 29% of young South African adolescents live in grandparent-headed households (Statistics South Africa, 2005), suggesting that many more may be living with grandparents who are not household heads. Additionally, research suggests that non-resident grandparents often play important roles in the lives of their grandchildren (Griggs, Tan, Buchanan, Attar-Schwartz & Flouri, 2010). In the global north, positive associations have been found between grandparent involvement and adolescent adjustment (Attar-Schwartz et al., 2009). Considering the high rate of parent absence and grandparent co-residence in South Africa, research here may make an important contribution to the relatively scarce existing literature regarding the associations between grandparental involvement and adolescent adjustment. The current study uses a South African sample to investigate the associations mother, father and closest grandparent involvement have with adolescent adjustment and substance use.

Background

Parent Involvement and Adolescent Adjustment

Despite mixed results, the majority of research suggests a positive association between parent involvement and adolescent adjustment. Adolescents with emotionally and behaviourally involved parents benefit emotionally, as they are happier (Flouri & Buchanan, 2003), more satisfied with life (Wenk et al., 1994), suffer less depression and display lower rates of suicidal ideation (Brook, Morojele, Zhang & Brook, 2006; Ciairano, Kliewer, Bonino & Bosma, 2008; van Renen & Wild, 2008; Videon, 2005; Wenk et al., 1994) than adolescents with less involved parents. The relationship between parent involvement and depression has been confirmed by longitudinal studies, where a change in parents' emotional involvement over time was associated with a change in adolescent depression scores (Videon, 2005). Ciairano et al. (2008) found that parental control (strictness of family rules) moderated this association for young adolescent males, as those with highly involved parents only experienced a reduction in depression when parental control was high.

Adolescents with supportive and involved parents also benefit socially, in that they have higher self-esteem (Ciairano et al., 2008; Wenk et al., 1994) and better perceptions of peer relations (Domitrovich & Bierman, 2001). This leads them to have better social and problem solving skills (Domitrovich & Bierman, 2001). Parent involvement is also positively associated with effortful control (Brook et al., 2006; Wong, 2008), which is the ability to shift attention and focus, suppress inappropriate responses and perform necessary but undesired actions. Not only does this association related to improved social relations, but it also mediates the association between parent involvement and higher school achievement (Shek, 2002; Wong, 2008). In a South African sample, Brook et al. (2006) also found parent involvement to be associated with a decrease in adolescent delinquency and rebelliousness.

Parent Involvement and Adolescent Substance Use

Adolescents with highly involved parents report less cigarette smoking, alcohol use and marijuana use than adolescents with less involved parents (Fletcher, Steinberg & Williams-Wheeler, 2004; Mak et al., 2010; Simons-Morton, Haynie, Crump, Eitel & Saylor, 2001;

Wong, 2008). Simons-Morton et al. (2001), using logistic regression analysis, found adolescents with highly involved parents to be 2.5 times less likely to have smoked a cigarette and 1.67 times less likely to have drunk alcohol in the past month than adolescents with less involved parents. Furthermore, parental involvement is negatively associated with clinically diagnosable substance use and dependence in adolescents (Henry, Robinson & Wilson, 2003). Some studies suggest that this relationship is mediated by the increased knowledge that involved parents acquire of their children's activities (Fletcher et al., 2004), which is consistent with the fact that increased parent-child conversation time is related to decreases in substance abuse (Mak et al. 2010). However, it is possible that adolescents who do not abuse drugs are more willing to reveal their activities, thus explaining how the relationship may also work in the opposite direction.

Differentiating between Mother and Father Involvement

The discussion thus far has not investigated the associations of mother and father involvement separately. Mother and father involvement are independently associated with child outcomes (Flouri & Buchanan, 2003; Videon, 2005), and are at best significantly but moderately correlated (Amato & Rivera, 1999; Flouri & Buchanan, 2003; Harris et al., 1998). It is therefore necessary to assess these variables separately to avoid confounding effects.

Mother involvement. Mother involvement is commonly found to be positively associated with prosocial behaviour (Day & Padilla-Walker, 2009; Domitrovich & Bierman, 2001), which involves the tendency to share, cooperate and be helpful. In a sample of Chinese adolescents, mother involvement was also associated with higher school achievement (Shek, 2002). Notably, the association between maternal involvement and adolescent adjustment may vary according to the gender of adolescents. Boys seem to benefit more from maternal behavioural involvement, whilst girls benefit more from emotional involvement (Wenk et al., 1994). Some studies have found mother involvement to be positively associated with the psychological wellbeing of girls only (Shek, 2005), whereas others have found no association between mother involvement and psychological wellbeing for either boys or girls (Harris et al., 1998). Furthermore, Shek (2005) found mother involvement to be negatively associated with delinquency in boys, whereas Harris et al. (1998) found no such association. It is worthwhile noting that Shek's (2005) study involved Chinese adolescents, whereas Harris et al.'s (1998) study involved American adolescents,

indicating that the differences in findings between these studies may be a result of cultural differences. Regarding substance abuse, some studies suggest a negative association between mother involvement and adolescent smoking and drinking (Shek, 2005). However, Branstetter, Furman and Cottrell (2009) found that maternal monitoring (attempts to gain knowledge of the adolescent's activities), rather than involvement, was negatively associated with adolescent substance use.

Father involvement. Fathers were once conceptualized as unemotional breadwinners who influenced the adjustment of their children only indirectly as forms of social and economic capital (Harris et al., 1998). However, the view of fatherhood is changing as research reveals that fathers have important emotional and psychological effects on their children's development (Videon, 2005). This has led to an increase in research on the effects of father involvement, yielding promising but mixed results. Flouri (2005) found father involvement to be positively associated with prosocial behaviour, and negatively associated with adolescent adjustment difficulties such as emotional, peer, conduct and hyperactivity problems. Other studies have found no association between father involvement and prosocial behaviour (Domitrovich & Bierman, 2001), but most have confirmed the relationship between father involvement and various other aspects of adolescent adjustment. Father involvement is positively associated with adolescent psychological and emotional health (Day & Padilla-Walker, 2009; Domitrovich & Bierman, 2001; Harris et al., 1998; Shek, 2002; Shek, 2005), and negatively associated with delinquency (Harris et al., 1998; Shek, 2002; Shek, 2005). Some studies have found a positive relationship between father emotional involvement and school achievement (Amato & Rivera, 1999; Harris et al., 1998), whereas others find no such association (Shek, 2002). Father involvement has also been associated with less adolescent drug use in some studies (Day & Padilla-Walker, 2009; Shek, 2002), whereas others suggest no association between father involvement and the use of substances such as cigarettes and alcohol (Shek, 2005).

Summary and Limitations of Previous Research

Cumulatively, the literature suggests that parental involvement may be positively associated with adolescent adjustment and negatively associated with substance abuse. Furthermore, mother involvement and father involvement are independently associated with adolescent outcomes.

Previous research is subject to various limitations. Several studies employ parent-reported measures of parent involvement (Amato & Rivera, 1999; Domitrovich & Bierman, 2001; Wenk et al., 1994). However, child-perception of parent involvement is more closely related to child outcomes (Domitrovich & Bierman, 2001; Wenk et al., 1994). Furthermore, few studies examine the differential associations of mother and father involvement with adolescent adjustment (Day & Padilla-Walker, 2009).

In addition to this, many of the studies in this area employ simplistic operational definitions of relevant variables. For example, parent involvement and adolescent adjustment are often subsumed by answers to single statements. This calls for more research employing rigorous and multifaceted definitions of key variables.

Few studies consider the association of substance use with parent involvement. Given that substance use among adolescents is a significant issue in South Africa (Reddy et al., 2008), research considering potential influences on substance use is relevant and important.

Research in South Africa could make important contributions to the literature in light of more serious limitations. Most studies took place in the United States and the United Kingdom (Shek, 2005), and consequently have a predominantly homogenous sample of white participants. This is problematic because the prevalence of different family or household structures varies across racial groups in South Africa (Statistics South Africa, 2005), which may result in different associations between parenting practices and adolescent outcomes. Cultural biases may also exist, as is evident from the previous discussion (Shek, 2005), in that American and British conceptualizations of family differ from those of other cultures (Ciairano et al., 2008; Shek, 2002, 2005). This may influence the impact of the relative involvement of mothers and fathers.

Grandparent Involvement and Adolescent Adjustment

Grandparents may influence the adjustment of their grandchildren in various ways. They may be able to give the unconditional love and attention that busy parents cannot give (Griggs et al., 2010), or counteract harsh parenting (Barnett, Neppl, Scaramella, Ontai & Conger, 2010). Research suggests that grandparents can be of assistance to the functioning of families after divorce, death and even in two-parent families (Attar-Schwartz et al., 2009).

For the sake of simplicity, many studies focus on the involvement of that grandparent with whom adolescents identify themselves as having the closest relationship, or the grandparent most involved in the adolescents' lives. This is most commonly the maternal grandmother (Attar-Schwartz et al., 2009). A few studies have found grandparent involvement to be negatively associated with a variety of internalizing and externalizing problems, such as depression (Attar-Schwartz et al., 2009; Henderson, Hayslip, Sanders & Louden, 2009; Ruiz & Silverstein, 2007) and peer, scholastic and conduct problems (Griggs et al., 2010). Furthermore, research has suggested that grandparent involvement moderates the effects of adverse life events on hyperactivity and emotional problems (Flouri, Buchanan, Tan, Griggs & Attar-Schwartz, 2010). However, findings are mixed in this regard, as other studies have found no association between grandparent involvement and these difficulties (Flouri et al., 2010; Gaibie, 2012; Pittman, 2007). Some studies suggest differences in the association between grandparent involvement and emotional/behavioural difficulties across family structures. For example, Attar-Schwartz et al. (2009) found that whilst grandparent involvement had no association with adolescent adjustment problems in two-parent families, there was a negative association between these variables for adolescents from single-parent families. Similarly, Ruiz and Silverstein (2007) found the negative association between grandparent involvement and depression to be strongest for adolescents from single-parent families. Other studies, however, have found no such difference between family structures (Yorgason, Padilla-Walker & Jackson, 2011). It seems that grandparent involvement may be associated with decreased difficulties for adolescents, but more studies are needed in light of mixed findings in this area.

Research has also found grandparent involvement to be associated with relational competence in adolescents, such as the ability to maintain and enhance relationships (Henderson et al., 2009). This is likely to be the result of the positive association between grandparent involvement and prosocial behaviour, which multiple studies have substantiated (Attar-Schwartz et al., 2009; Flouri et al., 2010; Gaibie, 2012; Griggs et al., 2010; Yorgason et al., 2011). This association has also been observed longitudinally (Yorgason et al., 2011).

Henderson et al. (2009) also found adolescents with highly involved grandparents to have higher self-efficacy, which is the perceived ability to handle challenging situations. Other related findings report no association between grandparent involvement and self-esteem (Ruiz & Silverstein, 2007). Finally, adolescents with highly involved grandparents

who contribute to their education financially have more positive school engagements, such as paying attention in class, and subsequently achieve better results (Yorgason et al., 2011).

Whilst some may contend that grandparent involvement will be superfluous when taking parent involvement into account, studies have found grandparent associations with multiple adjustment variables to occur over and above parent involvement (Gaibie, 2012; Ruiz & Silverstein, 2007; Yorgason et al., 2011). In fact, some findings suggest that grandparent involvement has a stronger association with adolescent adjustment when parent involvement is high (Ruiz & Silverstein, 2007).

Grandparent Involvement and Adolescent Substance Use

No studies investigating the direct association between grandparent involvement and substance abuse in adolescents were found. However, studies have shown that adolescents from homes negatively affected by parent drug use show fewer externalizing problem behaviours and more psychological wellbeing when cared for by highly involved grandparents (Sheridan, 2012; Sheridan, Haight & Cleeland, 2011).

Limitations of Previous Research

There is a dearth of research, both internationally and particularly in South Africa, regarding the associations between grandparent involvement and adolescent adjustment. In addition, the association between grandparent involvement and adolescent substance use is virtually unexplored. More research is needed to further substantiate or challenge the findings of previous research, particularly in light of previous studies' various limitations. As with studies on parent involvement, most studies of grandparent involvement were performed in the United States and the United Kingdom, and involved samples composed of a majority of white participants. This is significant because studies have suggested differences in the amount and effects of grandparent involvement across different racial groups (Pittman, 2007; Yorgason et al., 2011).

Summary and Conclusions

There is strong evidence to suggest that both parent and grandparent involvement is associated with various aspects of adolescent adjustment. However, there is a need for studies differentiating between mother and father involvement, employing more rigorous definitions of involvement and adjustment, and including samples that are not predominantly composed of white Europeans or Americans. Furthermore, few studies investigate the association between parent involvement and adolescent substance use, whereas the association of grandparent involvement with adolescent substance use is a neglected area in current research.

Specific Aims and Hypotheses

The primary objective of the current study was to investigate the associations mother, father and closest grandparent involvement have with adolescent adjustment and substance abuse, using a sample of grade 8 and 9 adolescents from Cape Town. The age of the sample was chosen on the basis of previous research using young adolescents under 16 years of age (Gaibie, 2012; Griggs et al., 2010; Pittman, 2007; Videon, 2005), allowing for comparability. Research has suggested that adolescents in this age range are at particular risk for the onset of psychopathology (Lewinsohn, Clarke, Seeley & Rohde, 1994) and the development of substance abuse habits (Grant & Dawson, 1997; Reddy et al., 2008). A secondary aim of the proposed study is to investigate whether closest grandparent involvement has an association with adolescent adjustment and substance use when mother and father involvement are taken into account. The hypotheses tested were as follows:

1) Adolescents with higher levels of mother involvement will be better adjusted than adolescents with lower levels of mother involvement.
2) Adolescents with higher levels of father involvement will be better adjusted than adolescents with lower levels of father involvement.
3) Adolescents with higher levels of mother involvement will report less substance use than adolescents with lower levels of mother involvement.
4) Adolescents with higher levels of father involvement will report less substance use than adolescents with lower levels of father involvement.

5) Adolescents with higher levels of closest grandparent involvement will be better adjusted than adolescents with lower levels of closest grandparent involvement, even after mother and father involvement are taken into account.
6) Because there is no directly relevant prior research upon which to hypothesize the relationship between closest grandparent involvement and adolescent substance use, this study is unable to make a grounded hypothesis in this regard. However, given the research supporting an association between grandparent involvement and various other aspects of adolescent adjustment, this study tests the hypothesis that adolescents with higher levels of closest grandparent involvement will report less substance use than adolescents with lower levels of closest grandparent involvement, even after mother and father involvement are taken into account.

Method

Research Design

This study took place within the context of a larger study investigating the associations between parent involvement, grandparent involvement and adolescent adjustment amongst grade 8 and 9 pupils in Cape Town. A cross-sectional, quantitative correlational design was used. The primary reason for using a correlational design is that the independent variables of this research are not subject to manipulation. A survey including various measures was administered to the participants (see Appendix A), as surveys are useful methods for collecting a large amount of personal data in a quick and relatively inexpensive manner (Cozby, 2009).

Participants

The current sample consisted of 512 grade 8 and 9 learners from two schools in Cape Town. Of these participants, 220 (43%) were male. Most of the participants were 13 (n= 143), 14 (n= 245), and 15 (n= 105) years of age, and the median age was 14 (SD= .81). A vast majority of the sample identified themselves as coloured (mixed-race) (85.2%), followed by black African (8%) and white (2.3%). More than half of the participants (56.3%) came from nuclear families (residing with their biological mother and father), 20.1% lived with

both parents and at least one grandparent, and 13.3% resided with only one parent. A more comprehensive description of the sample can be found in Appendix B.

Sampling Procedures

The sampling method used was a mixture of convenience and purposive sampling. The sample was purposive in that Grade 8 and 9 learners were specifically targeted, but convenient in that those schools which were willing to participate were included in the study because of time and resource constraints. The principals of eight schools were contacted via telephone and email. These schools were contacted because a) they served communities predominantly composed of black people, and b) they were situated within a convenient travelling distance from the researcher's home. Two principals were willing to accommodate the current study. The first of these schools is a mixed Afrikaans- and English-medium school, and is situated in a historically coloured area with a majority of coloured learners. The school fee per learner is R1350 per year. The second school is an English-medium school situated in a historically white area and has a majority of coloured learners. The school fee per learner is R13 150 per year.

The inclusion criteria for the current study were the following: learners had to be in grade 8 or 9, have both biological parents living, as well as at least one living grandparent. A total of 13 classes from the first school and 10 classes from the second, collectively composed of 722 learners, were surveyed. Of these learners, 2 did not receive consent from their parents to participate in the study. Furthermore, 208 learners did not have two living biological parents or at least one living grandparent. Therefore, the total sample after exclusion was composed of 512 learners. A sample size calculation was performed in order to determine the minimum amount of participants needed to detect statistical significance. Using the equations provided by Tabachnick and Fidell (1996), the following sample size calculations were conducted:

1) $N > 50 + 8m$ (with m being the number of predictor variables). This equation calculates the sample size needed in order to test multiple correlations with a specified number of predictor variables. Since this study included 6 predictors, the estimated sample size is 98.

2) $N > 104 + m$. This equation calculates the sample size needed in order to test each predictor variable's association with the dependent variable. With 6 predictors, the estimated sample size is 110.

Furthermore, post-hoc power analyses using G*Power (version 3.1.7) revealed that a sample of 461 participants would be adequate to detect an effect as small as .03 with a power of 0.8. Therefore, the sample size of the current study was sufficiently large for statistical analysis.

Measures

Measures included in the survey used for analysis in the current study include:

Demographics. Learners were asked to state their age, gender and race.

Socio-economic status. The socio-economic status (SES) of the pupils was assessed using an asset index approach (Booysen, 2001). This presented learners with an array of fifteen household assets, and participants indicated which assets they have in their homes. A total score of SES, out of fifteen, was then calculated by adding up the number of household assets possessed by each participant. This measure is based on the household socio-economic status component of the 18th year adolescent questionnaire developed for the Birth-to-Twenty study (University of Witwatersrand, Department of Paediatrics and Child Care, n.d.) and the Census@School survey questionnaire for grades 8-12 (Statistics South Africa, 2009). Evidence suggests that indexes of this type provide simple and robust measures of socio-economic status in South Africa (Booysen, 2001). Criterion validity of this measure is evidenced by its association with maternal income and education, as well as child health outcomes (McVeigh, Norris & De Wet, 2004). There is also evidence that indices of this kind explain a similar proportion of variance as more sophisticated indices based on component or factor analysis (Sheppard, Norris, Pettifor, Cameron & Griffiths, 2009). Descriptive analyses revealed a significant amount of skew in the data towards high SES scores ($M = 13.81$, $SD = 1.63$). Therefore, scores were recoded into a scale out of three, with a score of one representing all those who had originally scored thirteen or below; a score of two representing an original score of fourteen; and a score of three representing an original score of fifteen. Using the recoded scale, the mean SES score for the sample was 2.15 ($SD = .86$). T-tests revealed a significant difference in SES between school one ($M = 1.77$, $SD = .89$) and

school two (M = 2.33, SD = .77), t = -7.19, p<.01, consistent with the potential SES differences indicated by the schools' respective yearly school fees.

Adolescent adjustment. Adolescent adjustment was measured using the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1994). This is a 25 item 3-point Likert-type scale with five sub-scales of five items each, with each item receiving a score between 0 and 2. Four of these subscales represent adjustment difficulties, namely: hyperactivity, emotional symptoms, conduct problems, and peer problems. Scores for each subscale are added up to a total of 10, and the total scores of each difficulty subscale are then added to calculate a total difficulties score out of 40. Higher scores represent more difficulties. The fifth subscale measures prosocial behaviour, with higher scores indicating more prosocial behaviour. The SDQ is a well-established measure of adolescent adjustment that has been applied in various countries (Hawes & Dadds, 2004), as well as various studies cited in this paper (Attar-Schwartz et al., 2009; Flouri et al., 2010; Gaibie, 2012; Griggs et al., 2010). The SDQ has also been used as a tool for screening child adjustment in South Africa (Cluver & Gardner, 2006). Concurrent validity has been demonstrated in that the scale yielded significantly higher difficulties scores for adolescents in mental health clinics compared to normal controls (Goodman, Meltzer & Bailey, 1998). Convergent and discriminant validity have also been established (Goodman & Scott, 1999). The scale generally shows good internal consistency (Goodman, 2001). Cronbach's alphas for the current sample were .72 for the total difficulties scale and .58 for the prosocial behaviour scale. Although the internal consistency of the prosocial behaviour scale was notably lower than the generally desired minimum of .70, it is comparable to that found and considered acceptable by other studies (Goodman et al., 1998; Muris, Meesters & van den Berg, 2003) and is likely the result of the small number of items (Muris et al., 2003). Streiner (2003) also asserts that alphas above .5 are acceptable for scales of this kind and adequate for research on non-clinical samples.

Substance use. Substance use was measured using six items adapted from a questionnaire designed to measure risk behaviour in South African adolescents (Flisher, 2007). Participants were asked to indicate (by marking "yes" or "no") whether they had used cigarettes or alcohol in the past month, and cannabis, methamphetamine, ecstasy and other illegal drugs in the past year. The risk behaviour questionnaire has good test-retest reliability (Flisher, Evans, Muller & Lombard, 2004), and has established construct validity through its association with numerous relevant variables (Fakier & Wild, 2011; Flisher & Chalton, 2001).

Mother and father involvement. Mother and father involvement were assessed using six questions from the 1979 US National Longitudinal Survey of Youth self-administered supplement for children aged 10 years or older. This scale assesses the behavioural, emotional and cognitive involvement of mothers and fathers (Pleck, 2010). Each item on the scale is scored according to a 4-point Likert-type scale ranging in scores from 0 to 3. A total score is then calculated for both mother and father involvement. Evidence suggests that the items of this scale load strongly on a single factor representing high quality parent involvement (Carlson, 2006; Pleck & Hofferth, 2008). Gaibie (2012) used this scale amongst Cape Town adolescents and found Cronbach's alphas of .66 for the mother involvement scale and .82 for the father involvement scale. Cronbach's alphas for the current sample were .68 for the mother involvement scale, and .77 for father involvement. Although the alpha for the mother involvement scale is below the generally desired minimum of .70, it is only marginally so and remains acceptably high (Streiner, 2003).

Closest grandparent involvement. Participants were asked to indicate with which grandparent they have the closest relationship. Grandparent involvement was measured using a scale based on one previously used by Griggs et al. (2010). The scale is composed of 11 items measuring constructs such as the extent to which adolescents can depend on their grandparents, receive help from their grandparents, and feel emotionally close to their grandparents. Each item is scored along a 3-point Likert-type scale, similar to that of the parent involvement scale. The scale was modified to be more relevant in a South African context and used by Gaibie (2012) for a Cape Town sample. The scale had the following Cronbach's alpha coefficients: maternal grandmother= .84; maternal grandfather= .88; paternal grandmother= .87; and paternal grandfather= .90 (Gaibie, 2012). Alphas for the current sample were: .87 for maternal grandmother; .91 for maternal grandfather; .90 for paternal grandmother; and .91 for paternal grandfather.

Procedure

Permission to conduct this study was obtained from the Western Cape Education Department as well as the University of Cape Town Ethics Review Committee of the Faculty of Humanities. Since the study involved minimal risk for participants, passive informed consent was obtained from the learners' parents (Appendix C). Forms were sent home with the learners a few days before the study took place, informing parents of the study. Those

parents who did not wish for their children to participate were required to indicate this by returning the provided form to their child's school. Learners who did not bring back forms from their parents were assumed to have received parental consent for participation. Before surveys were administered, informed assent forms were distributed to the learners (Appendix D). Both the assent forms as well as the parent consent forms informed participants that they were free to withdraw from the study at any time, and that their information would be kept anonymous.

Once the assent forms had been distributed, those learners who provided assent to participate in the study were administered the research survey by the researcher and research-assistants. For school one, this occurred during multiple Life Orientation periods, whereas the study occurred during a morning exam study period for school two. Therefore, time was relatively flexible for school two, whereas each period for school one was 50 minutes. Participants generally completed their surveys well within 50 minutes. The survey was available to learners in English, Afrikaans, and isiXhosa. Afrikaans and isiXhosa versions were translated using standard forward and back-translation methods. However, of the total amount of learners surveyed, only one opted to use the Afrikaans version and none used the isiXhosa version.

For school one, the teacher was free to leave the classroom during survey administration to ensure that his presence would not make the learners anxious when providing personal information on the surveys. However, because it was found that the absence of the teacher unsettled learners at school one, teachers were requested to remain in the class during the survey for school two. The teachers and non-participating learners occupied themselves with their own work, whilst the researchers remained available to answer learners' questions throughout the survey. Once the learners had finished, the researchers collected each survey. The surveys were then transported directly to the researcher's home and stored securely, disallowing access by any persons not involved in the research to ensure participant confidentiality.

Analysis

The SPSS statistical software package (version 20) was used to analyse the data. The scores for total difficulties and prosocial behaviour from the SDQ, as well as the answers for

each item of the substance abuse scale, served as the dependent variables. Mother and father involvement, as well as closest grandparent involvement, served as the independent variables. SES, age and gender were control variables for the adjustment analyses, in line with previous studies (Attar-Schwartz et al., 2009; Griggs et al., 2010). For substance use, gender and age were added as control variables. This is necessary because socio-economic status is a known correlate with poor adolescent adjustment (Barnett et al., 2010), and there are known gender and age differences in aspects of the SDQ and adolescent substance abuse (Attar-Schwartz et al., 2009; Reddy et al., 2008).

Descriptive statistics of relevant variables, and the correlations between them, were reviewed. To test the hypothesis that mother, father and grandparent involvement were associated with adolescent adjustment, two linear hierarchical multiple regression analyses were carried out. The scores for total difficulties and prosocial behaviour were the dependent variables. As predictor variables, socio-economic status, gender and age were added as a block in the first step. In step 2, father and mother involvement were included as a block. For step 3, closest grandparent involvement was added.

A series of forced-entry hierarchical logistic multiple regression analyses were carried out in order to investigate the associations mother, father and closest grandparent involvement have with each of the items on the substance use scale. Each substance use item served as a dependent variable, whilst mother, father and closest grandparent involvement, as well as age and gender were predictor variables. These variables were placed into the regression in the same order as the linear regression analyses.

For all analyses, alpha levels were set at .05. Missing data were removed according to listwise deletion.

Results

Descriptive statistics

Descriptive statistics, including means and standard deviations, are listed in Table 1.

Table 1

Descriptive Statistics

Variable	*n*	*M*	*SD*
Total difficulties	501	11.22	4.95
Prosocial behaviour	510	7.84	1.67
Father involvement	492	11.71	4.14
Mother involvement	510	13.2	3.22
Closest grandparent involvement	507	13.71	5.33

Zero-order Correlations

Table 2 contains the correlation matrix of the variables. Methamphetamine, Ecstasy and Other Drug use were excluded from the analyses because of low prevalence rates.

Mother, father and closest grandparent involvement were negatively correlated with total difficulties and positively correlated with prosocial behaviour. Father and mother involvement were negatively correlated with cigarette use, and mother involvement was furthermore negatively correlated with alcohol use. As expected, there was a moderately high correlation between mother and father involvement. There was also a weak yet significant positive correlation between closest grandparent involvement and mother and father involvement. Cigarette, alcohol and marijuana use were all positively correlated with age and each other.

Adolescent Adjustment

To test whether mother, father and closest grandparent involvement were associated with adolescent adjustment two hierarchical multivariate regression analyses were performed. The first involved the total difficulties score as the dependent variable; the second involved the prosocial behaviour score as the dependent variable. Detailed results of these analyses are found in Table 3.

Table 2

Correlations among age, gender, socio-economic status (SES), total difficulties, prosocial behaviour, mother and father involvement, closest grandparent involvement, and substance use.

	1	2	3	4	5	6	7	8	9	10	11
1. Age	-										
2. Gender[a]	-.08	-									
3. SES	-.08	-.11*	-								
4. Total Difficulties	.15**	.09*	-.06	-							
5. Prosocial behaviour	-.00	.15**	.02	-.16**	-						
6. Mother involvement	-.11*	.02	.02	-.33**	.20**	-					
7. Father involvement	-.11*	-.01	.11*	-.32**	.11*	.52**	-				
8. Closest grandparent involvement	-.11*	-.01	.06	-.12**	.17**	.2**	.22**	-			
9. Cigarette smoking	.13**	.08	-.03	.15**	-.17**	-.14**	-.11*	-.00	-		
10. Alcohol use	.11*	.09*	-.07	.17**	-.15**	-.10*	-.07	-.03	.43**	-	
11. Marijuana use	.19**	-.03	-.03	.12*	-.12**	-.05	-.01	-.01	.36**	.41**	-

*p<.05
**p<.01
[a] 0 = *boys*, 1 = *girls*

Table 3

Results of hierarchical linear multiple regressions predicting adolescent adjustment from mother, father and closest grandparent involvement

	Adolescent adjustment			
	Total difficulties		Prosocial behaviour	
Predictor	ΔR^2	β	ΔR^2	β
Step 1	.03**		.03**	
Age		.12**		.04
Gender[a]		.09*		.16**
SES		-.02		.03
Step 2	.11**		.03**	
Mother involvement		-.20**		.15**
Father involvement		-.18**		.00
Step 3	.00		.02**	
Grandparent involvement		-.04		.15**
	R= .38, Adj. R^2= .14**		R= .29, Adj. R^2= .07**	
n	476		485	

*p<.05
**p<.01
[a] 0 = *boys*, 1 = *girls*

Total difficulties. Both age and gender were positively associated with total difficulties, revealing that older and female participants tended to have more difficulties. SES was not associated with total difficulties. Both mother and father involvement were significantly negatively associated with total difficulties, indicating that more father and mother involvement were associated with fewer difficulties. Closest grandparent involvement was not significantly associated with total difficulties once the control variables and parent involvement were taken into account. Overall, the model was significant, $F(6, 469)= 13.38$, p<.001, and explained 14.6% of the variance in total difficulties according to the unadjusted R^2 value.

The distribution of the standardized residuals did not deviate sufficiently from normality to warrant doubt, and therefore the assumption of normality was not violated. No heteroscedasticity was detected. The outliers comprised less than 5% of the sample (Field, 2009), and Mahalanobis and Cook's distances revealed that none of these outliers were problematically influential. Tolerance values revealed no issues of multicollinearity.

Prosocial behaviour. Of the control variables, only gender was a significant predictor, indicating that girls tended to display more prosocial behaviour than boys. Mother involvement was significantly positively associated with prosocial behaviour, indicating that more mother involvement was associated with more prosocial behaviour. Father involvement was not a significant predictor. Closest grandparent involvement was positively associated with prosocial behaviour, over and above the influence of the control variables and parent involvement. Overall, the model was significant, $F(6, 484)= 7.15$, $p<.001$, and explained 8.2% of the variance in prosocial behaviour according to the unadjusted R^2 value.

No heteroscedasticity was detected. The outliers comprised less than 5% of the sample, and none were problematically influential. The distribution of standardized residuals was markedly positively skewed, and neither log nor square root transformations corrected the issue. It is noteworthy, however, that running the analysis with the outliers excluded resulted in a close-to-normal distribution of standardized residuals, yet the results remained unchanged.

Substance Use

Of the sample, 12.7% reported having smoked a whole cigarette in the past month; 11.5% reported having drunk more than a few sips of alcohol in the past month; 11.5% reported having smoked marijuana in the past year; and 0.8% reported other illegal substance use in the past year. None reported methamphetamine or ecstasy use. Because of the low frequency of methamphetamine, ecstasy and other illegal substance use, no analyses were performed with these outcome variables.

Hierarchical logistic regression analyses were performed with each of the three remaining substance use outcomes as dependent variables to investigate their association with mother, father and closest grandparent involvement. Those independent variables which were not significant predictors were removed after each step before reporting on the final results, since insignificant variables distort the predictive effect of the final model.

Preliminary analyses with the whole sample revealed two issues affecting the interpretation of the results. Firstly, logistic regression analyses use the most frequent outcome of the dependent variable as a baseline model against which to measure the contribution of predictors. In this analysis, almost 90% of the sample had answered “no” for

each substance, meaning that the baseline model already predicted outcomes with a high amount of accuracy. This is likely to undermine the potential contribution of the predictors, as was illustrated by the fact that the final models of the preliminary analyses predicted with the same accuracy as the baselines. Secondly, each model revealed a large amount of extreme outliers, which were too numerous to justify exclusion. As a result, a random subsample of "no" answers equal to the amount of "yes" answers was drawn for each analysis. The results of the analyses using the full sample are in Appendix E.

Cigarette smoking. The results of this analysis are presented in Table 4. The final model did not include gender, SES or closest grandparent involvement. Age was positively associated with cigarette smoking, showing that older adolescents were more likely than younger adolescents to have smoked in the past month. Simultaneously placing mother and father involvement in the model significantly increased the predictive power of the model, yet neither mother involvement nor father involvement were significant predictors on their own. This revealed issues of collinearity between these two variables. Therefore, a composite score of both parents' involvement was calculated, and this significantly contributed to the model. Adolescents with more involved parents were less likely to have smoked in the past month than adolescents with less involved parents. This model explained 11% - 14% of the variance, and predicted smokers vs. non-smokers with 62% accuracy compared to a baseline accuracy of 50.4%. There were no outliers.

Table 4

Results of a hierarchical logistic multiple regression predicting adolescent cigarette smoking in the past month using random subsample.

	B(SE)	**Odds ratio (Confidence interval)**
Included		
Constant	-4.68(3.26)	
Age	.48*(.23)	1.61 (1.03-2.51)
Parent involvement	-.08**(.03)	.92 (.87-.98)
n= 121		

R^2= .11 (Cox & Snell), .14 (Nagelkerke)
Model $\chi^2(2)$= 13.53, p<.01.
*p<.05
**p<.01

Alcohol use. The results of this analysis are shown in Table 5. The final model included only age, which was positively associated with past-month alcohol use. Therefore, older adolescents were more likely than younger adolescents to have drunk more than a few sips of alcohol in the past month. Mother, father and closest grandparent involvement were not associated with past-month alcohol use. The model including age as a predictor explained 4% - 6% of the variance, and predicted alcohol vs. non-alcohol users with 56.8% accuracy compared to the baseline accuracy of 50%. There were no outliers.

Table 5

Results of a hierarchical logistic multiple regression predicting adolescent alcohol use in the past month using random subsample.

	B(SE)	**Odds ratio (Confidence Interval)**
Included		
Constant	-6.79*(3.14)	
Age	.48*(.22)	1.62 (1.05-2.51)
n= 118		

R^2= .04 (Cox & Snell), .06 (Nagelkerke)
Model: $\chi^2(2)= 4.97$, $p<.05$.
*$p<.05$

Marijuana smoking. The results of this analysis are displayed in Table 6. Again, age was positively associated with past-year marijuana use, and therefore older adolescents were more likely than younger adolescents to have smoked marijuana in the past year. Mother, father and closest grandparent involvement were not associated with past-year marijuana use. The model explained 9 - 12% of the variance, and increased the accuracy of predicting marijuana smokers vs. non-marijuana smokers from a baseline of 50% to 58.5%.

Table 6

Results of a hierarchical logistic multiple regression predicting adolescent marijuana use in the past year using random subsample.

	B(SE)	Odds ratio (Confidence interval)
Included		
Constant	-11.5*(3.67)	
Age	.81*(.17)	2.25 (1.36-3.74)
n= 118		

R^2= .09 (Cox & Snell), .12 (Nagelkerke)
Model $\chi^2(1)$= 11.51, p<.01.
*p<.01

Discussion

The results provided some support for the hypotheses of the current study. Hypothesis 1 was fully supported, as hierarchical linear multiple regressions showed that mother involvement was associated with more adolescent adjustment, namely fewer total difficulties and more prosocial behaviour. Hypothesis 2 was partially supported in that father involvement was negatively associated with total difficulties, but was not significantly associated with prosocial behaviour after controlling for age, gender, SES and mother involvement. Hypotheses 3 and 4 were only partially supported, as logistic hierarchical multiple regressions showed that the cumulative score of mother and father involvement was negatively associated with past-month cigarette smoking after controlling for age and gender, but none of the other substance use variables showed significant independent associations with mother or father involvement. Because of collinearity effects it is not possible to individually affirm or reject these hypotheses with regard to cigarette smoking. Hypothesis 5 was partially supported, in that closest grandparent involvement was positively associated with prosocial behaviour even after the influences of mother and father involvement were accounted for. Hypothesis 6 was rejected, as closest grandparent involvement was not associated with any of the substance use outcomes.

The findings of this study support an association between mother involvement and the psychological, social and emotional adjustment of adolescents amongst the mixed findings of previous research. These results are in contradiction to those of Harris et al., (1998), although

their outcome measures were comparable to the emotional and conduct problems components of the SDQ. However, the findings of this study are in line with other studies using non-American/-European samples (Shek, 2002; Shek, 2005), though it was not within the scope of the current study to evaluate the differential associations between mother involvement and adolescent adjustment across girls and boys observed in those studies. Moreover, the finding that mother involvement is positively associated with prosocial behaviour confirms the results of previous research (Day & Padilla-Walker, 2009; Domitrovich & Bierman, 2001). Research suggests that mothers who are involved in warm and supportive ways may provide a sense of stability for adolescents and a model of empathic behaviour which adolescents then imitate in their own relationships (Domitrovich & Bierman, 2001). Of course, in the absence of longitudinal support it may be the case that better adjusted adolescents elicit more maternal involvement.

The negative association between father involvement and total difficulties is in line with most of the previous research in this area (Day & Padilla-Walker, 2009; Domitrovich & Bierman, 2001; Flouri, 2005; Harris et al., 1998; Shek, 2002; Shek, 2005). This is further support for the view that fathers have important associations with the psychological/emotional adjustment of their children, as opposed to being detached breadwinners with little parenting significance. The fact that father involvement was not associated with prosocial behaviour after demographic variables and mother involvement were controlled for adds weight to previous research with similar findings (Domitrovich & Bierman, 2001), and is contrasted with other findings (Flouri, 2005). It is noteworthy that Flouri's (2005) study also used the SDQ to measure adolescent adjustment, yet found that father involvement was positively associated with prosocial behaviour across both white and Indian British adolescents. These differences may simply be a result of the fact that mother involvement was not controlled for by Flouri (2005) because of its strong association with father involvement. Alternatively, the contrary findings may be the result of cultural differences in paternal parenting between Flouri's (2005) British sample and the present study's South African sample. Future studies on culturally diverse samples which control for mother involvement are required to test these speculations.

Cumulatively, these findings indicate that both mother and father involvement have important independent associations with adolescent difficulties, and the inclusion of these variables in step two of the hierarchical regression model explained an additional 11% of the variance in total difficulties after demographic variables were controlled for. The

standardized betas for mother and father involvement (-.20 and -.18 respectively) suggest that these variables were equally important. Regarding prosocial behaviour, the inclusion of mother involvement in step 2 of the hierarchical regression model explained an additional 3% of the variance in prosocial behaviour after controlling for demographic variables. However, father involvement had virtually no association with prosocial behaviour. One possible explanation for this may be that maternal involvement is more centred on relationship building, warmth and support, whilst paternal parenting is more concerned with norm compliance (Day & Padilla-Walker, 2009). Research findings are mixed in this regard. For example, whereas Smetana (1995) found that fathers were more likely to display authoritarian parenting styles and mothers more likely to display warm parenting styles, Simons and Conger (2007) found that mother and father parenting styles were similar more often than not. Future studies, including qualitative approaches, may be useful to substantiate or falsify these speculated parenting differences.

Regarding substance use, the finding that parent involvement is negatively associated with cigarette smoking is in line with previous research (Fletcher et al., 2004; Mak et al., 2010; Simons-Morton et al., 2001; Wong, 2008). Notably, the logistic regression model including parent involvement and age explained 11% – 14% of the variance in adolescent cigarette smoking. Because of collinearity effects it was not possible to differentiate the associations of mother and father involvement with cigarette smoking. Therefore, studies employing more rigorous methods are needed to elaborate on these differential associations.

In light of the relatively high correlations between the use of cigarettes, alcohol and marijuana, it is puzzling that parent involvement was associated with the former after controlling for demographic variables, but not the latter two. It may be speculated that the lack of association between parent involvement and alcohol drinking is because of the ease with which this practice can be hidden from parents. In contrast, cigarettes are quickly addictive and leave strong odours on clothes and other objects, making it difficult for adolescents to hide this activity from highly involved parents. Such an interpretation is in line with the suggestion of some research (Branstetter et al., 2009) that the association between parent involvement and adolescent substance use is mediated by parents' knowledge of adolescents' activities. However, such an explanation could be explained inversely, in that adolescents who are not involved in substance use are more willing to reveal their activities to their parents (Fletcher et al., 2004). Alternatively, for both alcohol and marijuana it may simply be the case that other social influences not considered in this research, such as peer

pressure or a history of family substance use, will better account for their use (Simons-Morton et al., 2001).

The finding that closest grandparent involvement was not associated with total difficulties is in line with some previous research (Attar-Schwartz et al., 2009; Flouri et al., 2010; Gaibie, 2012; Pittman, 2007), and contradicts the findings of various other previous studies (Griggs et al., 2010; Henderson et al., 2009; Ruiz & Silverstein, 2007). However, these findings do not rule out the possibility that grandparent involvement may moderate the effects of adverse life events on adolescent adjustment problems (Flouri et al., 2010). Additionally, these findings cannot contradict the possibility that the association between grandparent involvement and adolescent adjustment difficulties differs across family structures (Attar-Schwartz et al., 2009), although other previous research has negated this (Yorgason et al., 2011). Therefore, future research should focus more specifically on the moderating effects of grandparent involvement, as well as differential outcomes across family structures.

Closest grandparent involvement was associated with adolescent prosocial behaviour even after taking demographic variables and parent involvement into account, and explained an additional 2% of the variance in prosocial behaviour. This finding is in line with most previous international studies (Attar-Schwartz et al., 2009; Flouri et al., 2010; Griggs et al., 2010; Yorgason et al., 2011), as well as one study conducted with adolescents in Cape Town (Gaibie, 2012). Research in other countries has suggested that involved grandparents tend to have warm and supportive relationships with their grandchildren, and thus act as models of prosocial behaviour (Griggs et al., 2010). Of course, since the current research is correlational it remains possible that grandparents are simply more involved with adolescents who display prosocial behaviours. Thus, more research is needed in South Africa to establish the causality of these effects as well as to investigate the mechanisms by which grandparent involvement and adolescent prosocial behaviour are associated.

These findings offer no support for an association between closest grandparent involvement and adolescent substance use. Indeed, given that not even mother and father involvement were associated with two of the three substance use outcomes, it would be counter-intuitive to expect that grandparent involvement should have such an association. However, these results do not contradict findings regarding the moderation of grandparental

care on the effects family substance use has on children (Sheridan, 2012; Sheridan et al., 2011).

Strengths and Limitations

This study has several important features. It is one of the few studies regarding parent involvement and adolescent adjustment using a South African sample, and therefore adds to the current dearth of research in South Africa. Furthermore, the use of valid, reliable and multifaceted measures of adolescent adjustment and parent/grandparent involvement differentiate this study from the various studies employing broad, simplistic measures of these variables. The differentiation between mother and father involvement contributes further to the literature examining the differential associations mother and father involvement have with adolescent adjustment (Day & Padilla-Walker, 2009). Furthermore, this study attempted a seminal investigation of the association between closest grandparent involvement and adolescent substance use.

The strengths of this study must be viewed in light of its various limitations. As previously mentioned, the correlational design of this study makes it impossible to make any claims of causality. This has two implications. Firstly, alternative explanations and mediator variables cannot be ruled out. For example, it is possible that highly involved parents influence the selection of the adolescents' peers, which in turn may directly influence adjustment and/or substance abuse (Simons-Morton et al., 2001). Secondly, the direction of effects cannot be established. It is very likely that the relationship between parent/grandparent involvement and adolescent adjustment is bidirectional (Fletcher et al., 2004), in that poorly adjusted or substance using adolescents may shun relationships with family members or cause them to withdraw. Though previous longitudinal studies have supported a causal influence of parent involvement on adolescent adjustment (Videon, 2005; Yorgason et al., 2011), more are needed in order to establish these findings with more confidence. Additionally, studies investigating the influence of adolescent traits on parenting practices are warranted.

The sample of this study was predominantly composed of coloured learners from only two schools. This limits the generalizability of the findings to, at most, coloured adolescents in Cape Town. Furthermore, a relatively high overall SES score indicates that this sample

may not be representative of the majority of black learners in South Africa who live in much poorer conditions. The study does, however, contribute to a research area that has until now been dominated by studies with predominantly white American/European samples.

The presence of teachers in the classrooms during the survey at school two may have caused participants to respond in socially desirable ways for fear of having their answers revealed (Gaibie, 2012). However, it was specifically stressed to learners that their confidentiality was assured, and teachers did not intrude in any way during the survey process. Self-reports in general are open to social desirability biases (Flouri, 2005), and bring into question the accuracy of adolescents' perceptions of their own adjustment and the involvement of their parents. However, regarding adjustment it is intuitive to argue that there is no better way to measure subjective wellbeing than through a self-report, and research has supported the veracity of such measures (Lepper, 1998; Sandvik, Diener & Seidlitz, 1993). Regarding parent involvement, it has been argued that the practices of parents find meaning in the perceptions of those being parented, and therefore the adolescents' perceptions of their parents are more important for their adjustment (Fletcher et al., 2004). Finally, the fact that adolescents provided all of the data may lead to single source bias, resulting in inflated correlations between outcomes (Flouri et al., 2010). Studies employing multiple outcome measures, including adolescent, parent and teacher reports, are recommended.

The measurement of substance use was very simplistic, in that it only asked whether adolescents had drunk alcohol or smoked a cigarette in the past month, or smoked marijuana in the past year. This would encompass those who are regular users as well as any who may have used these substances once in their lifetime, having happened to have done so recently. Therefore, it remains plausible that a more elaborate measure of both alcohol and marijuana use may be associated with parent and/or grandparent involvement. However, given the low rates of substance use observed with these simplistic measures, it seems unlikely that more elaborate measures will lead to significantly different findings for this age group. Nevertheless, future studies should use more elaborate measures to clarify the association between parent involvement and substance use.

The measure of adolescent adjustment (SDQ) used in this study is limited in scope, and does not measure other potentially relevant aspects of adjustment such as scholastic achievement and physical wellbeing (Gaibie, 2012). Also, only the total difficulties score of the SDQ was used as a measure of adolescent problems. Investigating the associations parent

and grandparent involvement have with the different problem subscales may have resulted in varying and more elaborate results. However, evidence indicates that the individual SDQ subscales possess lower reliability, and explain a substantial amount of overlapping variance (Roy, Veenstra & Clench-Aas, 2008). Thus it may be argued that the utilization of the full total difficulties scale warrants increased confidence in the associations observed.

Finally, the use of only the closest grandparent score ignores the potential impact of multiple grandparents in the adolescents' lives, and there is thus a need for studies to broaden the investigation to the involvement of multiple grandparents (Attar-Schwartz et al., 2009). Since the study only considered the involvement of biological mothers and fathers, the potential contribution of stepparents was not considered. Previous studies have suggested that the involvement of step-parents has important associations with adolescent wellbeing (Yuan & Hamilton, 2006), and more research is needed in this area.

Conclusion

Despite its various limitations, this study was an important investigation of potential influencing factors on areas of considerable concern in South Africa, namely adolescent adjustment and substance use. Both mother and father involvement were negatively associated with a cumulative measure of adolescent emotional, peer, conduct and hyperactivity difficulties, whereas mother and closest grandparent involvement were positively associated with adolescent prosocial behaviour. Furthermore, parental involvement was negatively associated with adolescent cigarette smoking. These findings suggest that it may be important for interventions aimed at adolescents with adjustment problems to involve parents (Simons-Morton et al., 2001), particularly by fostering emotional and behavioural involvement in their children's lives. Moreover, it may be beneficial for mental and community health practitioners to work with whole families where possible, rather than focusing attention only on individuals and immediate families (Attar-Schwartz et al., 2009). Together, these findings suggest that both immediate and more distal family relations have associations with various aspects of the adjustment and substance use of South African adolescents.

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