Parenting Behavior, Adolescent Depression, Alcohol Use, Tobacco Use, and Academic Performance: A Path Model

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(ABSTRACT)

This study examines the relationship of role parenting behaviors and adolescent depression in adolescent outcomes. Parenting behaviors considered were authoritative parenting, parental monitoring, and parental care. Adolescent outcomes considered were depression, alcohol use, tobacco use, and grades. A path model was employed to examine these variables together. A sample of (n=3,174) of 9^{th} -12^{th} grade high school students from seven contiguous counties in rural Virginia were examined on these variables.

Logistic regression analysis revealed parental monitoring and adolescent depression predicted all outcome variables tested. Authoritative parenting predicted adolescent alcohol use and grades and parental care only predicted adolescent depression. Logistical regression also reveled gender difference with parental care, authoritative parenting and male and female alcohol use and grades. Authoritative parenting predicted female alcohol use, and female grades were predicted by parental care. For males, authoritative parenting predicted male grades, and parental care predicted male alcohol use.

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CHAPTER I

INTRODUCTION

Statement of Problem

Depression onset is occurring earlier in life today than in past decades (NIMH, 2003). Early onset depression often reoccurs and continues into adulthood (NIMH, 2003). Adolescent depression has been under diagnosed, leading to serious difficulties in school, work and personal adjustment, which also continue into adulthood (Brage, 1995). According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR), depressive symptoms include feeling sad or empty, markedly diminished interest or pleasure in activities, weight gain or loss, insomnia or hyper-somnia, psychomotor agitation, fatigue, feelings of worthlessness, diminished ability to think or concentrate, and recurrent thoughts of death (American Pyschological Association, 2000). Depression in adolescents has just recently been acknowledged as a problem (NIMH, 2000; Nunley, 2001). Depressive symptoms are often viewed as normal adolescent behavior or moodiness. Adolescents with depressive symptoms have difficulty expressing how they feel and may use other means of expression such as acting out, which often is interpreted as misbehavior (NIMH, 2000). It is estimated that 8.3 percent of adolescents in the U.S. suffer from depression and 4.9 percent from major depression (NIMH, 2003).

Depression is one of the biggest risk factors in adolescent suicide. In 2000, NIMH (2003) reported the suicide rate for adolescents ages 15-19 was 8.2 deaths per 100,000. Attempted suicide rates are about 2-3 percent higher than the actual suicide rate (NIMH, 2003). In Virginia, the rate of suicide in adolescents ages 10-19 has increased 32% in the last 25 years (VDH, 2000). Virginia's suicide rate is 6% higher than the national rate (Seifen, 2001). The Virginia Commission on Youth (2001) reported depression as the second leading cause of

adolescent hospital admission in Virginia in 1995. These hospitalizations in 1995 cost $51.5 million (Virginia Commission on Youth, 2001). Depression in adolescents is an important aspect on its own, but this importance is magnified because it is linked to other problem areas in adolescence such as substance abuse and academic performance (NIMH, 2000; NMHA, 1997).

Adolescents that suffer from depression usually have falling academic performance (Nunley, 2001). Nunley (2001) describes poor academic performance as not only an outcome of depression, but also as a symptom of depression. Poor school performance has been associated with dropping out of high school (Magdol, 2001), and dropping out of high school has been associated with high economic costs from lower earnings and higher rates of unemployment, welfare dependency, and criminal behavior (Carnegie Council on Adolescent Development, 1989). According to Lamarine (1995), since depression often results in lower academic performance, the school should be the best place to assess for adolescent depression. Unfortunately depression is an area that has been largely ignored by the public schools.

Studies have shown that depressive symptoms in adolescents are a predictor and risk factor of adolescent tobacco and alcohol use (Diego, Field, Sanders, 2003; Sutherland & Shepherd, 2001). According to national statistics, adolescent alcohol and tobacco use is still a big problem in the United States (National Center for Health Statistics, 1999). Sixty-five percent of high school seniors have smoked cigarettes, and eighty percent have consumed alcohol (Diego et al., 2003). Adolescent alcohol and tobacco use can lead to addiction, health problems, emotional problems, problems with school and work, and low social competence (Palmer & Liddle, 1996). Adolescent depression often co-occurs with alcohol and tobacco use (NIMH, 2000) because these substances are often used to avoid or mask feelings of depression (NMHA, 1997).

Given these links between adolescent depression, alcohol and tobacco use, and low academic performance, it is important to find out what factors contribute to adolescent depression and to consider adolescent depression as a contributing factor to adolescent academic performance, alcohol use and tobacco use. Treating adolescent depression may be a key factor in helping adolescents with these other adolescent problem outcomes.

Rationale

Researchers have examined the role of parenting and how it can influence a variety of adolescent outcomes including, depression, alcohol use, tobacco use, and academic performance. Parenting behaviors that contribute to parenting style include parental care, warmth, monitoring, discipline, and decision-making styles. Parenting style has been found to predict adolescent well-being in the domains of social, academic, and psychosocial performance (Darling & Steinberg, 1993). Darling and Steinberg also reported that authoritative parenting is one of the most consistent family predictor of adolescent competence. Dornbusch, Ritter, Leiderman, Roberts, and Fraleigh (1987) reported that an authoritative parenting style characterized by warmth, interest, and concern, along with clear rules has a positive relationship with adolescent grades. Specifically, their findings suggest that the more warmth, interest, concern, and the clearer the rules from parents, the higher the adolescents grades. Parental monitoring, defined as the degree to which activities are monitored by parents and how much parents know about their adolescents whereabouts, has been found to be negatively associated with adolescent substance use (Mounts, 2002; Raboteg-Saric, Rijavec, & Brajsa-Zganec, 2001), such that less parental monitoring is associated with increased rates of substance use (including alcohol and tobacco) and depression.

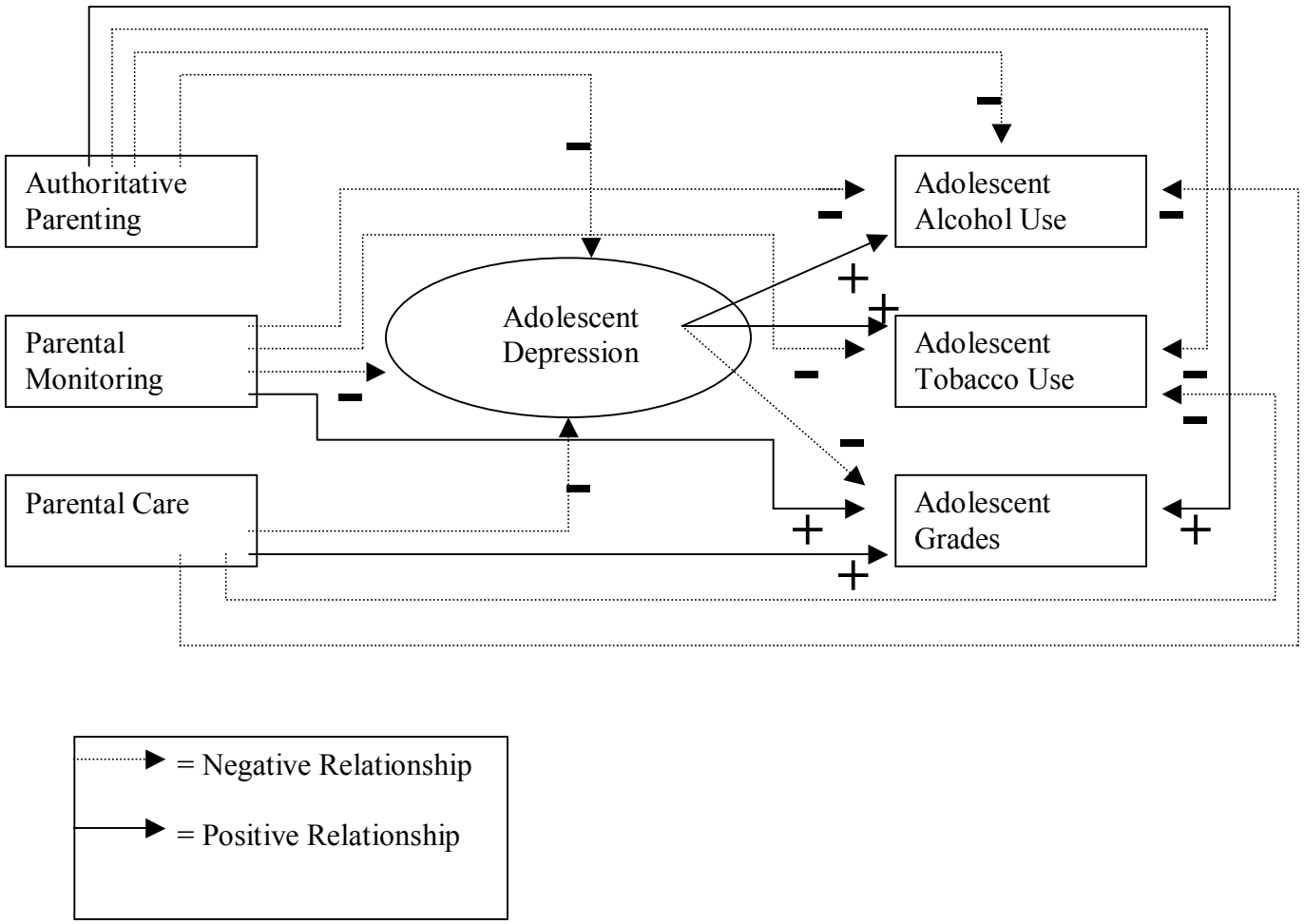
McFarlane, Bellissimo, and Norman (1995) found that mother and father care, defined as warmth, affection, empathy and reciprocity, was negatively associated with adolescent depression, which implies that higher amounts of care decreased the likelihood of depression. Steinberg, Elmen, and Mounts (1989) studied different ethnic groups and found that authoritative parenting predicted good psychosocial outcomes, including less depression, for African-, Asian-, European-, and Hispanic- American adolescents. Academic performance was associated with authoritative parenting only in European American adolescents (Steinberg et al., 1989). Because most of the research is cross-sectional, the direction between parenting style and adolescent outcome is unclear. However, there are some longitudinal studies that suggest a direct effect of parenting style on adolescent outcomes such as alcohol and tobacco use, and academic performance. For example, Glasgow, Dornbusch, Troyer, Steinberg, and Ritter (1997) studied high school students over a two-year period and found a direct effect of parenting style on adolescent academic performance, such that the type of parenting style reported predicted adolescent academic performance. That is, adolescents reporting parents as indulgent or neglectful earned significantly lower grades than adolescents reporting authoritative parenting. Mounts' (2002) longitudinal study found that parenting style had a direct effect on adolescent alcohol use. Such that adolescent report of authoritative parenting had lower levels of alcohol use.

Purpose

Previous studies have established a clear relationship between authoritative parenting, parental care, parental monitoring and adolescent depression (Aunola, Stattin, & Nurmi, 2000; Garber, Robinson, & Valentiner, 1997; Greaven, Santor, Thompson, & Zuroff, 2000; McFarlane et al., 1995; Radziszewska, Richardson, Dent, & Flay, 1996), alcohol and tobacco use

(Adamczyk-Robinette, Fletcher, & Wright, 2002; Clausen, 1996; Cohen & Rice, 1997; Coombs & Landsverk, 1998; Dishion, Patterson, & Feid, 1988; Fletcher & Jefferies, 1999; Herman, Dornbusch, Herron, & Herting, 1997; Mounts, 2002; O'Byrne, Haddock, & Poston, 2002; Raboteg-Saric et al., 2001; Radziszewska et al., 1996) and academic performance (Amato & Flower, 2002; Cohen & Rice, 1997; Dornbusch et al., 1987; Forehand & Nousiainen, 1993; Glasgow et al., 1997; Herman et al., 1997; Lamborn, Mounts, Steinberg, & Dornbusch, 1991; Paulson, 1994; Radziszewska et al., 1996; Steinberg et al., 1989). Research also suggests a relationship between depression and adolescent alcohol and tobacco use (Diego et al., 2003; Fergusson, Goodwin, & Horwood, 2003; Field, Deigo, & Sanders, 2001; Vogel, Hurford, Smith, & Cole, 2003) and academic performance (Field et al., 2001; Vogel et al., 2003). Few however have examined the relationship among all of these factors. This study explores the relationship between authoritative parenting style, parental care, parental monitoring, adolescent depression, adolescent alcohol, adolescent tobacco use, and adolescent academic performance. Specifically, we believe that the relationship between parenting (care, monitoring, authoritative) and adolescent academic performance, alcohol use, and tobacco use will be mediated by adolescent depression. We will also examine authoritative parenting, parental care, and parental monitoring as a major factor in adolescent depression (see Figure 1).

Figure 1. Path Model



Research Hypotheses

1. There will be a negative relationship between authoritative parenting and adolescent depression.
2. There will be a negative relationship between authoritative parenting and adolescent alcohol use.
3. There will be a negative relationship between authoritative parenting and adolescent tobacco use.
4. There will be a positive relationship between authoritative parenting and adolescent grades.
5. A negative relationship will be found between parental monitoring and adolescent depression.
6. A negative relationship will be found between parental monitoring and adolescent alcohol use.
7. A negative relationship will be found between parental monitoring and adolescent tobacco use.
8. A positive relationship will be found between parental monitoring and adolescent grades.
9. Parental care will be negatively related to adolescent depression.
10. Parental care will be negatively related to adolescent alcohol use.
11. Parental care will be negatively related to adolescent tobacco use.
12. Parental care will be positively related to adolescent grades.
13. Adolescent depression will be positively related to adolescent alcohol use.
14. Adolescent depression will be positively related to adolescent tobacco use.
15. Adolescent depression will be negatively related to adolescent grades.

16. Adolescent depression will mediate the relationship between authoritative parenting, parental monitoring, parental care and adolescent alcohol and tobacco use and adolescent academic performance.

Theoretical Framework

This study uses social learning theory as the basic theoretical framework. All behaviors happen in a context, so it is important to recognize influence of other factors. This study examines parents as the influencing factor for adolescent depression. Bandura's social learning theory recognizes the importance of observing and modeling the behaviors, emotional reactions, and attitudes of others. Social learning theory is based on the idea that we cannot only rely on ourselves for information about the world and how we should behave in it (Bandura, 1977). Bandura's (1977) model states that people observe what is going on around them and then interpret a meaning of those behaviors. Applied to the present study, social learning theory suggests that adolescents interpret the messages that their parents give them via their parenting behaviors, which can alter the adolescent's cognitions and behaviors. For example, if a parent is showing low or no caring for the adolescent, the adolescent may feel uncared for and may show signs of sadness or hopelessness. Harsh punishment or authoritarian decision-making may cause the adolescent to feel as if they cannot do what they like to do, and therefore the adolescent may lose interest in things they use to enjoy. One of Bandura's principles states that an observer is more likely to adopt modeled behavior if the modeler has an admired status, as many parents do to children growing up to adolescents. Previous studies have demonstrated that parents are still influential in the lives of adolescents (Gecas & Seff, 1990). In addition, Clausen (1996) believes that parents serve as a role model for adolescents and that adolescents tend to imitate the habits and behavior of their parents. This study will focus more on how parental behaviors affect

adolescent's depressive symptoms, and how this in turn influences adolescent grades and tobacco and alcohol use. For this study, parenting behaviors include adolescent report of how decisions are made (authoritatively or non-authoritatively), the extent to of parental monitoring, and parental care. We will then look at the relationship between parent behaviors and the adolescent report of depressive symptoms.

Parenting

This study uses multiple indicators of parenting. One indicator is authoritative parenting, which is part of Baumrind's (1966) typology of parenting. Although Baumrind developed these categories with parents of young children, these parenting styles have been used in the study of adolescents as well. Baumrind (1966) uses the term Permissive to describe parents who see themselves on the same level as their adolescents. They avoid control, make very few demands and see themselves as only a resource for the adolescent. Authoritarian parents believe they are the trainer of the adolescent and use forceful discipline and control (Baumrind, 1971). Authoritative parents set standards to direct adolescents to appropriate behaviors, encourage negotiation and give reasoning behind decisions. Baumrind (1971) found differences in outcomes with varying parenting styles. Authoritative parenting was associated with higher grades, less substance use, and lower rates of depression. Authoritative parental behavior has been associated with higher achievements for girls.

Other researchers have divided these parenting styles into parental behaviors or practices. For example, Maccoby and Martin (1983) reported that higher parental support and moderate control are important for lower adolescent depression and alcohol and tobacco use. Parental support has also been called parental warmth, and parental care. Parental control has been operationalized as protectiveness, monitoring, and strictness (Maccoby & Martin, 1983). Many

different measures have been used to examine parenting style. Some researchers have used rules and decision making, caring, involvement, and monitoring to group parents into one of Baumrind's categories of parenting (Adamczyk-Robinette et al., 2002; Aunola & Flower, 2000; Cohen & Rice, 1997; Dornbusch et al., 1987; Fletcher & Jefferies, 1999; Lamborn et al., 1991; Radziszewska et al., 1996; Steinberg et al., 1989). More recently researchers have been looking at individual aspects of parenting such as parental involvement, care, rejection, hostility, cohesion, and protection separately instead of using Baumrind's typology (Amato & Flower, 2002; Clausen, 1996; Ge, Best, Conger, & Simons, 1996; Greaven et al., 2000; Heaven, Newbury, & Mak, 2004; Herman et al., 1997; McFarlane et al., 1995; Mounts, 2002; Raboteg-Saric, et al., 2001; Rey, 1995).

Studies examining parenting behaviors and adolescent depression report that there is a significant relationship between these factors (Aunola et al., 2000; Garber et al., 1997; Ge et al., 1996; Greaven et al., 2000; McFarlane et al., 1995; Radziszewska et al., 1996). For example, Radziszewska and colleagues (1996) found that authoritative parenting style was significantly related to lower levels of depressive symptoms, and unengaged parenting style with the highest level of depressive symptoms. Similar findings have been reported in studies of parenting style and adolescent academic performance (Amato & Flower, 2002; Cohen & Rice, 1997; Dornbusch et al., 1987; Forehand & Nousiainen, 1993; Glasgow et al., 1997; Herman et al., 1997; Lamborn et al., 1991; Paulson, 1994; Radziszewska et al., 1996), and in studies of parenting style as it relates to adolescent alcohol and tobacco use (Adamczyk-Robinette et al., 2002; Clausen, 1996; Cohen & Rice, 1997; Coombs & Landsverk 1998; Dishion et al., 1988; Fletcher & Jefferies, 1999; Herman et al., 1997; Mounts, 2002; O'Byrne et al., 2002; Raboteg-Saric et al., 2001; Radziszewska et al., 1996). Glasgow and colleagues (1997) reported that parenting style had a

direct effect on adolescent academic performance, such that non-authoritative parenting style was associated with lower adolescent academic performance. Similarly, Clausen (1996) found that parental styles with low levels of caring and high levels of protection, defined as non-authoritative parenting, were associated with higher levels of adolescent cigarette smoking and alcohol consumption.

Research that has examined the relationship between parental monitoring and adolescent alcohol and tobacco use (Dishion et al., 1988; Herman et al., 1997; Mounts, 2002; Raboteg-Saric et al., 2001) is inconclusive. Herman et al., (1997) found a positive relationship between monitoring and alcohol and tobacco use, such that high monitoring was associated with higher levels of alcohol and tobacco use. However, Dishon et al., (1988), Raboteg-Saric et al., (2001), and Mounts (2002) found a negative relationship between monitoring and adolescent alcohol and tobacco use. This could be explained by the different populations tested and measures used. For example, Herman et al., (1997) employed a large diverse sample of 12-18 year olds, a longitudinal design, and used a regulation scale to measure monitoring. Dishon et al., (1988) used a sample of 238 students in high risk neighborhoods and used an interviewing method to assess for monitoring. Raboteg-Saric et al., (2001) employed a sample of 287 students 11-14 years old and used a monitoring scale, while Mounts (2002) had a sample of 300 9th grade students in the Midwest and used a monitoring scale.

Similarly, inconsistent findings are found in studies that have examined parental monitoring and adolescent academic performance (Amato & Flower, 2002; Herman et al., 1997). Amato and Flower (2002) reported findings that monitoring did not have a significant relationship with adolescent academic outcomes. However, Herman et al., (1997) reported that higher monitoring predicted higher adolescent grades. Again, the different findings may be due

to the different samples and research methods. Amato and Flower (2002) had a sample of 1,331 10-17 year olds and also interviewed and surveyed their parents. On the other hand, Herman et al., (1997) used only 12-18 year old student reports of parental behavior.

Studies that examined the relationship between parental care or warmth and adolescent depression (Greaven et al., 2000; Heaven et al., 2004; McFarlane et al., 1995; O'Byrne et al., 2002; Rey, 1995; Robertson & Simons, 1989) have consistently found a negative relationship. That is, higher parental care or warmth is related to lower rates of adolescent depression. A negative relationship has also been reported by O'Byrne, Haddock, and Poston (2002).

A review of PSYC INFO and PSYC LIT revealed no studies examining the relationship between authoritative parenting, parental monitoring, parental care, and adolescent outcomes using adolescent depression as a contributing factor.

CHAPTER II

LITERATURE REVIEW

Although parenting has been linked to adolescent outcomes, the directionality of the relationship is still unclear. Most of the existing research is cross sectional in design, so researchers are unclear if parenting directly affects adolescent outcomes, if adolescent behaviors affect parenting, or both. However, evidence from several longitudinal studies suggests that parenting directly affects adolescent outcomes. This section reviews the research that examines the relationship between parenting styles and adolescent depression, academic performance, and alcohol and tobacco use. The relationship between adolescent depression and academic performance, and alcohol and tobacco use will also be examined.

Parenting and Depression

Several researchers have examined the relationship between parenting style and adolescent depression (Aunola et al., 2000; Garber et al., 1997; Ge et al., 1996; Greaven et al., 2000; McFarlane et al., 1995; Radziszewska et al., 1996). More recent researchers have operationalized parenting style by examining specific behaviors such as, parental involvement, care, rejection, hostility, cohesion, and protection. For example, using Baumrind's (1966) typology, Radziszewska et al. (1996) and Aunola et al. (2000) found that authoritative parenting style was related to lower levels of adolescent depressive symptoms, and that the highest levels of depressive symptoms were related to unengaged parenting style. Researchers have also examined parental overprotection as non-authoritative parenting. Mcfarlane et al. (1995), Rey (1995), Garber et al. (1997), and Heaven et al. (2003) reported more overprotection from parents predicted higher rates of depression in adolescents. However, using similar methods and measures, in their study of 141 adolescents 12 and 15 years old, Greaven et al. (2000) reported

that overprotection was not related to adolescent depression. This discrepancy may be explained by the fact that Greaven et al. (2000) used only mother report of parenting style where as Mcfarlane et al. (1995), Rey (1995), Garber et al. (1997), and Heaven et al. (2003) used only adolescent report or both parent and adolescent report. Based on these findings, hypothesis 1 states: there will be a negative relationship between authoritative parenting and adolescent depression.

In studies of middle school and high school students, multiple researchers have concluded that parental care was significantly related to adolescent depression or depressive symptoms, such that low parental care was associated with higher rates of adolescent depression (Garber et al., 1997; Ge et al., 1996; Heaven et al., 2004; McFarlane et al., 1995; Rey, 1995; Robertson & Simons, 1989). Using parental rejection as an indicator of low parental care, Robertson and Simons (1989) also found that perceived parental rejection directly affected adolescent depression such that, adolescents who feel rejected by their parent(s) are more likely to be depressed than adolescents who do not feel rejected by their parent(s). In their study of 451 7^{th} graders, Ge et al. (1996) examined adolescents' parents' warmth (care), over a four-year period. Father and mother warmth (care) measured at time one, time two, and time three were significantly related to adolescent depression at time four, suggesting that low parental warmth (care) leads to adolescent depression. The previous research supports hypothesis 9: there will be a negative relationship between parental care and adolescent depression.

A review of PSYC INFO and PSYC LIT revealed no studies specifically examining the relationship between parental monitoring and adolescent depression. Monitoring has been examined in other areas of adolescent outcomes and was found to have a positive effect on

adolescents, so hypothesis 5 states: there will be a negative relationship between parental monitoring and adolescent depression.

Parenting and Academic Performance

Researchers have also examined the relationship between parenting style and adolescent academic performance (Amato & Flower, 2002; Cohen & Rice, 1997; Dornbusch et al., 1987; Forehand & Nousiainen, 1993; Glasgow et al., 1997; Herman et al., 1997; Lamborn et al., 1991; Paulson, 1994; Radziszewska et al., 1996). These studies suggest that authoritative parenting style is related to better adolescent academic performance.

Studies that have measured parenting behaviors and grouped parents into Baumrind's parenting style typology have found that authoritative parenting style is associated with better adolescent school performance. Glasgow et al. (1997) studied 2,352 high school students and Steinberg et al. (1989) studied 120 families of 11-16 year olds. Both reported that parenting style has a direct effect on adolescent academic outcome, such that authoritative parenting facilitates adolescent academic success. In their study of 7,836 9th through 12th graders, Dornbusch et al. (1987) found a relationship between authoritative parenting and academic performance by using parental decision making as a factor to group parents into styles. However, in their study of 6,983 high school students, Herman et al. (1997) reported that parental decision-making alone was not related to adolescent grades. The difference in findings may suggest that other factors that Dornbusch et al. (1987) used (communication and parent responses) to assess for parenting style may have more of an effect on adolescent grades than parental decision making. Non-authoritative parenting styles have been found to be associated with lower adolescent academic performance. In their study of 3,993 ninth graders, Radziszewska et al. (1996) were more specific in reporting that adolescents with unengaged

parents had the lowest academic grades. Conversely, in their study of 7,836 9th through 12th graders, Dornbusch et al. (1987) reported that authoritarian and permissive parenting were associated with the lowest adolescent academic grades as did Cohen and Rice (1997) in their study of 386 8th and 9th graders. Despite these differences, all studies conclude that authoritative parenting is related to better adolescent academic performance. This supports hypothesis 4: there will be a positive relationship between authoritative parenting and adolescent grades.

Other researchers have examined the relationship of different parental behaviors and adolescent academic performance. For example, in a national study, Amato and Flower (2002) studied 1,707 adolescents between the ages of 12 and 18 and found that parental support (care) was positively related to adolescent academic grades. This suggests that more parental support was associated with higher adolescent grades. Hypothesis 12 states: Parental care will be positively related to adolescent grades.

In Amato and Flower's (2002) study, parental monitoring was not found to have a significant relationship with adolescent grades. In contrast, Herman et al.'s (1997) study of 6,983 high school student in 1988 and 2,850 high school students in 1989 found parental monitoring was significantly related to adolescent grades. Higher monitoring, predicted higher adolescent grades. Different adolescent populations and study design may account for the different findings. For example, Amato and Flower (2002) used a national sample with a cross sectional design, where as Herman et al. (1997) used a sample of adolescents in one state with a longitudinal design. Despite the conflicting findings in previous research, we believe monitoring will have a positive effect on adolescent grades. Hypothesis 8 states: parental monitoring will be positively related to adolescent grades.

In general, these studies suggest that higher levels of parental care/warmth, and authoritative parenting styles are optimal for higher adolescent academic performance. The relationship between monitoring and academic performance is still unclear due to conflicting research findings. As described above, differences in the samples and measures may contribute to the discrepancies in some of the studies.

Depression and Academic Performance

Although it seems to be logical, that depression affects academic performance, few research studies have examined the relationship between adolescent depression and academic performance. Studies that have examined this relationship have found adolescents with higher depressive symptoms have lower grades (Field et al., 2001).

Field and colleagues (2001) studied 79 high school seniors and found that depressed adolescents reported spending less time on homework and having lower grade point average compared to non-depressed adolescents. However, Vogel and colleagues (2003) studied 98 16-19 year old students and did not find a significant relationship between adolescent reported depression and their academic performance. The small sample sizes and the different ages studied may account for the different findings.

More research needs to be done to clarify the relationship between adolescent academic performance and depression. Our hypothesis 15 states: adolescent depression will be negatively related to adolescent grades.

Parenting and Alcohol/Tobacco Use

Several researchers have examined the relationship between adolescent alcohol and tobacco use and parenting behaviors (Adamczyk-Robinette et al., 2002; Clausen, 1996; Cohen & Rice, 1997; Coombs & Landsverk, 1998; Dishion et al., 1988; Fletcher & Jefferies, 1999;

Herman et al., 1997; Mounts, 2002; O'Byrne et al., 2002; Raboteg-Saric et al., 2001; Radziszewska et al., 1996). In general adolescents with lower alcohol and tobacco use, have parents with authoritative parenting style.

Using Baumrind's (1966) parenting typology, Cohen and Rice (1997) found that adolescent perceived authoritative parenting was significantly associated with lower adolescent alcohol and tobacco use. Similarly, Adamzcyk-Robinette et al., (2001) studied 156 8th graders and reported that higher levels of authoritativeness, measured by warmth, involvement, control, and autonomy, were associated with lower levels of adolescent tobacco use. An interesting finding by Fletcher and Jefferies (1999) in their study of 287 8th grade students, is that female adolescents that perceive their parents as more authoritative got drunk fewer times than those who rated their parents as less authoritative. A similar relationship was not found between parenting style and adolescent male alcohol use. On the other hand, Radziszewska et al., (1996) studied 3,993 9th graders and found adolescents from unengaged parents were the most likely to smoke compared to those reporting permissive, authoritative or autocratic parents. The different finding could be attributed to differences in measures. Radziszewska et al., (1996) used parental decision making as their measure of parenting style while Fletcher and Jefferies (1999) used warmth, involvement and control. The current study hypothesis 2 states, authoritative parenting will be negatively related to adolescent alcohol use. Hypothesis 3 states: there will be a negative relationship between authoritative parenting and adolescent tobacco use.

Employing parental monitoring as an indicator of parenting, Clausen (1996) studied 883 15-19 year olds and Herman et al. (1997) studied 6,983 high school student in 1988 and 2,850 in 1989. Both found that higher measures of protection or monitoring combined with low care were related to higher levels of adolescent alcohol and tobacco use. Conversely, Dishion et al.,

(1988) sampled 238 adolescents, Raboteg-Saric et al., (2001) sampled 287 11-14 year olds and Mounts (2002) sampled 309 9th graders. All found a negative relationship between parental monitoring and adolescent alcohol and tobacco use. The more parental monitoring, the lower the report of adolescent alcohol and tobacco use. Despite the mixed findings, we believe that we will find a negative relationship between parental monitoring and adolescent alcohol and tobacco use. Hypothesis 6: a negative relationship will be found between parental monitoring and adolescent alcohol use. Hypothesis 7: a negative relationship will be found between parental monitoring and adolescent tobacco use.

An interesting study by O'Byrne, Haddock, and Poston (2002) with 816 adolescents examined parental warmth and intimacy in relation to adolescent level of tobacco smoking. Findings illustrated that parental warmth and intimacy (care) were not related to adolescent tobacco smoking experimentation, but were significantly related to adolescent smoking initiation. They reported that for every one point decrease in warmth and intimacy, the likelihood of the adolescent being a current smoker increased by 5%. We hypothesize that parental care will have a negative relationship with adolescent alcohol use with hypothesis 10. We also hypothesize that parental care will have a negative relationship with adolescent tobacco use with hypothesis 11.

Parenting style does seem to have a relationship with adolescent alcohol and tobacco use, although the specific parental behaviors and the direction of the relationship are still unclear.

Depression and Alcohol/Tobacco Use

Several researchers have examined the relationship between adolescent depression and alcohol and tobacco use (Diego et al., 2003; Fergusson et al., 2003; Field et al., 2001; Vogel et al., 2003; Wu, Anthony, 1999). In general, findings suggest a significant relationship between

adolescent depression and alcohol and tobacco use. The direction of the effect is still unclear. Some researchers have hypothesized that depression in adolescents leads to the use substances, possibly to self-medicate, while others have hypothesized that tobacco and alcohol use can lead to adolescent depression.

Ferguson et al., (2003) studied 16-21 year olds meeting the DSM-IV criteria for major depression and found that those adolescents had elevated rates of daily smoking and nicotine dependence. Similarly Vogel et al., (2003) reported that adolescents 16-19 years old with higher scores on a depression inventory had increased smoking behaviors and reported a higher rate of the intent to smoke. It was hypothesized that smoking cigarettes is a way for adolescents suffering from depression to self medicate (Vogel et al., 2003). In two different studies of high school students researchers found that adolescent depression was a significant predictor of cigarette and alcohol use, such that those adolescents with depression had higher rates of cigarette and alcohol use than did those adolescents without depression (Diego et al., 2003; Wu & Anthony, et al., 1999). Both studies report that the effect of the relationship may be bi-directional, suggesting that depression may increase alcohol and tobacco use, and tobacco and alcohol use may increase depression. Our hypothesis 13 states that adolescent depression will be positively related to adolescent alcohol use. Hypothesis 14 states that adolescent depression will be positively related to adolescent tobacco use.

To Extend previous research, this study will look at the affects of parenting style on adolescent depression and depression as a mediator of adolescent academic performance, and alcohol and tobacco use. Our 16th hypothesis is that adolescent depression will mediate the relationship between authoritative parenting, parental monitoring, parental care and adolescent alcohol use, tobacco use, and adolescent academic performance.

CHAPTER III

METHODS

Study Participants and Procedures

Public school students in 9-12th grade in seven contiguous counties in rural Virginia were surveyed in 2001-2002. The Virginia Adolescent Resiliency Assessment (VARA) was designed to examine adolescent risk and resiliency. The survey was a self-report measure for adolescents, so only the perceptions of the adolescents are reflected.

A passive consent form was sent home with all enrolled students, which informed parents of the purpose of the study. Parents were instructed to sign and return the form if they did not want their child to participate in the survey. The students also had the option of refusing at the time the survey was administered. One class period during the school day was devoted to administering the surveys. Each teacher read the instructions to the students and answered any questions. The students completed and turned in the surveys anonymously.

About 81% of students who were present on the day of survey administration participated. About 96% of those students completed usable surveys.

Demographics

Of the 3,174 participants, 52.7% were female, and 47.3% were male. The sample consisted ninth graders (29.2%), tenth graders (26.4%), eleventh graders (23.3%), and twelfth graders (20.8%). Participants reported their ethnicity as 66.8% "White or Caucasian", 24.1% "Black or African American", 2.6% "Mixed race or biracial", 2.4% "Other", 1.2% "Native American", 1.3% "Asian", and 1.5% "Hispanic or Latino".

About half of the sample (58%) report that their parents were married. Seventy three percent (73%) reported living in a two-parent family (biological, adoptive or step) and fourteen

percent (14%) reported living with only their mother. Only three (3%) percent reported living with father only. Respondents also reported 65% of mothers and 77% of fathers were working full-time. The majority of the parents had a high school education or more.

Data Collection Instrument

This study uses questions from the Virginia Adolescent Resiliency Assessment (VARA) questionnaire. The VARA consists of 174-items to account for teen perceptions of their community and school, aspirations, concerns and attitudes about aspects of their lives, mental and physical health, and frequency of engaging in both dangerous and desirable behaviors. Unless otherwise noted, all measures from the VARA used in this study were adapted from the Youth Risk Behavior Survey (CDC, 1999) or the Teen Assessment Project (TAP; Small & Rodgers, 1995).

The VARA questionnaire measured demographic information, as well as self-report measures of the adolescents' lives including: perceptions of the community, school and friends; parent-teen relations; sexuality; diet and exercise; alcohol, tobacco, and drug use; mental health; personal safety and violence; and how adolescents spend their time. This study only includes variables regarding mental health, parents, and alcohol use, tobacco use, and grades.

Authoritative Parenting

One item assessed for the adolescence perception of parenting style by asking about the decision making process in the home. The question asked, "In general, how are most important decisions made between you and your parent(s) or other adult you live with (for example, what time you need to be home at night or where you can go with friends)?" Adolescents answered "They tell me exactly what to do" (authoritarian parenting style), "They ask my opinion but they have the final say" (authoritative parenting style), "We talk about it and together we come to a

decision" (authoritative parenting style) "They discuss the decision with me but then let me decide" (authoritative parenting style), " They trust me to decide for myself" (permissive, indulgent parenting style), or "They don't care what I do, so I decide for myself" (permissive, neglectful parenting style). Adolescents that reported authoritative parenting styles were scored as 1; non-authoritative parenting styles were scored as 0.

Parental Monitoring

An eight-item scale was used to assess perceptions of parental monitoring. Adolescents were asked how often the following statements were true: "My parent(s) know where I am after school"; "If I am going to be home late, I am expected to call my parent(s) to let them know"; "I tell my parent(s) whom I'm going to be with before I go out"; "When I go out at night, my parents know where I am"; "My parents know who my friends are"; "My parents know the parents of my friends"; "My parent(s) know what I watch on television"; and "My parent(s) monitor my computer/Internet use". The possible responses were: "never" (0), "rarely" (1), "sometimes" (2), "a lot of the time" (3), and "always" (4). Cronbachs alpha for this scale was .83.

Parental Care

A three-item scale was used to determine parental care. Adolescents rated these items as, "never" (0), "rarely" (1), "sometimes" (2), "a lot of the time" (3), and "always" (4). The items rated were, "my parent(s) are good parents", "my parent(s) care about me", and "my parent(s) respect me". Cronbachs alpha for this scale was .83.

Depression

One item was used to assess adolescent report of depression. Adolescents were asked: "During the past 12 months, did you ever feel so sad or hopeless everyday for two weeks or

more in a row that you stopped doing some usual activities". Adolescents could answer "yes" (1) or "no" (0) to this item.

Alcohol and Tobacco Use

Alcohol and tobacco use were measured using one item for tobacco use and one for alcohol use. Adolescents were asked on how many days of the past 30 they had used any type of tobacco product. Response options were, "0 days" (0), "1 or 2 days" (1), "3 to 5 days" (2), "6 to 9 days" (3), "10 to 19 days" (4), "20 to 29 days" (5), "all 30 days". Adolescents were also asked this same question regarding alcohol use.

Academic Performance

To assess for academic grades, adolescents were asked what average grade they usually get in their classes at school. Response choices were, "mostly A's" (7), "about half A's & half B's" (6), "mostly B's" (5), "about half B's & half C's" (4), "mostly C's" (3), "about half C's & half D's" (2), "mostly D's" (1), and "mostly below D's" (0).

CHAPTER IV

RESULTS

Of the 3,174 students that participated in this study, 1,969 (62%) reported having authoritative parents. The average answer for parental monitoring questions was a lot of the time (47%) and always (33.7%). Seventy four percent (74%) of the students surveyed reported high parental care. Students that reported getting A's and B's in school accounted for 54% of the sample. Thirty percent (30%) of the students reported depression within the previous 12 months from the time of the study. No cigarette use was reported by 67% of the students, and 10% of the students reported using tobacco all 30 days of the month. No alcohol use was reported by 53% of the students.

Table 1 presents the means, standard deviations, and correlations for each variable. All variables were found to have significant correlations. As predicted, authoritative parenting was negatively correlated with adolescent depression, alcohol use and tobacco use, and positively correlated with adolescent academic grades. Parental monitoring was negatively correlated with adolescent depression, alcohol and tobacco use, and positively correlated with adolescent academic grades. Parental care was negatively correlated with adolescent depression, alcohol use and tobacco use, and positively correlated with adolescent academic grades. Adolescent depression was negatively correlated with adolescent grades and positively correlated with adolescent alcohol and tobacco use. Finally, adolescent grades were negatively correlated with adolescent alcohol and tobacco use.

Table 1. Correlation Matrix for Whole Sample

Variables	1	2	3	4	5	6	7
1.Authoritative Parenting	1.0						
2. Parental Monitoring	.299**	1.0					
3. Parental Care	.223**	.423**	1.0				
4. Adolescent Depression	-.073**	-.147**	-.215**	1.0			
5. Academic Performance/Grades	.109**	.197**	.123**	-.114**	1.0		
6. Tobacco Use	-.053**	-.297**	-.152**	.166**	-.220**		
7. Alcohol Use	-.040*	-.316**	-.179**	.140**	-.144**		
Mean	2.55	2.68	3.42	.31	4.73	1.25	1.02
SD	1.92	.77	.77	.46	.46	2.13	1.43

**p≤ .001 *p<.05

A series of regression analyses were computed to determine the effect of the model on adolescent outcomes. Significant relationships are presented in Figure 2. Table 2 shows all of the regression analyses.

Figure 2. Path Model Significant Findings for Whole Sample

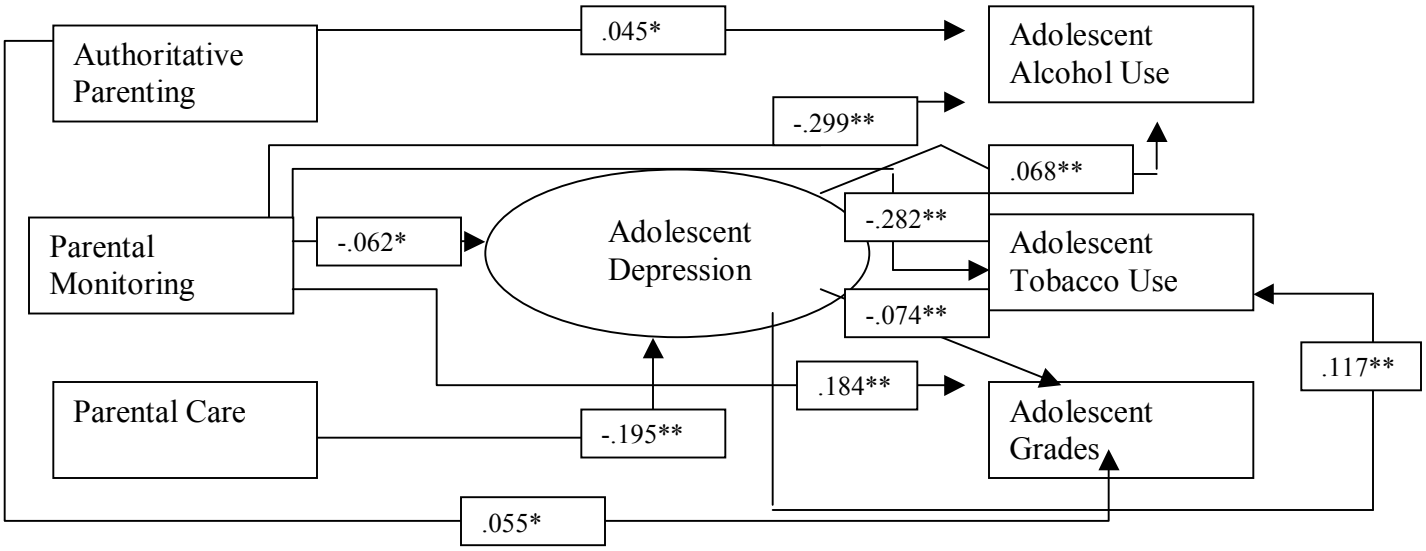


Table 2. Regression Table for Whole Sample

Variable	R^2	F	Beta
Tobacco Use	.099	80.485	
- depression			.117**
- care			-.002
- monitoring			-.282**
- authoritative			.021
Alcohol Use	.104	84.616	
- depression			.068**
- care			-.035
- monitoring			-.299**
- authoritative			.045*
Grades	.059	46.353	
- depression			-.074**
- care			.038
- monitoring			.184**
- authoritative			.055*
Depression	.052	8.580	
- care			-.195**
- monitoring			-.062*
- authoritative			-.016

**p≤.001 *p<.05

Tobacco use was significantly predicted by combining depression, parental care, parental monitoring and authoritative parenting (F=80.49, p=.000). The model accounted for 10% of the variance in tobacco use. Of the four predictor variables, parental monitoring (B=-.282, p=.000) and depression (B=.117, p=.000) significantly predicted tobacco use, indicating that as parental monitoring decreases and as depression increases tobacco use increases.

Alcohol use was significantly predicted by combining depression, parental care, parental monitoring and authoritative parenting (F=84.62, p=.000). The model accounted for 10% of the variance in alcohol use. Of the four predictor variables, parental monitoring (B=-.299, p=.000), depression (B=.068, p=.000) and authoritative parenting (B=.045, p=.013) significantly predicted alcohol use, indicating that as parental monitoring decreases, depression increases and as authoritative parenting increases alcohol use increases.

Adolescent grades were significantly predicted by combining depression, parental care, parental monitoring and authoritative parenting (F=46.35, p=.000). The model accounted for 6% of the variance in grades. Of the four predictor variables, parental monitoring (B=.184, p=.000), depression (B=-.074, p=.000) and authoritative parenting (B=.055, p=.004) significantly predicted adolescent grades, indicating that as parental monitoring and authoritative parenting increases and depression decreases, adolescent grades increase.

Depression was significantly predicted by combining parental care, parental monitoring and authoritative parenting (F=8.58, p=.000). The model accounted for 5% of the variance in adolescent depression. Of the three predictor variables, parental care (B=-.195, p=.000) and parental monitoring (B=-.062, p=.002) significantly predicted depression, indicating that as parental care and parental monitoring increase, adolescent depression decreases.

To further explain this model, we examined potential gender differences. The analyses were repeated separately by gender. Table 3 presents the correlations for each variable for males and females. All variables were found to be significant for females, and all but one variable were found to have a significant correlation for males. For females, authoritative parenting was negatively correlated with adolescent depression, alcohol use and tobacco use, and positively correlated with adolescent academic grades. For males, authoritative parenting was negatively correlated with adolescent depression and adolescent tobacco use. Authoritative parenting was not correlated to male adolescent alcohol use. Parental monitoring was negatively correlated with adolescent depression, alcohol and tobacco use, and positively correlated with adolescent academic grades for both males and females. Parental care was also found to be negatively correlated with adolescent depression, alcohol use and tobacco use and positively correlated with adolescent academic grades for both males and females. Adolescent depression was negatively correlated with adolescent grades and positively correlated with adolescent alcohol and tobacco use for both males and females. Finally, adolescent grades were found to be negatively correlated for adolescent alcohol and tobacco use with both males and females.

Table 3. Correlation Matrix for Males and Females
(correlations for males appear in the top half of the table, females on the bottom half)

Variables	1	2	3	4	5	6	7
1.Authoritative Parenting	1.0	.214**	.200**	-.083	.093**	-.027**	.014
2. Parental Monitoring	.212**	1.0	.428**	-.166**	.204**	-.293**	-.294**
3. Parental Care	.247**	.422**	1.0	-.205**	.122**	-.133**	-.144**
4. Adolescent Depression	-.076**	-.170**	-.232**	1.0	-.124**	.131**	.122**
5. Academic Performance/Grades	.111**	.154**	.119**	-.128**	1.0	-.215**	-.151**
6. Tobacco Use	-.069**	-.279**	-.172**	.216**	-.203**	1.0	
7. Alcohol Use	-.087**	-.310**	-.217**	.188**	-.104**		1.0

**p≤ .001 *p<.05

A series of regression analyses were computed to determine the effect of the model on male adolescent outcomes. Table 4 shows all of the regression analyses. Significant relationships are presented in Figure 3.

Figure 3. Path Model Significant Findings for Males

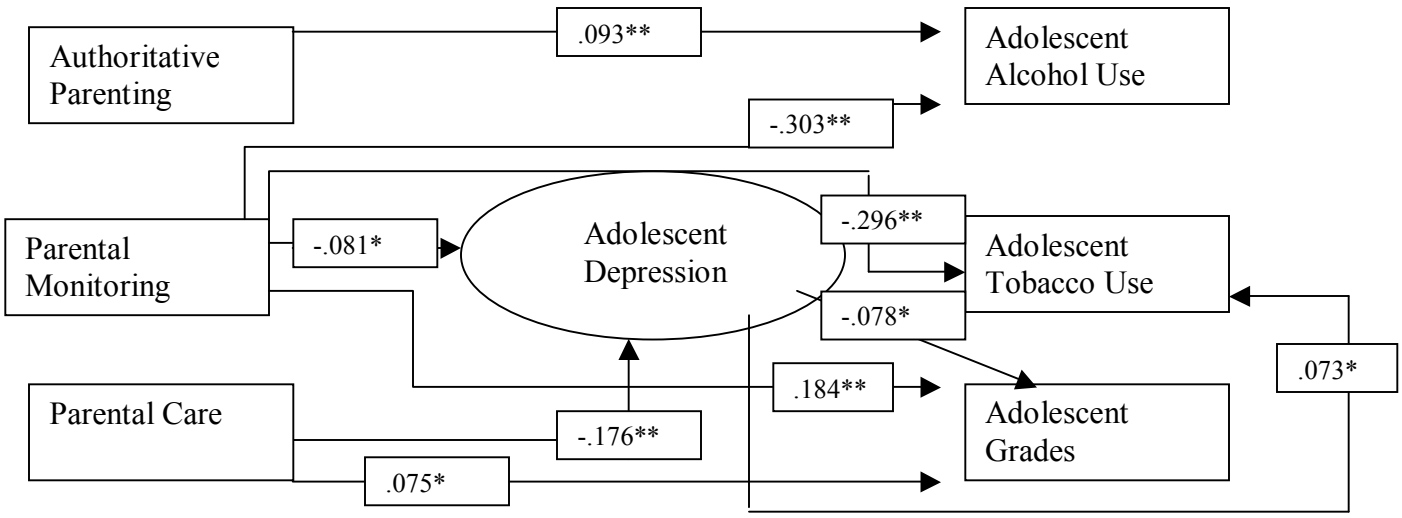


Table 4. Regression Table for Male Sample

Variable	R^2	F	Beta
Tobacco Use	.091	33.87	
- depression			.073*
- care			.005
- monitoring			-.296**
- authoritative			.048
Alcohol Use	.092	34.33	
- depression			.039
- care			-.013
- monitoring			-.303**
- authoritative			.093**
Grades	.066	23.93	
- depression			-.078*
- care			.075*
- monitoring			.184**
- authoritative			.032
Depression	.052	24.83	
- care			-.176**
- monitoring			-.081*
- authoritative			-.036
**p≤.001 *p<.05			

For males, tobacco use was significantly predicted by combining depression, parental care, parental monitoring and authoritative parenting (F=33.87, p=.000). The model accounted for 9% of the variance in tobacco use. Of the four predictor variables, parental monitoring (B= -.296, p=.000) and depression (B=.073, p=.007) significantly predicted tobacco use, indicating that as parental monitoring decreases and as depression increases tobacco use increases.

Male alcohol use was significantly predicted by combining depression, parental care, parental monitoring and authoritative parenting (F=34.33, p=.000). The model accounted for 10% of the variance in alcohol use. Of the four predictor variables, parental monitoring (B=-.303, p=.000) and authoritative parenting (B=.093, p=.001) significantly predicted alcohol use, indicating that as parental monitoring increases and authoritative parenting decreases alcohol use decreases.

Adolescent male grades were significantly predicted by combining depression, parental care, parental monitoring and authoritative parenting (F=23.93, p=.000). The model accounted for 7% of the variance in grades. Of the four predictor variables, parental monitoring (B=.184, p=.000), depression (B=-.078, p=.004) and parental care (B=.075, p=.012) significantly predicted adolescent grades, indicating that as parental monitoring and parental care increase and depression decreases, adolescent grades increase.

Male depression was significantly predicted by combining parental care, parental monitoring and authoritative parenting (F=24.83, p=.000). The model accounted for 5% of the variance in depression. Of the predictor variables, parental care (B=-.176, p=000) and parental monitoring (B=-.81, p=.006) significantly predicted depression, indicating that as parental care and monitoring decrease depression increases.

A series of regression analyses were computed to determine the effect of the model on female adolescent outcomes. Table 5 shows all of the regression analyses. Significant relationships are presented in Figure 4.

Figure 4. Path Model Significant Findings for Females

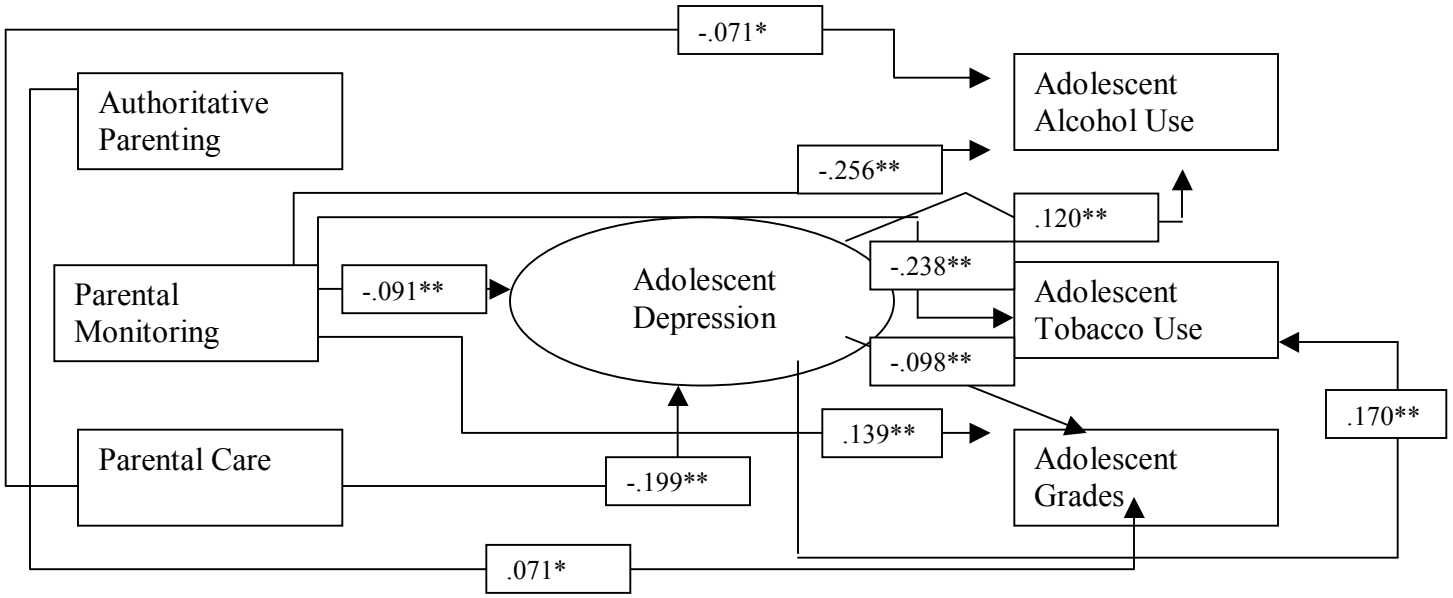


Table 5. Regression Table for Females

Variable	R^2	F	Beta
Tobacco Use	.102	45.25	
- depression			.170**
- care			-.015
- monitoring			-.238**
- authoritative			-.002
Alcohol Use	.111	50.03	
- depression			.120**
- care			-.071*
- monitoring			-.256**
- authoritative			.002
Grades	.044	18.85	
- depression			-.098**
- care			.011
- monitoring			.139**
- authoritative			.071*
Depression	.061	35.06	
- care			-.199**
- monitoring			-.091**
- authoritative			-.005
**p≤.001 *p<.05			

Female tobacco use was significantly predicted by combining depression, parental care, parental monitoring and authoritative parenting (F=45.25, p=.000). The model accounted for 10% of the variance in tobacco use. Of the four predictor variables, parental monitoring (B=-.238, p=.000) and depression (B=.170, p=.000) significantly predicted tobacco use, indicating that as parental monitoring decreases and as depression increases tobacco use increases.

Female alcohol use was significantly predicted by combining depression, parental care, parental monitoring and authoritative parenting (F=50.03, p=.000). The model accounted for 11% of the variance in alcohol use. Of the four predictor variables, parental monitoring (B=-.256, p=.000), parental care (B=-.071, p=.008) and depression (B=.120, p=.000) significantly predicted alcohol use, indicating that as parental monitoring and care decreases and depression increases alcohol use increases.

Female adolescent grades were significantly predicted by combining depression, parental care, parental monitoring and authoritative parenting (F=18.85, p=.000). The model accounted for 5% of the variance in grades. Of the four predictor variables, parental monitoring (B=.139, p=.000), depression (B=-.098, p=.000) and authoritative parenting (B=.071, p=.006) significantly predicted adolescent grades, indicating that as parental monitoring and authoritative parenting decrease and depression increases adolescent grades decrease.

Female depression was significantly predicted by combining parental care, parental monitoring and authoritative parenting (F=35.06, p=.000). The model accounted for 6% of the variance. Of the predictor variables, parental monitoring (B=-.199, p=.000) and parental care (B=-.091, p=.000) significantly predicted depression, indicating that as parental monitoring and parental care increase depression decreases.

CHAPTER V

DISCUSSION

The purpose of this study was to test a model predicting that the relationship between parenting behaviors (monitoring, care, authoritativeness) and adolescent outcomes (academic grades, alcohol use, tobacco use) would be mediated by adolescent depression.

This model was based on social learning theory (Bandura, 1977), and suggests that parents have an important role in the lives of their adolescents. Our study supported social learning theory. According to social learning theory, adolescents perceive their parents' behavior and those perceptions may affect their alcohol use, tobacco use, depression and grades. Social learning theory may account for the gender difference found in our study. Our findings suggest that parental care and authoritative parenting predict different outcomes in males and female adolescents, supporting the notion that parents parent adolescent males and females differently.

A recent article by Fletcher, Steinberg, and Williams-Wheeler (2004) suggests that parenting behaviors are interrelated. Specifically, they report that parental monitoring may be effected by parental knowledge or adolescent communication and vise versa. They also report that parental warmth may mediate adolescent communication and parental monitoring. According to social learning theory, adolescents may combine multiple parental behaviors to interpret meanings or to assess for different aspects such as care, monitoring, and authoritativeness. These findings point to the importance of examining multiple indicators of parenting behavior simultaneously. This study attempts to do this by illustrating which factors of parenting behaviors are important for predicting adolescent outcomes. Although our model only accounts for 7% - 10% of the variance, the analysis of this study provides support for our

proposed model. Despite the different samples and measures used in our study, most of our findings are consistent with previous research.

The results demonstrate that parental monitoring is a significant predictor of all adolescent outcomes tested in this study. With no prior research on the relationship between parental monitoring and adolescent depression, our study found that a decrease in parental monitoring predicted an increase in adolescent depression. Previous research has shown conflicting results when examining parental monitoring and adolescent grades (Amato & Flower, 2002; Herman et al., 1997). Our results are consistent with the longitudinal study of Herman et al. (1997), which reported that an increase in parental monitoring predicted an increase in adolescent grades. Again, previous research has reported both positive and negative relationships between parental monitoring and adolescent alcohol and tobacco use (Clausen, 1996; Herman et al., 1997; Mounts, 2002; Raboteg-Saric et al., 2001). Our results demonstrated and increase in parental monitoring predicted a decrease in both adolescent alcohol and tobacco use.

In this study, an increase in authoritative parenting predicted an increase in adolescent grades, which is consistent with previous research (Dornbusch et al., 1987; Herman et al., 1997). Our study found that an increase in authoritative parenting predicted an increase in adolescent alcohol use and no significant relationship with adolescent tobacco use. These findings are inconsistent with previous research (Cohen & Rice, 1997; Fletcher & Jefferies, 1999). This inconsistency may be due to the sample differences where both Dornbusch et al. (1987) and Herman et al. (1997) had large samples of high school students in urban/suburban areas of California. All studies used measures of decision making to assess for authoritative parenting.

Also, the current study's one item measure of authoritative parenting and alcohol use may contribute to the inconsistent finding of authoritative parenting and alcohol use.

Consistent with previous research, adolescent depression was a significant predictor for adolescent alcohol use, tobacco use and grades (Diego et al., 2003; Fergusson et al., 2003; Field et al., 2001; Vogel et al., 2003; Wu & Anthony, 1999). Higher adolescent depression predicted adolescent alcohol use, tobacco use and lower adolescent grades.

Inconsistent with previous research, parental care was not found to be significantly related to adolescent alcohol use, tobacco use or grades (Amato & Flower, 2002; O'Byrne et al., 2002). This inconsistency could be due to the difference in sample populations and measures used. Amato and Flower (2002) had a large nationally representative sample of 10-17 year olds using both parent and adolescent report of support (care) from and interview. O'Byrne, Haddock, and Poston (2002) examined a sample of 816 12-18 year old adolescents in a metropolitan area and used a survey to assess for family intimacy (care).

The same analyses were run on males and female separately to see if there was a difference in findings with adolescent gender. We found that parenting style was not a significant factor for adolescent females alcohol use but was for adolescent male alcohol use. Interestingly, we found that parental care was a significant predictor of adolescent male grades but not of female adolescent grades. Parenting style was a significant predictor of adolescent female grades but not of adolescent male grades.

Clinical Implications

The results of this study demonstrate that parental behaviors, along with adolescent depression are predictive of some adolescent outcomes. Particularly important is our sample of adolescents in rural areas. Few research studies have been conducted in rural areas and this

study may be the first step in examining the differences and similarities of factors that contribute to adolescent outcomes in different areas. This information can help with the prevention of poor adolescent outcomes and with the treatment of adolescents.

Historically substance use in adolescents has been address by putting prevention programs in communities and schools. Schools and communities have also adopted special programs and classes for adolescents and children that are not able to be in mainstream classrooms at school. For example, schools and communities have programs that focus on keeping adolescents from using drugs alcohol and tobacco (DARE, National Youth Anti-Drug Media Campaign, Free vibe, and Straight Scoop). These programs try to teach children and adolescent about peer pressure and how to "say no", and the dangers of using drugs, alcohol and tobacco. While these programs maybe helpful to some adolescents, they do not consider the role of depression or parents in substance use. Therefore these do not address the underlying condition contributing to these problem behaviors. Involving parents and mental health providers in the treatment and prevention of adolescent substance use can help. Treating depression and providing information to parents about monitoring their children should contribute to a decrease in adolescent alcohol and tobacco use.

Adolescents that have poor performance in school, if treated, are usually put in classes for learning disabilities or emotional problems. This could be a problem for adolescents who have the potential to be in mainstream classes, but because of depression are not able to perform. Again, training school workers and/or parents to assess for depression, and to treat the depression should show an increase in adolescent academic grades. Helping parents to learn effective ways to monitor their adolescents should also help to increase adolescent academic grades.

Depression in adolescents has recently been treated by anti-depressant medication and/or individual therapy. Medication helps to restore the brain's chemical balance by increasing the available supply of serotonin, a substance in the brain believed to influence mood. Therapy works in conjunction with the medication may help adolescents view themselves more positively. This study shows that parenting behaviors can contribute to adolescent depression, so parent's involvement in the treatment of adolescent depression should also be considered. For example, developing a class for parents to learn how their behaviors can contribute to and/or help to diminish adolescent depression.

Treating adolescents can be complicated and require many systems to work together, especially in rural areas where resources may be limited. Involving parents, schools, and other service providers as agents of change may help to insure that the different predictors of adolescent outcomes are addressed, although parental behaviors in this study only accounted for 7% - 10% of the variance. Our model shows that 90% of the variance is still unaccounted for.

Limitations and Future Directions

A limitation of the current study is that depression in this study was measured by only one question, which may mask the severity of the problem in this population or inflate the severity because it is not a comprehensive measure of depression. Additionally, this study employed a cross-sectional design so the directionality of the relationships cannot be tested. Our measures of parenting behaviors did not separate roles of mothers and fathers, and only accounted for adolescent perception not actual parental behavior. Because the present study employed adolescent self report, the report of grades may not be a true measure of grades. Additionally, it may be that depressed adolescents may interpret parental behaviors differently than adolescents that are not depressed. This could affect the measures of parental behavior.

Similarly, our questions can not determine state verses actual behavior. For example, if an adolescent recently had a fight with their parent(s), their perception of parental behaviors my be colored. The role of family structure may also play a role in adolescent perception of parental behaviors. For example in a single parent home, monitoring may be more difficult, and adolescents may feel less care with one parent verses two. One way to take all of these factors into consideration is to include additional reports of behavior such as parent's report of their own behavior, and school report of adolescent grades.

This study assumes a direction of relationships, for example authoritative parenting predicts higher adolescent grades, but it may be the case that adolescents getting higher grades may have an effect on the parents' way of parenting. Our findings cannot be generalized to other populations. Future studies should involve larger, more representative samples and standardize measures of parental behaviors. Future research may also want to focus on the adolescents with problem outcomes such as high alcohol use, high tobacco use, low grades, and depression, and the parenting behaviors that may contribute. This may show what parenting behaviors are important to those adolescents that are having problems. Our model found that male and female adolescents showed slightly different outcomes with different parenting behaviors. Future research should further examine parenting behaviors and adolescent outcomes by gender and why there might be differences. Although we only sampled high school students, there may be an age or maturity issue when it comes to both parents behavior (or adolescent perception of) and adolescent outcomes. Future research can examine the differences by age. This study did not examine the family values on adolescent alcohol and tobacco use, which could affect parental behavior and adolescent use of substances. For example, if parents do not believe that underage drinking is inappropriate, their teens may in turn be more likely to drink.

Strengths of the current study include a large, rural, ethnically diverse sample and the availability of adolescent report of different parenting behaviors, as well as their own behaviors. Although adolescent report can also be considered a limitation, Paulson (1994) acknowledged the importance of adolescent perception rather than parent's perception.

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