The Roles of Engagement, Autonomy, and Relatedness in Maternal "Monitoring"

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Abstract

With substantive evidence suggesting that parental control is significantly *less* effective than is adolescent disclosure in protecting against problem behaviors (Eaton, Krueger, Johnson, McGue, & Iacono, 2009; Kerr & Stattin, 2000), one may conclude that parents' face a formidable task. This dissertation extends the literature by using a multi-method, multi-reporter, longitudinal design to examine the mechanisms through which these different facets of parental 'monitoring' may be protective against subsequent adolescent problem behaviors, aiming to shed light on the reasons behind the apparent discrepancy in effectiveness. Results indicate that the relationship between maternal control and subsequent changes in adolescent problem behaviors may be *domain specific*. Specifically, findings underscore the importance of moderate levels of maternal control in early adolescence in order to prevent risky sexual behavior and substance abuse later in adolescence, but suggest that this strategy is likely not ideal for parents of adolescents who are at greater risk of developing hostility problems. Additionally, while maternal control does indeed predict decreases in adolescents' autonomy and relatedness over time, results suggest that this does not undermine the potential protective value of maternal control. Finally, this study provides preliminary evidence that, while adolescents' behavioral disclosure may be an effective avenue through which parents gain knowledge and prevent subsequent problem behaviors, emotional disclosure likely is not.

Acknowledgments

Many thanks to my committee for their guidance, as well as to the extensive list of other infinitely important people who helped make this dissertation possible. First and foremost, thank you to those who made me who I am: my family. Without the support of my mom, dad, and sisters, I surely wouldn't be here. Also, thanks to all the friends (who often *feel* like family) that I've been lucky enough to keep over the years. Without their distractions, I might be here, but I surely wouldn't have enjoyed the journey nearly as much! And last, but certainly not least, thanks to the best lab mates a girl could ask for. These ladies (and gentleman) have kept me honest over the years, encouraging me to stay focused and motivated when I needed it most, but made it fun all the while.

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Crouter, MacDermid, McHale, and Perry-Jenkins (1990) conceptualized parental monitoring as a dyadic phenomenon, requiring interest and attentiveness on the part of the parent (e.g., as exhibited through parental control) and a willingness to share information and experiences on the part of the child (e.g., as exhibited through adolescent disclosure). This doctoral dissertation examines the mechanisms through which these two different facets of 'monitoring' may be protective against subsequent adolescent problem behaviors. First, the introduction identifies the problem by presenting a brief overview of the existing research on the emergence of problem behaviors in adolescence, and then reviews potentially protective role of parental monitoring (i.e., parental knowledge). Second, I discuss two strategies that have been identified as tactics parents may use to gain knowledge – parental control and adolescent disclosure – in the development of adolescent problem behaviors. The preventive value of these 'knowledge gaining' tactics is examined in terms of the engagement of both parties (the parent and the adolescent), as well as in terms of balancing both autonomy and relatedness in the parent-adolescent relationship. More specifically, I suggest that, while both parental control and adolescent disclosure promote engagement in the parent-adolescent relationship, adolescent disclosure more effectively protects against problem behaviors than does parental control, because adolescent disclosure does not undermine autonomy and relatedness with parents. Overall, this study is designed to enhance our understanding of the link between parents' knowledge gaining strategies and subsequent adolescent problem behaviors by placing it within the broader developmental framework of the critical task of establishing autonomy while maintaining relatedness with parents.

Adolescent Problem Behaviors

Adolescence has long been documented as a time marked by an increase of problem behaviors. Problem behaviors, such as substance use, alcohol use and externalizing problems steadily increase throughout adolescence (Boyer, 2006; Flory, Lynam, Milich, Leukefeld, & Clayton, 2004; Jessor, 1991; Johnston, O'Malley, & Bachman, 2002; Rai, et al., 2003; Schulenberg, Wadsworth, O'Malley, Bachman, & Johnston, 1996; Tucker, Orlando, & Ellickson, 2003). In a national sample of ninth graders, 28% reportedly tried illicit drugs, 43% had smoked cigarettes, and 66% had tried alcohol (Centers for Disease Control & Prevention, 2007). These numbers escalate so that by twelfth grade, 55% reportedly tried illicit drugs, 80% tried alcohol and 30% recently smoked. Similar trends reflecting an increasing incidence of behaviors exist for externalizing problems in adolescence (Elliott, Huizinga, & Menard, 1989; Moffitt, 1993). In fact, violent criminal activity in the United States appears to begin between the ages of 13 and 16 (Farrington, 2004) and climb throughout adolescence.

Given high rates of endorsement, socially sanctioned problem behaviors may be part of a normative developmental process in which adolescents strive to assert their autonomy and gain peer acceptance (Allen, Porter, McFarland, Marsh, & McElhaney, 2005; Dishion & Owen, 2002; Jessor, 1987, 1991; Johnston, O'Malley, & Bachman, 2003). Despite being normative, problem behaviors can still be particularly detrimental for adolescents' health. Specifically, adolescent problem behaviors are associated with future substance abuse and dependence, increases in psychiatric and health problems (e.g. mood disorders, obesity and high blood pressure) as well as with neurobehavioral and cognitive deficits (Arnett, 2000; Arnett & Taber, 1994; Brook, Finch, Whiteman, &

Brook, 2002; Brook, Richter, & Rubenstone, 2000; Flory, et al., 2004; Nelson, Leibenluft, McClure, & Pine, 2005; Oesterle, et al., 2004; Tucker, et al., 2003). These problems seem to extend to subsequent interpersonal relationships as well, as childhood externalizing problems have been linked to poorer intimate relationship quality in adulthood (Knoester, 2003).

Another key arena of problem behaviors that emerges during adolescence involves teen sexual behavior. Recent estimates have shown that nearly one in three adolescents is sexually active by 9th grade, and that that proportion doubles by 12th grade (Centers for Disease Control & Prevention, 2007). Perhaps even more alarming, those teens who are sexually active report particularly poor rates of contraceptive use (Coleman, 1999; Hogan, et al., 2000; Manning, Longmore, & Giordano, 2000; Santelli et al., 2000), with recent surveys indicating that nearly 39% of all American high school students failed to use a condom the last time they had sex (Centers for Disease Control & Prevention, 2007).

Adolescent sexuality has long been a focus of adult concern, given its connection to outcomes such as unintended pregnancies (Lanctot & Smith, 2001) and sexually transmitted infections (Brooks-Gunn & Furstenberg, 1989; Sandfort, Orr, Hirsch, & Santelli, 2008). The lack of contraceptive use among sexually active adolescents is one particularly distressing aspect of adolescents' sexual behavior, given that, other than abstinence, contraceptive use is the primary preventive measure against both teen pregnancy (Santelli et al., 2004) and sexually transmitted infections (Crosby, DiClemente, Wingood, Lang, & Harrington, 2003).

Importantly, the costs of adolescent problem behaviors impact far more than just the individual. For example, the societal costs of juvenile crime have been estimated as high as $177,000 to $219,000 per juvenile offender, with over 75% of this total resulting from the "pain, suffering, and lost quality of life" of their victims (Welsh, Loeber, Stevens, Stouthamer-Loeber, Cohen, & Farrington, 2008). Adolescent sexual behavior can be costly as well, with more than half of all welfare funding in the United States spent on families resulting from teenage births (Coley & Chase-Lansdale, 1998).

Parental "Monitoring" as Parental Knowledge

Given the increasing importance of peer relationships during adolescence (e.g., Berndt, 1996; Buhrmester, 1990, 1998) and considerable evidence highlighting the influence of peers in perpetuating problem behaviors during this stage in life (Dishion & Medici Skaggs, 2000; Furstenberg et al., 1987; Gillmore et al., 2002; Miller & Moore, 1990; Stack, 1994), it is likely that many parents are left wondering what they can do to keep their teens from going down the wrong path. One possible strategy is close parental supervision. Consistent with this perspective, research has shown that adolescents who spend their free time with peers in unstructured activities in the absence of adult supervision engage in more problem behavior (Mahoney & Stattin, 2002; McHale et al., 2001; Osgood et al., 1996). Furthermore, Fortenberry and colleagues (2006) found that adolescents were less likely to have sex in the afternoons when there was parental supervision; however, when parents relaxed their supervision in the evening, risk of adolescent sex increased. Relatedly, adolescents who are not supervised after school and do not participate in after school programs are more likely to be sexually active and to contract sexually transmitted infections (Cohen, Farley, Taylor, Martin, & Schuster,

2002). These statistics paint a rather clear picture underscoring the pitfalls of insufficient supervision and highlighting the potential impact that better supervision could make.

Along these lines, adolescent researchers have spent considerable time investigating the protective role of what they call "parental monitoring". Conceptualized as "a set of correlated parenting behaviors involving attention to and tracking of the child's whereabouts, activities, and adaptations" (Dishion & McMahon, 1998, p. 61), parental monitoring has been considered a primary protective factor against various problem behaviors for years, including delinquency (Aseltine, 1995; Barber, 1996), antisocial behavior (Cernkovich & Giordano, 1987; Crouter, McDermod, McHale, & Perry-Jenkins, 1990; Patterson & Stouthamer-Loeber, 1984; Sampson & Laub, 1994; Weintrab & Gold, 1991), illegal substance use (Flannery, Vazsonyi, Trquati, & Fridrich, 1994), tobacco use (Biglan, Duncan, Ary, & Smolkowski, 1995), alcohol use (Webb, Bray, Getz, & Adams, 2002), poor school performance (Crouter et al., 1990; White& Kaufman, 1997), deviant friends (Chassin, Pillow, Curran, Molina, & Barrera, 1993; Dishion, Capaldi, Spracklen, & Li, 1995), and risky sexual behavior (Huebner & Howell, 2003; Metzler, Noell, Biglan, Ary, & Smolkowski, 1995; Miller, Forehand, & Kotchick, 1999; Romer et al., 1994). Monitoring even appears to be effective among adolescents from a variety of backgrounds, including those from both urban (Rai et al., 2003; Richards, Miller, O'Donnell, Wasserman, & Colder, 2004) and rural areas (Cottrell, Li, Harris, D'Alessandri, Atkins, Richardson, & Stanton, 2003; Pack, Krishnamurthy, Cottrell, Stanton, D'Alessandri, & Burns, 2005), as well as those from non-intact families (Fröjd, Kaltiala-Heino, & Rimpelä, 2007; Jones, Forehand, Brody, & Armistead, 2003) and economically disadvantaged neighborhoods (Ceballo, Ramirez, Hearn, & Maltese,

2003). Furthermore, behavioral-genetic research has indicated that parental monitoring may even help mitigate the impact of preexisting genetic risk factors (Dick, Viken, Purcell, Kaprio, Pulkkinen, & Rose, 2007).

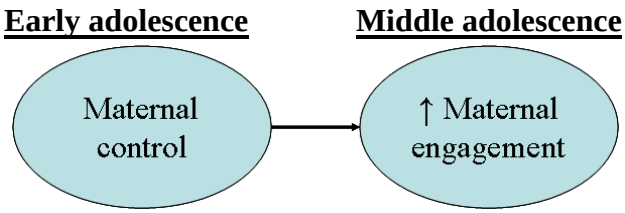
More recently, however, Stattin & Kerr (2000; Kerr & Stattin, 2000) have proposed that the term "parental monitoring" is misleading, in that it suggests that successful parents are engaging in active tracking and surveillance of their teens. They argue that it is not tracking and surveillance that are linked to fewer problems per se, but rather parental knowledge. Furthermore, they posit that *how* parents gain that knowledge is what really matters.

Parental Control

Parental Control as Promoting Parental Engagement. Consistent with Crouter and colleagues' (Crouter, MacDermid, McHale, & Perry-Jenkins, 1990) conceptualization of parental monitoring as requiring interest and attentiveness on the part of the parent, Stattin and Kerr (2000) posited that one tactic parents use in order to gain important knowledge of their adolescents' everyday activities and whereabouts is *parental control*, or imposing "rules and restrictions on their children's activities and associations, thereby controlling the amount of freedom children have to do things without telling them" (Stattin & Kerr, 2000, p. 1073). Using this conceptualization, they found a significant negative correlation between control and norm breaking at home, at school, and during leisure time. Indeed, other studies have associated parents' use of behavioral control with lower levels of drug use, truancy, and swearing (Barber, Olsen, & Shagle, 1994), less frequent sexual intercourse, fewer sexual partners, and more consistent condom use (even after controlling for religiosity and socioeconomic status;

Jemmott & Jemmott, 1992), less alcohol and drug use (Barnes & Farrell, 1992; Gray & Steinberg, 1999), delinquency (Barnes & Farrell, 1992), deviance in school (Gray & Steinberg, 1999), and greater academic achievement (Steinberg et al., 1992). In all of these studies, the more that parents use behavioral control with their adolescents, the lower the incidence of problem behaviors.

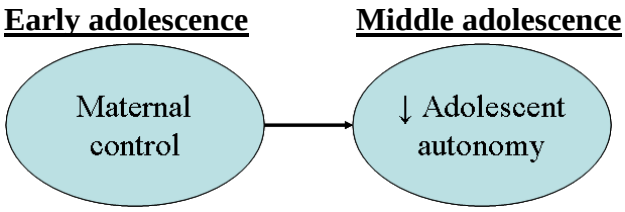
But is parental control really a method through which parents *gain knowledge* about their adolescents' everyday activities and whereabouts? It seems quite possible that the strictest of parents could actually know very little about their adolescent. However, drawing from Crouter and colleagues' conceptualization (1990), parents may exhibit their interest and attentiveness simply through the act of control. Taken together with Hirshi's (1969) control theory, this engagement in the parent-adolescent relationship creates an atmosphere in which parents' views of adolescent problem behaviors may be internalized by the adolescent and in turn play a protective role by encouraging teens to minimize behaviors that are undesirable. Consistent with this idea, Matsäpelto and Pulkkinen (2003) found that parents who are high in restrictiveness are similar to those high in nurturance and parental knowledge, in that they are highly *engaged*. Conversely, research has shown that families in which parents are permissive and fail to employ adequate management strategies are characterized by relationships that are *disengaged* (Olson et al., 1983; Patterson 1976, 1982; Pulkinnen, 1982). Accordingly, it is likely that the use of parental control promotes parents' engagement in the parent-adolescent relationship. More specifically, I hypothesize that higher levels of maternal control will be predictive of greater relative increases in subsequent maternal engagement in the mother-adolescent relationship.



Parental Control as Undermining Autonomy & Relatedness. In contrast to the perspective of parental control as a protective factor, some evidence has emerged to support the idea that parental control may have no effect at all in preventing various problem behaviors such as smoking onset (Engels, Finkenauer, Kerr, & Stattin, 2005). Not only is parental use of control tactics ineffective in preventing problem behaviors, but it is even been shown to have *negative* outcomes. One study investigating parental mediation of televised violence and sex revealed such unintended effects, including adolescent reports of more positive attitudes toward the prohibited content and more viewing of it with friends (Nathanson, 2002). Others found evidence of higher levels of externalizing behaviors, such as cutting class and swearing, (Barber, Olsen, & Shagle, 1994), as well as earlier initiation of sexual activity (Donenberg, Bryant, Emerson, Wilson, & Pasch, 2003; Miller, McCoy, Olson & Wallace, 1986; Upchurch, Aneshensel, Sucoff, & Levy-Storms, 1999) among adolescents whose families were high in behavioral control.

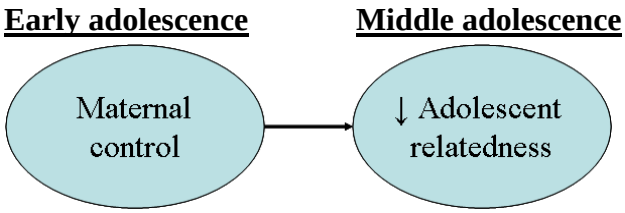
But why would parental control be associated with negative outcomes? Perhaps it is because parental control undermines adolescents' autonomy at a time when they need so badly to express it. In addition to appearing as a central construct in classic theories of development (e.g., Erikson, 1968), contemporary research has established that the ways in which autonomy is negotiated vis-à-vis the parent-adolescent relationship has important implications for adolescent social, emotional and behavioral adjustment,

including lower levels of problem behaviors. These results suggest that adolescents' problem behaviors may be best understood in the context of their attempts to achieve autonomy from their parents (particularly their mothers). For example, some have posited that teens who experience difficulties defining and defending their own needs in relation to their parents may have difficulties resisting pressures to engage in intercourse before they are ready (Connolly & Goldberg, 1999; Graber, Britto and Brooks-Gunn, 1999). It seems that adolescents may use problem behaviors as an attempt to "blast out" of autonomy-undermining relationships, thus asserting themselves as independent of their family unit (Allen et al., 2002). While parental monitoring researchers have not discussed parental control in terms of autonomy, Kerr and Stattin (2000) argue that parental control doesn't work because it leads to greater feelings of *being controlled* on the adolescent's part. Expanding upon this idea, it is likely that high levels of parental control undermine an adolescent's autonomy. Specifically, I hypothesize that higher levels of maternal control will be predictive of greater relative decreases in subsequent adolescent autonomy in the mother-adolescent relationship.



While it is well established among psychologists that one of the chief developmental tasks of adolescence is to gain autonomy from one's parents, the task of simultaneously maintaining a positive relationship with them is not to be overlooked. In fact, previous research suggests that motivations to establish autonomy while maintaining relatedness with one's parents characterize important dimensions of adolescent social

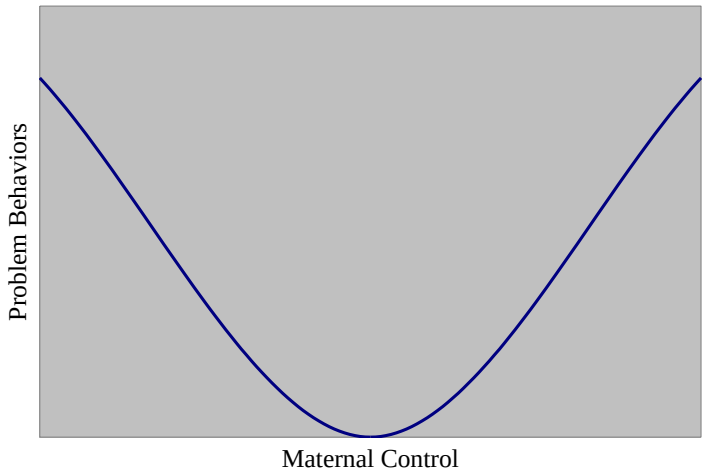
competence and may help enhance knowledge of adolescent problem behaviors (Kuperminc, Allen, & Arthur, 1996). But is parental control conducive to this sort of relatedness? It likely is not, since adolescents probably do not like being controlled. While parental monitoring researchers have not discussed parental control in terms of relatedness, McElhaney and colleagues (McElhaney, Porter, Thomson, & Allen, 2008) found that mothers who reported high levels of influence over various behaviors had adolescents who exhibited lower levels of both autonomy *and* relatedness in observed interactions with themselves as well as with their peers. Expanding upon this idea, it seems likely that greater parental *attempts* to influence (i.e., high levels of parental control) undermine an adolescent's relatedness. Specifically, I hypothesize that higher levels of maternal control will be predictive of greater relative decreases in subsequent adolescent relatedness in the mother-adolescent relationship.



Parental Control [in Moderation] as a Protective Factor. Other studies have even suggested that the relationship between parental control and problem behaviors may not be linear at all. Curvilinear associations have been found between parental control and various problem behaviors, including sexual involvement (Miller et al., 1986), drug use (Kurdek & Fine, 1994), and academic performance (Kurdek & Fine, 1994; Kurdek, Fine, & Sinclair, 1995; Gray & Steinberg, 1999). In all of these studies, moderate levels of parental control facilitated the most desirable outcomes.

Taken together, these findings support the idea outlined thus far; a balance of both parental engagement *and* adolescent autonomy and relatedness is necessary in the parent-adolescent relationship. These optimal traits seem to parallel Baumrind's (1967) model of the authoritative parent, who is both demanding and responsive. Baumrind theorized that these parents "monitor and impart clear standards for their children's conduct. They are assertive, but not intrusive and restrictive. Their disciplinary methods are supportive, rather than punitive. They want their children to be assertive as well as socially responsible, and self-regulated as well as cooperative" (Baumrind, 1991, p. 62). Perhaps most importantly, they have children and adolescents who are more socially and instrumentally competent (Baumrind, 1991; Weiss & Schwarz, 1996; Miller et al., 1993), and adolescents who exhibit greater academic achievement, healthier psychosocial development, and fewer behavior problems and psychological symptoms (Dornbusch, Ritter, Leiderman, Roberts, & Fraleigh, 1987; Lamborn, Mounts, Steinberg, & Dornbusch, 1991; Steinberg, Elmen, & Mounts, 1989; Steinberg, Lamborn, Dornbusch, & Darling, 1992; Steinberg, Mounts, Lamborn, & Dornbusch, 1991) than those whose parents are nonauthoritative. Similarly, Amato (1989) found that, unlike younger children (who fare better when parental control is highest), social competence among adolescents is associated with high parental support and lower levels of parental control. Accordingly, I hypothesize that higher levels of maternal control will have a curvilinear relationship with subsequent adolescent problem behaviors. The lowest levels of problem behaviors are expected to occur among adolescents whose mothers exhibit moderate control, which is indicative of maternal engagement but does not undermine adolescents' autonomy and relatedness. Furthermore, I hypothesize that this association will be mediated by parental

engagement *at low levels of parental control*, and will be suppressed by adolescent autonomy and relatedness *at high levels of parental control*.

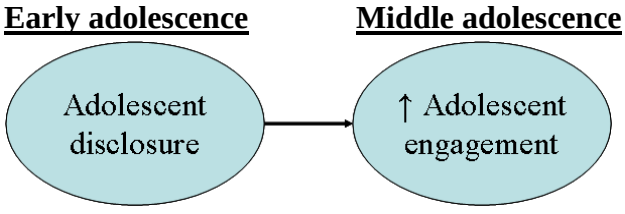


Adolescent Disclosure

Adolescent Disclosure as Promoting Adolescent Engagement. Consistent with Crouter and colleagues' (Crouter, MacDermid, McHale, & Perry-Jenkins, 1990) conceptualization of parental monitoring as also requiring a willingness to share information and experiences on the part of the child, Stattin and Kerr (2000) suggested that another way parents gain important knowledge of their adolescents' every day activities and whereabouts is through adolescent disclosure, noting that "the children could tell them spontaneously, without any prompting" (p. 1073). Using this conceptualization, Stattin & Kerr (2000) found a significant negative correlation between disclosure and norm breaking at home, at school, and during leisure time as well. In fact, results suggested that adolescents' spontaneous disclosure of information was even more strongly linked to norm breaking than was parental control. Furthermore, the results of one follow-up study conducted by the authors suggest that adolescent disclosure is *significantly more strongly correlated* with adolescent delinquency, school problems, and

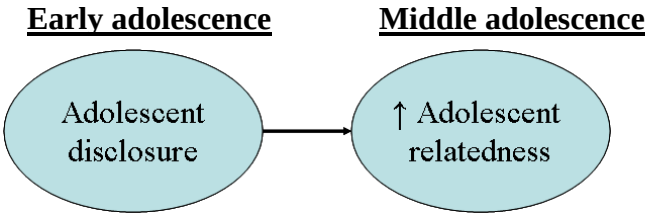
deviant friends than parental control (Kerr & Stattin, 2000). While some may argue that such findings are spuriously correlated because the most delinquent youth disclose the least to parents, recent research statistically controlling for early-adolescent delinquency has suggested otherwise (Lahey, Van Hulle, D'Onofrio, Rodgers, & Waldman, 2008).

Similarly to parental control, adolescent disclosure likely promotes a higher level of engagement in the parent-adolescent relationship, but this time on the part of the *adolescent*. Drawing from Crouter and colleagues' conceptualization (1990), adolescents may exhibit their willingness to share information and experiences simply through the act of disclosure. Unfortunately, parental monitoring researchers have focused only on behavioral disclosure, rarely giving any attention to adolescents' emotional disclosure. Is this association also present with disclosure regarding emotional issues? This question is especially relevant during adolescence when so many emotionally charged issues, such as budding romantic relationships, have the potential to become particularly problematic. One study, conducted by Criss, Shaw, and Ingoldsby (2003), suggested that it is, indicating a positive correlation between parent-child positive "synchrony" (i.e., observed "harmony, reciprocity, responsiveness, interconnectedness, engagement, mutual focus, and shared affect"; p. 384) and parent-child emotional openness. Thus, I hypothesize that higher levels of emotional disclosure will be predictive of greater relative increases in subsequent adolescent engagement within the mother-adolescent relationship as well.



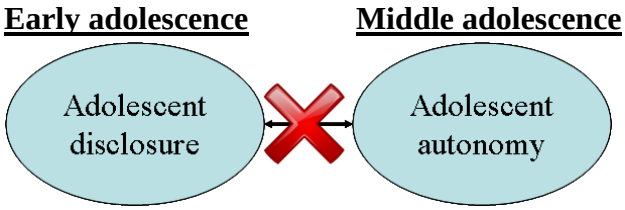
Adolescent Disclosure as Promoting Relatedness & Not Undermining Autonomy. But why is adolescent disclosure a *more effective* buffer against problem behaviors than parental control? Parental control and adolescent disclosure may both promote engagement in the parent-adolescent relationship, as described above. However, in contrast to parental control, adolescent disclosure (regardless of whether the content is behavioral or emotional) may *promote* adolescents' relatedness *without undermining* their autonomy.

While many adolescents may be quite engaged with their parents in a *negative* way, it is likely that adolescent disclosure promotes not only engagement, but also *positivity* with the person to whom he or she is disclosing. Consistent with this idea, full disclosure has been linked to closer, more trusting relationships with parents (Smetana, Villalobos, Tasopolous-Chan, Gettman, & Campione-Barr, 2009). Expanding upon this idea, it is likely that greater adolescent emotional disclosure promotes relatedness within the parent-adolescent relationship as well. Specifically, I hypothesize that higher levels of adolescent disclosure will be predictive of greater relative increases in subsequent adolescent relatedness in the mother-adolescent relationship.

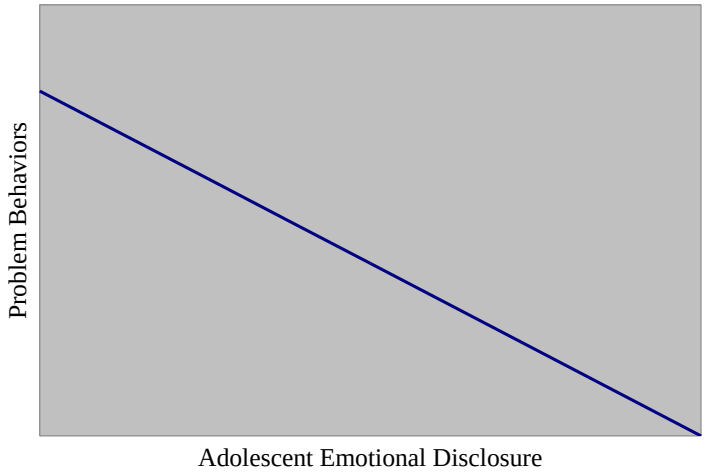


Furthermore, while parental control likely interferes with adolescents' ability to achieve the chief developmental task of establishing autonomy from their parents, adolescent disclosure, which hinges on adolescents' *willingness* to share information and experiences, likely does not. Accordingly, I hypothesize that higher levels of emotional

disclosure will not be significantly related to subsequent autonomy in the mother-adolescent relationship.



Adolescent Disclosure as a Protective Factor. Taken together, adolescent emotional disclosure likely *does not* prevent adolescents from achieving the chief developmental task of developing autonomy from their parents; meanwhile it likely *does* assist in the maintenance of a positive relationship with them (i.e., engagement and relatedness). In turn, these positive aspects of the parent-adolescent relationship have been associated with an array of positive outcomes for adolescents. For example, observational measures of parent-adolescent synchrony have been linked to lower subsequent antisocial behavior (Criss, Shaw, Ingoldsby, 2003). Conversely, adolescents who are emotionally detached from their parents have been found to be more likely to get into fights and to use substances (Turner, Irwin, Tschann, & Millstein, 1993). Thus, in contrast to maternal control, the relationship between adolescent emotional disclosure and problem behaviors is expected to be linear. More specifically, I hypothesize that higher levels of emotional disclosure will be predictive of lower levels of adolescent problem behaviors, and that this association will be mediated by adolescents' engagement and relatedness in the parent-adolescent relationship.



Important Considerations

One important limitation of the existing research on this topic is its cross-sectional nature. Because some may argue, for example, that higher levels of parental control lead to lower levels of adolescent autonomy *or* that the reverse may be instead true, longitudinal studies are needed that examine the potentially bidirectional nature of these variables.

Furthermore, the common reliance of existing research on adolescent self-reports of both relationship qualities and problem behaviors introduces a critical confound. Adolescents who are highly tied to their parents, for example, might be most likely to report both positive relationship qualities and a lack of problem behaviors (i.e., to report what their parents would value). It is only by assessing relationship qualities and interactions with more independent methods that we can begin to move beyond this confound.

Finally, while parental control and adolescent emotional disclosure are of primary interest, it is important not to overlook two potentially important covariates. First, it is crucial to consider how socioeconomic status may influence the interplay between

parental control and adolescent problem behaviors. It seems intuitive that parental monitoring may be of elevated importance in disadvantaged communities, where social disorganization and crime may be greater. Unfortunately, some have suggested that it is just these risk factors that make it difficult for parents to adequately monitor and supervise their children's behaviors in these settings (Klebanov, Brooks-Gunn, & Duncan, 1994; Simons, Johnson, Beaman, Conger, & Whitbeck, 1996). Additionally, parents from lower SES families may be at a disadvantage when it comes to monitoring their children, since they often have to work longer hours to support their families. In support of this idea, monitoring is associated with fewer problem behaviors among boys whose mothers were employed full-time, but not among boys whose mothers did not work (interestingly, this interaction did not persist for girls; Crouter et al., 1990; Jacobson & Crockett, 2000). Jacobson and Crockett explained that "effective monitoring may compensate for a lack of direct supervision" (2000, p. 65).

Second, the role of gender is not to be overlooked. As evidenced by the discussion of SES above (Crouter et al., 1990; Jacobson & Crockett, 2000), several studies have yielded results that suggest parental monitoring and control may be more important for boys than for girls (Cernkovich & Giordano, 1987; Heimer, 1997). While this finding may be attributable to gender differences in some problem behaviors, such as aggression (Broidy, et al., 2003), recent statistics suggests that the gender gap in juvenile offenses is closing (Office of Juvenile Justice & Delinquency Prevention, 2002).

Unfortunately, the majority of investigations regarding demographic differences have relied on the outdated definition of parental monitoring, measuring parental knowledge in general, rather than *how* parents gain that knowledge. By parsing apart the

relationship of these potential covariates with parental control and adolescent emotional disclosure, we can gain a better understanding of the specific protective factors that may be effective for adolescents of different socioeconomic statuses and genders.

Hypotheses

The proposed study is designed to enhance our understanding of the link between these two important facets of parental "monitoring" (i.e., parental control and adolescent disclosure) and subsequent adolescent problem behaviors by mapping it onto what we already know about the importance of achieving autonomy and relatedness, as well as engagement, in the mother-adolescent relationship. In order to do so, the following hypotheses will be addressed with observational and multi-reporter data from a socio-demographically heterogeneous sample of 184 adolescents and their mothers followed across a six-year span:

Maternal Control Hypotheses

- Hypothesis 1A: Higher levels of maternal control will be associated with greater relative increases in subsequent maternal engagement. The possibility of a bidirectional relationship will be examined.
- Hypothesis 1B: Higher levels of maternal control will be associated with greater relative decreases in subsequent adolescent relatedness. The possibility of a bidirectional relationship will be examined.
- Hypothesis 1C: Higher levels of maternal control will be associated with greater relative decreases in subsequent adolescent autonomy. The possibility of a bidirectional relationship will be examined.

Maternal Control and Problem behaviors

- Hypothesis 2: Maternal control will be curvilinearly related to adolescent problem behaviors, such that the lowest levels of risk taking behaviors will be associated with moderate maternal control.

Indirect Relationships with Maternal Control

- Hypothesis 3A: Maternal engagement will mediate the relationship between maternal control and subsequent adolescent problem behaviors *at low levels of maternal control*.
- Hypothesis 3B: Adolescent autonomy and relatedness will suppress the relationship between maternal control and subsequent adolescent problem behaviors *at high levels of maternal control*.

Adolescent Disclosure Hypotheses

- Hypothesis 4A: Higher levels of adolescent disclosure will be associated with greater relative increases in subsequent adolescent engagement. The possibility of a bidirectional relationship will be examined.
- Hypothesis 4B: Higher adolescent disclosure will be associated with greater relative increases in subsequent adolescent relatedness. The possibility of a bidirectional relationship will be examined.
- Hypothesis 4C: Adolescent disclosure will not be associated with subsequent adolescent autonomy. The possibility of a bidirectional relationship will be examined.

Adolescent Disclosure and Problem behaviors

- Hypothesis 5: Adolescent disclosure will be linearly related to adolescent problem behaviors, such that the lowest levels of risk taking behaviors will be associated with high emotional disclosure.

Indirect Relationships with Adolescent Disclosure

- Hypothesis 6: Adolescent engagement and relatedness will mediate the relationship between adolescent disclosure and subsequent adolescent problem behaviors.

Method

Participants

Participants included 184 adolescents (M age = 13.36, SD = 0.66; 86 males and 98 females) and their mothers. The sample was racially/ethnically and socioeconomically diverse: of the participants, 58% identified themselves as Caucasian, 29% as African American, and 13% as being from other or mixed ethnic groups. Adolescents' mothers reported a median family income in the $40,000 to $59,999 range, which is comparable to the national median family income of $53,350 in 1997, the year of initial data collection (U.S. Bureau of the Census, 2010). Eighteen percent of the sample reported annual family income less than $20,000, and 33% reported annual family income greater than $60,000.

Formal attrition analyses revealed no differences between the 173 adolescents who returned at follow-up with their mothers at age 16 versus the 11 who did not on any of the demographic or primary predictor measures in this study. The 180 who returned for follow-up age 18, however, were significantly less disclosive to their mothers in observed interactions at age 13 and reported significantly less crimes against persons at age 13 than the four who did not return.

As part of a larger longitudinal investigation, adolescents were initially recruited from the seventh and eighth grades of a public middle school drawing from suburban and urban populations in the mid-Atlantic United States. Participants were recruited via an

initial mailing to all parents of students in the school along with follow-up contact efforts at school lunches. Families of adolescents who indicated they were interested in the study were contacted by telephone. Adolescents were recruited to serve as either target teens or close peers of target teens, as both roles involved extended interview and observational data collection. If adolescents had already been recruited to serve as a close friend of a participating target teen that close friend was then no longer eligible to participate as a target teen. Of all students eligible for participation, 63% agreed to participate in one of these two primary roles when approached. The resulting sample was similar to the larger community population in terms of both socioeconomic status and racial/ethnic background. All participants provided informed assent before each interview session, and parents provided informed consent. Interviews took place in private offices within a university academic building.

Procedure

In the initial introduction and throughout each session, confidentiality was assured to all family members, and adolescents were told that their parents would not be informed of any of the answers they provided. A Confidentiality Certificate, issued by the U.S. Department of Health and Human Services protected all data from subpoena by federal, state, and local courts.

Measures

For a simplified overview of all proposed constructs and measures, see Table 1.

Table 1. ***Overview of primary constructs and measures.***

Construct	Ages*
Parental Control CRPBI- firm vs. lax control (A/M)	13, 16
Adolescent Disclosure Parent SBT- adolescent self disclosure (O)	13, 16
Maternal Engagement Parent SBT - maternal engagement (O)	13, 16
Adolescent Engagement Parent SBT - adolescent engagement (O)	13, 16
Adolescent Autonomy Parent AR- undermining autonomy (O)	13, 16
Adolescent Relatedness Parent AR- promoting relatedness (O)	13, 16
Adolescent Problem Behaviors SEQ- Risky sexual behaviors (A) ADUQ- Drug & alcohol use (A) PBI- Crimes against persons (A)	13, 17-19

Note: A=Adolescent report, M=Mother report, O=Observed; * "Ages" always refer to the age of the target teen at the time of the data collection.

Maternal Control

At ages 13 and 16, adolescents and mothers completed the Firm vs. Lax Control subscale of the Child Report of Parenting Behavior Inventory (CRPBI; Schaefer, 1965; Schludermann & Schludermann, 1970; see Appendix A). Maternal control was measured using 10 items that assess the perception of the degree to which the mother uses rules to control the adolescent's behavior, such as, "My mother believes in having a lot of rules and sticking with them," and "My mother gives me as much freedom as I want" (the latter item was reverse coded). Mothers also completed this scale, rating the degree that they utilized behavioral control with the target teen. Each item was rated on a 3-point scale (from *not like* to *a lot like*), thus overall scores could range from 10 (low behavioral

control) to 30 (high behavioral control). Cronbach's alphas for this scale were 0.75 for adolescents' reports and 0.63 for mothers' reports at age 13, and 0.82 for adolescents' reports and 0.65 for mothers' reports at age 16. Adolescents' and mothers' reports were averaged, yielding a multireporter maternal control score for the purpose of this study.

Adolescent Disclosure

At ages 13 and 16, adolescents participated in an eight minute observed Supportive Behavior Task (SBT) during which they asked their mother for help with a "problem they were having that they could use some advice or support about." Typical topics included dating, problems with peers or siblings, raising money, or deciding about joining sports teams. Notably, as participants' mature, the nature of the topics selected and the depth of the discussion also mature, allowing this task to function easily as a repeated assessment paradigm. These interactions were coded using the supportive behavior coding system (Allen, Hall, Insabella, Land, Marsh, & Porter, 2001), which was based on several other similar systems (Crowell, Pan, Goa, Treboux, O'Connor, & Waters, 1998; Haynes & Katz, 1993; Julien, Markman, Lindahl, Johnson, Van Widenfelt, & Herskovitz, 1997). For the purposes of the current study, various indices of adolescents' willingness to engage in discussion were assessed. The emotional disclosure subscale is intended to capture the quality of information that the adolescent shared about him- or herself during the SBT. Affect, controversy, and vulnerability are all considered when rating levels of self disclosure. More specifically, statements that are accompanied with a high level of affect on the adolescent's part, that may be controversial within the dyad, and which would cause the adolescent to feel vulnerable with the average parent are considered highly disclosive. Two trained coders coded each interaction on a scale

from 0 (low self disclosure) to 4 (high self disclosure), and their codes were then averaged. Interrater reliability was calculated at ages 13 and 16 using intraclass correlation coefficients (r = 0.87 and r = 0.62, respectively).

Maternal Engagement

Also at ages 13 and 16, mothers' engagement was assessed within the SBT interaction using the supportive behavior coding system (Allen, Hall, Insabella, Land, Marsh, & Porter, 2001) described above. The engagement subscale focuses upon the degree to which the mother is engaging with the adolescent and demonstrating (explicitly and/or implicitly, with words and/or gestures) that she is paying close attention to what the adolescent is saying during the SBT. Mothers may show that they are engaged and interested in what the adolescent is saying by following up on what he/she says (whether agreeing or disagreeing), leaving him/her time to talk, asking questions about the topic, and listening to what he/she has to say. In addition to verbal signs of engagement, a mother can demonstrate engagement non-verbally with eye-contact, body posture, head movements (i.e., nodding, shaking head, etc.), and facial expressions. The code for engagement is based on both the amount and quality of engagement. Two trained coders coded each interaction on a scale from 0 (low engagement) to 4 (high engagement), and their codes were then averaged. Interrater reliability was calculated at ages 13 and 16 using intraclass correlation coefficients (r = 0.77 and r = 0.69, respectively).

Adolescent Engagement

Adolescents' engagement was assessed within the SBT interaction at ages 13 and 16 as well, using the supportive behavior coding system (Allen, Hall, Insabella, Land, Marsh, & Porter, 2001) described above. Engagement criteria were the same for

adolescents as for mothers. Interrater reliability was calculated at ages 13 and 16 using intraclass correlation coefficients (r =0 .83 and r = 0.77, respectively).

Adolescent Autonomy

Also at ages 13 and 16, adolescents and their mothers participated in an eight minute observed Autonomy & Relatedness (AR) revealed-differences task in which they discussed a family issue that they had separately identified as an area of disagreement. Adolescents and their mothers were then brought together, and the discussion began with the adolescent playing an audiotape that he or she had previously recorded with an interviewer in which he or she stated the problem, his or her perspective on it, and what the adolescent thought his or her mother's perspective was. Typical topics of discussion included money, grades, household rules, friends, and sibling issues. These interactions were videotaped and then transcribed.

Both the videotapes and transcripts were used to code the mother–adolescent interactions for behaviors exhibiting autonomy using the Autonomy and Relatedness Coding System (Allen, Hauser, Bell, McElhaney, & Tate, 1998). This system uses concrete behavioral guidelines to evaluate individual speeches and behaviors on eight subscales and then uses an algorithm to create a score on a scale of 0 to 4 which accounts for both the frequency and intensity of the behaviors displayed. Two additional subscales include global ratings in which the scores are based on the tone of the entire interaction. These 10 subscales are then combined on an *a priori* basis to yield several overall scales including adolescents' behaviors undermining autonomy and their behaviors promoting relatedness. The Undermining Autonomy scale is a composite of various poor negotiation skills, including overpersonalizing a disagreement, recanting a position without appearing

to have been persuaded the position is wrong, or pressuring another person to agree rather than by making rational arguments. Each interaction was coded separately by two trained coders who were blind to the rest of the data, using a scale from 0 (low autonomy undermining) to 4 (high autonomy undermining), and their codes were then averaged. Interrater reliability was calculated at ages 13 and 16 using intraclass correlation coefficients (r = 0.85 and r =.84, respectively). Past research using this coding system has found it to be a reliable predictor of both family and adolescent functioning (Allen, Hauser, Bell, & O'Connor, 1994; Allen, Hauser, Eickholt, Bell, & O'Connor, 1994).

Adolescent Relatedness

Adolescents' relatedness was assessed within the AR interaction at ages 13 and 16 as well, also using the Autonomy and Relatedness Coding System (Allen, Hauser, Bell, McElhaney, & Tate, 1998) described above. Behaviors coded on the Promoting Relatedness scale include signs of *validating* or agreeing with the other person and maintaining a high level of *engagement* during the discussion. Each interaction was coded separately by two trained coders who were kept unaware of the rest of the data, using a scale from 0 (low relatedness) to 4 (high relatedness), and their codes were then averaged. Interrater reliability was calculated at ages 13 and 16 using intraclass correlation coefficients (r = 0.77 at age 13 and 0.53 at age 16).

Adolescent Problem behaviors

Risky sexual behaviors – Sexual Experiences Questionnaire (SEQ; Adolescent self report at ages 17-19; see Appendix A). This measure was created specifically for this study, and was compiled from a variety of other sources and authors (Feiring, 1999; Feiring, 1996; McCabe & Collins, 1984; Treboux & Busch-Rossnagel, 1990). In this

questionnaire, target adolescents were asked to report on their history of risky sexual behaviors, including frequency of sexual intercourse, the number of sexual partners they had, and the frequency with which they used contraception during intercourse (on a scale from *0 = never* to *4 = always*). These three items were standardized and aggregated, yielding an overall risky sexual behavior score ranging from 0 (low risky sex) to 3 (high risky sex) for the purpose of this study.

Soft drug use – Alcohol and Drug Use Questionnaire (ADUQ; Johnston, O'Malley, & Bachman, 1987; Adolescent self report at ages 13, 17-19; see Appendix C). Target teens reported 1) how often they had drunk alcohol in the past 30 days and 2) how often they had smoked marijuana in the past 30 days with responses ranging from 0 *(none)* to 4 *(10 or more times)*. Johnston and colleagues (1987) found high reliability from year to year and consistency between related measures of drug use within the same questionnaire administration. Construct validity was demonstrated as self-reported drug use was related to attitudes, beliefs, and related behaviors. It appeared that under-reporting was minimal and that subjects were not defensive about their drug use. Generally, self-reports of problem behaviors have been found to be reliable and correlate with reports of independent observers (Patterson & Stouthamer-Loeber, 1984). A single *soft drug use* variable was created by calculating the mean of the two items. Internal consistency was acceptable to good (Cronbach's α = .62 at age 16, .76 at age 17, .68 at age 18, .68 at age 19, .53 at age 20, and .60 at age 21.)

Crimes Against Persons - Problem Behavior Inventory (Elliott, Huizinga, & Menard, 1989; PBI; Adolescent self report at ages 13, 17-19; see Appendix D). Crimes against persons, such as physical attacks on others, were assessed by the target adolescent

using a modified version of the PBI due to time constraints. For each of the six items, participants were asked how many times in the past six months had they engaged in crimes against persons (e.g., assault) acts on an 8-point scale from 1 (*Never*) to 8 (*Once a Day*). Responses were summed to obtain an index of total index of crimes against persons that have been found to be correlated with numerous theoretically-related measures of functioning (Allen, et al., 1990).

Data Analytic Plan

First, descriptive analyses of the data were conducted in order to gain a broad overview of the nature and limitations of the data prior to starting more complex analyses. Second, to address hypotheses one through three and seven through nine outlined above, cross lagged path analyses with repeated measures were used to test the possibility of bidirectional relationships among variables (e.g., examining bidirectional relationships between high parental control/low adolescent autonomy). Third, autoregressive path analyses were used to test the relationship between the primary predictors (maternal control and adolescent disclosure) and subsequent changes in risk taking behaviors. Finally, to test for indirect effects, autoregressive path analyses were applied based on the methodology suggested by Baron and Kenny (1986), which is appropriate for testing both mediation and suppression hypotheses (MacKinnon, Krull, & Lockwood, 2000). All analyses controlled for gender and SES, and tested for potential group differences where appropriate.

To best address any potential biases due to attrition in longitudinal analyses, full imputation maximum likelihood (FIML) methods will be used in all analyses, including all variables that were linked to future missing data (i.e. where data were not missing

completely at random; Muthén & Muthén, 2006). Because these procedures have been found to yield the least biased estimates when all available data are used for longitudinal analyses (vs. listwise deletion of missing data; Arbuckle, 1996; Enders, 2001; Raykov, 2005), the entire original sample of 184 for the larger study will utilized for these analyses. This full sample will thus provide the best possible variance/covariance estimates and will be least likely to be biased by missing data. This sample size has been determined sufficient for statistical power purposes using in all cases (minimum necessary sample size = 129 according to G*Power 3.2; Faul, 2009).

Results

Descriptive Statistics

All continuous study variables were roughly normally distributed, with the exception of crimes against persons, which was negatively skewed. This is not surprising, given that this is a normative sample. The log of this variable was calculated, and the resulting log transformed variable was used in analyses. Next, distributions of all primary independent variables (i.e., adolescent-mother relationship variables) were examined for presence of outliers, defined as variables more than three standard deviations from the group mean. No outliers were found among these primary predictor variables. Several outliers were identified among the dependent adolescent problem behavior variables. These outliers were trimmed to three standard deviations from the group mean.

Means of all primary constructs are presented in Table 2. T-tests were used to examine group differences among male (n = 86) and female (n =98) adolescents on each of the outcome variables. See Table 3 for means and standard deviations of significantly different variables. Gender differences emerged with males having significantly lower

levels of disclosure at age 16 ($t(137) = -3.20$, $p < .01$) and adolescent engagement at age 16 ($t(137) = -2.46$, $p < .05$), as well as higher levels of risky sex behaviors at age 18 ($t(135) = 2.20$, $p < .05$), and soft drug use at age 18 ($t(171) = 3.53$, $p < .001$) compared to females. A nonsignificant trend toward higher levels of crimes against persons for males versus females at age 18 ($t(130) = 1.71$, $p < .10$) also emerged. For the purposes of this study, family SES was split at the median, yielding a dichotomous family socioeconomic status (SES) variable, and thus T-tests were used to examine group differences among high SES ($n = 99$) and low SES ($n = 85$) adolescents on each of the outcome variables as well. See Table 4 for means and standard deviations of significantly different variables. SES differences emerged with low SES adolescents having significantly higher levels of crimes against persons at age 13 ($t(140) = 3.25$, $p < .01$), as well as lower levels of maternal engagement at age 13 ($t(164) = -4.74$, $p < .0001$), adolescent engagement at age 13 ($t(164) = -3.01$, $p < .01$), maternal engagement at age 16 ($t(137) = -3.89$, $p < .001$), adolescent engagement at age 16 ($t(137) = -2.71$, $p < .01$), adolescent relatedness at age 13 ($t(162) = -3.36$, $p < .01$), adolescent relatedness at age 16 ($t(133) = -3.66$, $p < .001$), soft drug use at age 16 ($t(150) = -2.19$, $p < .05$), and soft drug use at age 18 ($t(171) = -2.73$, $p < .01$) compared to adolescents from high SES families. Correlations among all primary constructs are presented in Table 5. Simple correlations for substantive variables are discussed later with relevant hypotheses.

Table 2. ***Means and standard deviations of predictor and outcome variables of interest.***

Variable	N	M	SD
Maternal control (A/M; 13)	182	20.73	2.68
Maternal control (A/M; 16)	165	19.47	3.29
Adolescent disclosure (O; 13)	166	1.30	1.03
Adolescent disclosure (O; 16)	139	0.84	0.79
Maternal engagement (O; 13)	166	2.93	0.79
Maternal engagement (O; 16)	139	3.05	0.65
Adolescent engagement (O; 13)	166	2.38	0.80
Adolescent engagement (O; 16)	139	2.52	0.87
Adolescent autonomy undermining (O; 13)	164	0.52	0.42
Adolescent autonomy undermining (O; 16)	135	0.57	0.43
Adolescent relatedness (O; 13)	164	1.53	0.52
Adolescent relatedness (O; 16)	135	1.54	0.59
Risky sexual activity (A; 13)	183	0.95	0.59
Risky sexual activity (A; 16)	152	0.94	0.79
Risky sexual activity (A; 18)	173	0.96	0.73
Soft drug use (A; 13)	183	0.10	0.34
Soft drug use (A; 16)	152	0.91	1.32
Soft drug use (A; 18)	173	1.42	1.34
Crimes against persons (A; 13)	182	2.09	0.20
Crimes against persons (A; 16)	150	2.05	0.22
Crimes against persons (A; 18)	173	2.15	0.13

Note: Reporter and adolescent age are presented in parentheses; A=adolescent report, M=mother report, O=observed.

Table 3. ***Means and standard deviations of predictor and outcome variables of interest, grouped by gender*.**

Variable	Males			Females		
	N	M	SD	N	M	SD
Maternal control (A/M; 13)	86	20.59	2.65	96	20.86	2.71
Maternal control (A/M; 16)	80	19.40	3.44	85	19.53	3.16
Adolescent disclosure (O; 13)	78	1.21	1.01	88	1.38	1.04
Adolescent disclosure (O; 16)**	67	0.62	0.68	72	1.04	0.84
Maternal engagement (O; 13)	78	2.88	0.80	88	2.96	0.78
Maternal engagement (O; 16)	67	3.03	0.59	72	3.07	0.70
Adolescent engagement (O; 13)	78	2.30	0.75	88	2.44	0.84
Adolescent engagement (O; 16)*	67	2.34	0.85	72	2.70	0.86
Adolescent autonomy undermining (O; 13)	80	0.47	0.39	84	0.56	0.45
Adolescent autonomy undermining (O; 16)	67	0.58	0.45	68	0.57	0.41
Adolescent relatedness (O; 13)	80	1.57	0.54	84	1.48	0.50
Adolescent relatedness (O; 16)	67	1.60	0.65	68	1.47	0.52
Risky sexual activity (A; 13)	86	0.99	0.53	97	0.91	0.64
Risky sexual activity (A; 16)	72	1.03	0.85	80	0.86	0.68
Risky sexual activity (A; 18) *	82	1.09	0.87	91	0.84	0.56
Soft drug use (A; 13)	86	0.13	0.38	97	0.07	0.30
Soft drug use (A; 16)	72	1.06	1.42	80	0.79	1.22
Soft drug use (A; 18)***	82	1.79	1.42	91	1.09	1.18
Crimes against persons (A; 13)	85	2.09	0.20	97	2.08	0.19
Crimes against persons (A; 16)	72	2.06	0.19	78	2.04	0.24
Crimes against persons (A; 18)†	82	2.17	0.16	91	2.14	0.09

Note: Reporter and adolescent age are presented in parentheses; A=adolescent report, M=mother report, O=observed;
† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 4. ***Means and standard deviations of predictor and outcome variables of interest, grouped by family SES.***

Variable	Low SES			High SES		
	N	M	SD	N	M	SD
Maternal control (A/M; 13)	84	20.82	2.51	98	20.65	2.82
Maternal control (A/M; 16)	76	19.18	3.19	89	19.71	3.37
Adolescent disclosure (O; 13)	76	1.25	1.08	90	1.34	0.99
Adolescent disclosure (O; 16)	61	0.77	0.82	78	0.89	0.77
Maternal engagement (O; 13)***	76	2.63	0.82	90	3.18	0.67
Maternal engagement (O; 16)***	61	2.82	0.68	78	3.23	0.56
Adolescent engagement (O; 13)**	76	2.18	0.81	90	2.54	0.76
Adolescent engagement (O; 16)**	61	2.30	0.79	78	2.70	0.89
Adolescent autonomy undermining (O; 13)	75	0.51	0.40	89	0.52	0.44
Adolescent autonomy undermining (O; 16)	59	0.62	0.43	76	0.54	0.43
Adolescent relatedness (O; 13)**	75	1.38	0.53	89	1.65	0.49
Adolescent relatedness (O; 16)***	59	1.34	0.50	76	1.69	0.61
Risky sexual activity (A; 13)	85	0.98	0.64	98	0.92	0.54
Risky sexual activity (A; 16)	65	0.96	0.97	87	0.92	0.58
Risky sexual activity (A; 18)	80	0.94	0.56	93	0.97	0.85
Soft drug use (A; 13)	85	0.12	0.37	98	0.08	0.31
Soft drug use (A; 16)*	65	0.65	1.19	87	1.11	1.38
Soft drug use (A; 18)**	80	1.13	1.25	93	1.68	1.37
Crimes against persons (A; 13)**	85	2.14	0.23	97	2.04	0.15
Crimes against persons (A; 16)	64	2.08	0.26	86	2.03	0.18
Crimes against persons (A; 18)	80	2.16	0.14	93	2.15	0.12

Note: Reporter and adolescent age are presented in parentheses; A=adolescent report, M=mother report, O=observed;
† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 5. ***Overall correlations among primary constructs.***

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Maternal control (A/M; 13)	-									
2. Maternal control (A/M; 16)	0.57***	-								
3. Adolescent disclosure (O; 13)	-0.00	-0.02	-							
4. Adolescent disclosure (O; 16)	-0.11	-0.11	0.24**	-						
5. Maternal engagement (O; 13)	-0.06	0.05	0.23**	0.13	-					
6. Maternal engagement (O; 16)	-0.06	-0.02	0.12	0.30***	0.38***	-				
7. Adolescent engagement (O; 13)	-0.08	-0.10	0.20**	0.18*	0.64***	0.34***	-			
8. Adolescent engagement (O; 16)	-0.04	-0.08	0.16†	0.36***	0.34***	0.71***	0.46***	-		
9. Adol. aut. undermining (O; 13)	0.01	0.00	0.06	0.07	-0.20*	-0.08	-0.20*	-0.11	-	
10. Adol. aut. undermining (O; 16)	0.19*	0.22*	-0.03	-0.02	-0.17†	-0.15†	-0.10	-0.26**	0.30***	-
11. Adolescent relatedness (O; 13)	-0.05	-0.10	0.06	0.14	0.37***	0.28**	0.51***	0.33***	-0.30***	-0.09
12. Adolescent relatedness (O; 16)	-0.18*	-0.22*	0.17†	0.25**	0.38***	0.45***	0.43***	0.56***	-0.13	-0.32***
13. Risky sexual activity (A; 13)	-0.05	-0.16*	-0.15†	-0.11	-0.13†	-0.23**	-0.10	-0.27**	-0.09	-0.00
14. Risky sexual activity (A; 16)	-0.08	-0.04	-0.12	0.03	0.11	-0.08	-0.12	-0.09	0.02	-0.08
15. Risky sexual activity (A; 18)	-0.01	-0.01	-0.12	0.03	0.11	0.09	0.02	0.00	-0.06	-0.04
16. Soft drug use (A; 13)	-0.10	-0.16*	0.13	0.14†	0.01	0.09	0.07	0.08	0.07	-0.13
17. Soft drug use (A; 16)	-0.22**	-0.26**	0.10	0.17†	0.06	0.07	0.08	-0.04	0.17*	0.06
18. Soft drug use (A; 18)	-0.14†	-0.08	0.05	0.14	0.09	0.11	0.11	-0.03	0.09	-0.00
19. Crimes against persons (A; 13)	0.11	-0.12	0.02	-0.17*	-0.14†	-0.25**	-0.17*	-0.25**	0.05	-0.02
20. Crimes against persons (A; 16)	0.00	-0.05	0.04	-0.08	-0.15†	-0.21*	-0.07	-0.12	-0.01	0.07
21. Crimes against persons (A; 18)	0.12	0.10	0.06	-0.12	-0.06	-0.29***	-0.08	-0.24**	-0.04	-0.00

Note: Reporter and adolescent age are presented in parentheses; A=adolescent report, M=mother report, O=observed;
† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

(continued)

Table 5 continued. ***Overall correlations among primary constructs.***

Variable	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
1. Maternal control (A/M; 13)										
2. Maternal control (A/M; 16)										
3. Adolescent disclosure (O; 13)										
4. Adolescent disclosure (O; 16)										
5. Maternal engagement (O; 13)										
6. Maternal engagement (O; 16)										
7. Adolescent engagement(O; 13)										
8. Adolescent engagement (O; 16)										
9. Adol. aut. undermining (O; 13)										
10. Adol. aut. undermining (O; 16)										
11. Adolescent relatedness (O; 13)	-									
12. Adolescent relatedness (O; 16)	0.33***	-								
13. Risky sexual activity (A; 13)	-0.07	-0.19*	-							
14. Risky sexual activity (A; 16)	-0.05	-0.11	0.18*	-						
15. Risky sexual activity (A; 18)	-0.02	0.10	0.14†	0.23**	-					
16. Soft drug use (A; 13)	0.05	0.15†	0.25***	0.10	-0.03	-				
17. Soft drug use (A; 16)	0.14†	0.11	0.03	0.23**	0.19*	0.25**	-			
18. Soft drug use (A; 18)	0.22**	0.05	0.13†	0.31***	0.28***	0.20**	0.70***	-		
19. Crimes against persons (A; 13)	-0.06	-0.29***	-0.03	0.17*	0.07	0.16*	0.09	0.11	-	
20. Crimes against persons (A; 16)	-0.16†	-0.12	0.07	-0.02	0.11	-0.03	-0.07	-0.04	0.15†	-
21. Crimes against persons (A; 18)	-0.03	-0.03	0.05	0.04	0.01	0.07	-0.08	0.05	0.27***	0.28***

Note: Reporter and adolescent age are presented in parentheses; A=adolescent report, M=mother report, O=observed;
† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Maternal Control Hypotheses

Hypothesis 1: Higher levels of maternal control will be associated with greater relative increases in subsequent maternal engagement and adolescent autonomy undermining behaviors, as well as greater relative decreases in adolescent relatedness.

To address these hypotheses, cross lagged path analyses were conducted for each adolescent-mother relationship outcome: a) maternal engagement, b) adolescent autonomy undermining behaviors, and c) adolescent relatedness. All models accounted for the demographic variables of gender and family income. Multiple group analyses were also conducted in order to investigate possible differences among 1) males versus females and 2) adolescents from high SES versus low SES families. Comparing the change in fit for these nested models allows alternative hypotheses to be evaluated systematically.

Hypothesis 1A: Maternal control & maternal engagement.

Inconsistent with the hypothesis that higher levels of maternal control would be associated with greater relative increases in subsequent maternal engagement, no main effect of maternal control at age 13 predicting a relative increase in maternal engagement at age 16 was found ($\beta = .02$, *ns*). However, multiple group analyses freeing constraints placed on structural coefficients representing relationship between maternal control at age 13 and maternal engagement at age 16 resulted in significant improvement in model fit when testing this pathway grouped by gender ($\Delta\chi^2 (1) = 7.452$, $p < .01$). Results presented in Figure 1 indicate that maternal control at age 13 predicted a trend toward a relative increase in maternal engagement at 16, after adjusting for earlier maternal engagement and family income, for females ($\beta = .21$, $p < .10$).

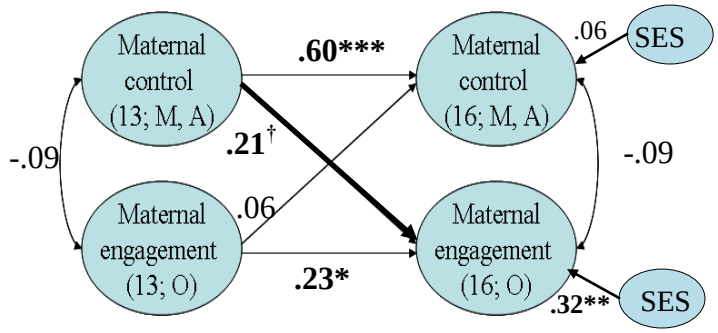


Figure 1. **Cross lag path analysis predicting maternal engagement for females, after accounting for SES.** † ***p*** **< 0.10, * *p* < 0.05, ** *p* < 0.01, *** *p* < 0.001.**

Conversely, results presented in Figure 2 indicate that maternal control at age 13 predicted a significant relative *decrease* in maternal engagement at 16, after adjusting for earlier maternal engagement and family income, for males (β = -.22, $p < .05$).

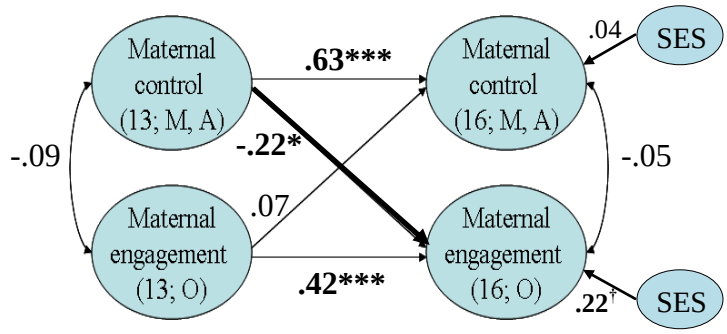


Figure 2. **Cross lag path analysis predicting maternal engagement for males, after accounting for SES.** † ***p*** **< 0.10, * *p* < 0.05, ** *p* < 0.01, *** *p* < 0.001.**

Multiple group analyses freeing constraints placed on structural coefficients representing relationship between maternal control at age 13 and maternal engagement at age 16 did not result in a significant model improvement when grouped by SES, failing to find evidence of the presence of SES differences in this model ($\Delta\chi^2$ (1) = 0.002, *ns*).

Hypothesis 1B: Maternal control & adolescent autonomy.

Consistent with the hypothesis that higher levels of maternal control would be associated with greater relative increases in subsequent adolescent autonomy undermining behaviors, an overall main effect of maternal control at age 13 predicting a

significant relative increase in adolescent autonomy undermining behaviors at age 16 was found (β = .21, $p < .05$), as presented in Figure 4.

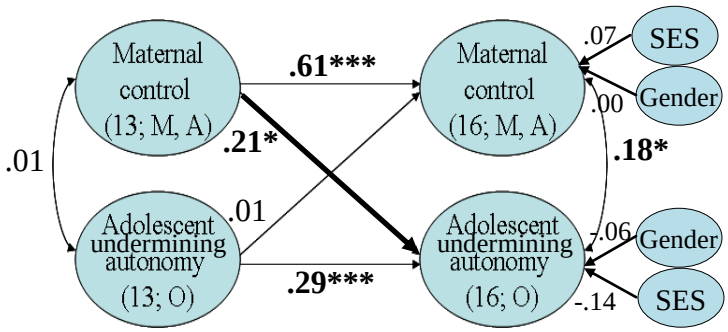


Figure 3. **Cross lag path analysis predicting adolescent autonomy undermining behavior, after accounting for gender and SES.** † ***p*** **< 0.10, * *p* < 0.05, ** *p* < 0.01, *** *p* < 0.001.**

Multiple group analyses freeing constraints placed on structural coefficients representing relationship between maternal control at age 13 and adolescent autonomy undermining behaviors at age 16 did not result in improvement in model fit when testing this pathway grouped by gender ($\Delta\chi^2$ (1) = 0.195, *ns*) or SES ($\Delta\chi^2$ (1) = 0.885, *ns*).

Hypotheses 1C: Maternal control & adolescent relatedness.

Consistent with the hypothesis that higher levels of maternal control would be associated with greater relative decreases in subsequent adolescent relatedness, an overall main effect of maternal control at age 13 predicting a significant relative decrease in adolescent relatedness at age 16 was found (β = -.20, $p < .05$), as presented in Figure 4.

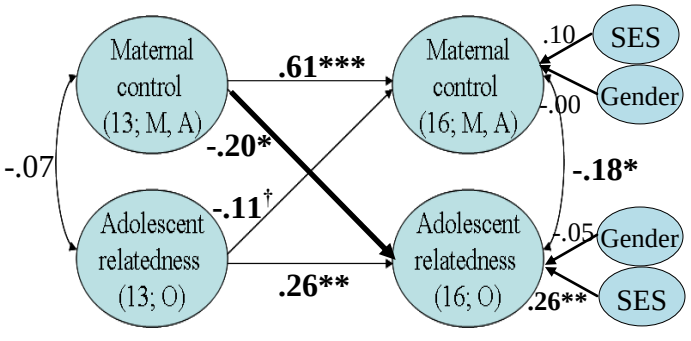


Figure 4. **Cross lag path analysis predicting adolescent relatedness, after accounting for gender and SES.** † ***p*** **< 0.10, * *p* < 0.05, ** *p* < 0.01, *** *p* < 0.001.**

Multiple group analyses freeing constraints placed on structural coefficients representing relationship between maternal control at age 13 and adolescent relatedness at age 16 did not reveal an improvement in model fit when testing this pathway grouped by gender ($\Delta\chi^2$ (1) = 0.487, *ns*) or SES ($\Delta\chi^2$ (1) = 0.040, *ns*).

Hypothesis 2: Maternal control will be curvilinearly related to subsequent problem behaviors, such that the lowest levels of problem behaviors will be associated with moderate levels of maternal control.

To address this hypothesis, a series of hierarchical regression analyses were conducted for each problem behavior outcome: a) risky sexual behavior, b) soft drug use, and c) crimes against persons. At Step 1, demographic variables (i.e., gender and family income) were entered. At Step 2, baseline problem behaviors were entered. At step 3, baseline maternal control was entered. At step 4, the quadratic variable (baseline control*baseline control) was entered. Multiple group analyses were also conducted in order to investigate possible differences among 1) males versus females and 2) adolescents from high SES versus low SES families. Comparing the change in fit for these nested models allows alternative hypotheses to be evaluated systematically.

Hypothesis 2A: Maternal control & risky sexual behavior.

Consistent with the hypothesis that maternal control would be curvilinearly related to adolescent risky sexual behaviors, results depicted in Table 6 indicate a significant negative linear relationship (β = -.21, $p < .01$) as well as a significant quadratic relationship between maternal control at age 13 and risky sexual behaviors at age 18 (β = .17, $p < .05$), such that the lowest levels of risky sexual behaviors are associated with moderate levels of maternal control (see Figure 5).

Table 6. ***Hierarchical regression analyses predicting relative change in risky sexual behaviors at age 18***

	β entry	β final	Δ R^2	Total R^2
Gender	-.13†	-.11		
Family income	-.01	-.01		.02
Risky sex behaviors (A; 13)	.11	.11	.01	.03
Maternal control (A/M; 13)	-.22**	-.21**	.05**	.08†
Maternal control (quadratic term)	.17*	.17*	.02*	.10*

Note: † < 0.10, * < 0.05, ** < 0.01, *** < 0.001

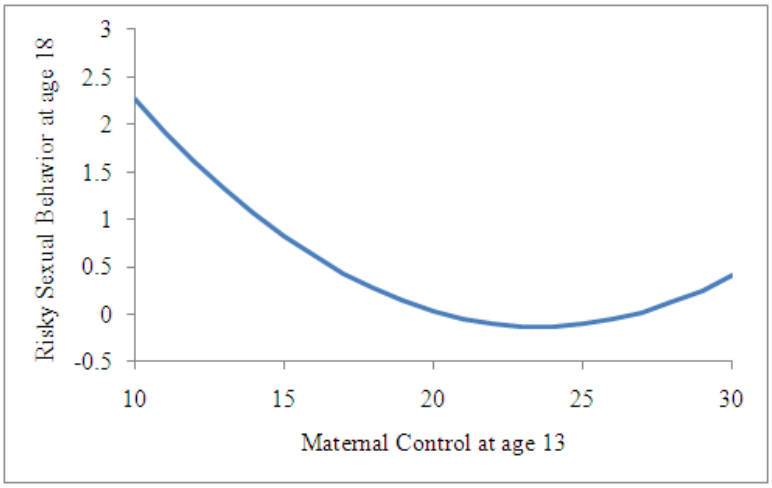


Figure 5. ***Curvilinear relationship between maternal control at age 13 and relative change in risky sexual behaviors at age 18.***

However, multiple group analyses freeing constraints placed on structural coefficients representing relationship between the quadratic term (maternal control at age 13 x maternal control at age 13) and risky sexual behaviors at age 18 revealed a trend toward an improvement in model fit when testing this quadratic pathway grouped by gender ($\Delta\chi^2$ (1) = 3.777, $p < .10$). Results presented in Table 7 indicate a significant negative linear relationship (β = -.21, $p < .05$) as well as a significant quadratic relationship between maternal control at age 13 and risky sexual behaviors at age 18 (β = .45, $p < .001$), after adjusting for earlier risky sexual behaviors and family income, for females, such that the

lowest levels of risky sexual behaviors are associated with moderate levels of maternal control (see Figure 6).

Table 7. ***Hierarchical regression analyses predicting relative change in risky sexual behaviors at age 18 for females***

	β entry	β final	Δ R^2	Total R^2
Family income	-.07	-.09		.01
Risky sex behaviors (A; 13)	.02	.04	.00	.01
Maternal control (A/M; 13)	-.31**	-.21*	.09**	.10
Maternal control (quadratic term)	.45***	.45***	.16***	.26**

Note: † < 0.10, * < 0.05, ** < 0.01, *** < 0.001

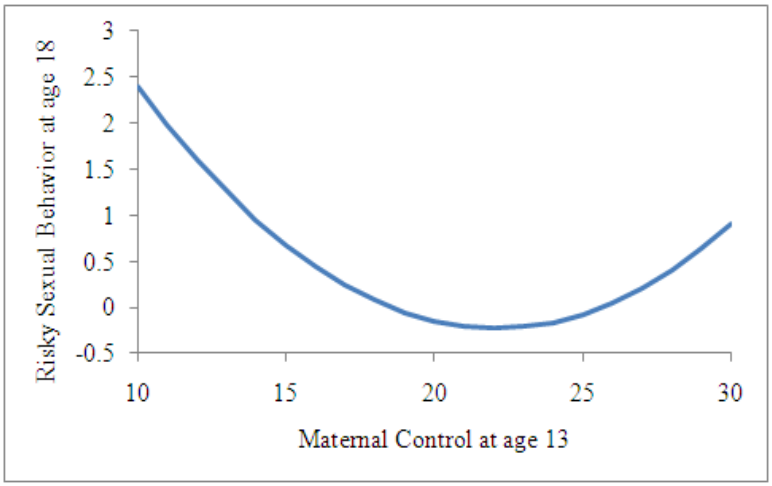


Figure 6. ***Curvilinear relationship between maternal control at age 13 and relative change in risky sexual behaviors at age 18 for females.***

Results presented in Table 8 indicate a trend toward a negative linear relationship (β = -.18, $p < .10$) but no quadratic relationship between maternal control at age 13 and risky sexual behaviors at age 18 (β = -.05, *ns*) after adjusting for earlier risky sexual behaviors and family income, for males.

Table 8. ***Hierarchical regression analyses predicting relative change in risky sexual behaviors at age 18 for males***

	β entry	β final	Δ R^2	Total R^2
Family income	.03	.06		.00
Risky sex behaviors (A; 13)	.16	.19†	.02	.02
Maternal control (A/M; 13)	-.19†	-.18†	.04†	.06
Maternal control (quadratic term)	-.05	-.05	.00	.06

Note: † < 0.10, * < 0.05, ** < 0.01, *** < 0.001

Multiple group analyses freeing constraints placed on structural coefficients representing relationship between the quadratic term (maternal control at age 13 x maternal control at age 13) and risky sexual behaviors at age 18 did not reveal an improvement in model fit when testing this pathway grouped by SES ($\Delta\chi^2$ (1) = 0.283, *ns*).

Hypothesis 2B: Maternal control & soft drug use.

Inconsistent with the hypothesis that maternal control would be curvilinearly related to adolescent soft drug use, no linear (β = -.08, *ns*) or quadratic (β = .04, *ns*) relationships were found between maternal control at age 13 and risky soft drug use at age 18. However, multiple group analyses freeing constraints placed on structural coefficients representing relationship between the maternal control at age 13 and adolescent soft drug use at age 18 revealed a trend toward an improvement in model fit when testing the linear pathway grouped by gender ($\Delta\chi^2$ (1) = 3.771, $p < .10$). Results presented in Table 9 indicate a significant negative linear relationship between maternal control at age 13 and soft drug use at age 18 (β = -.22, $p < .05$), after adjusting for earlier soft drug use and family income, for males. No quadratic relationship was detected (β = .11, *ns*).

Table 9. ***Hierarchical regression analyses predicting relative change in soft drug use at age 18 for males***

	β entry	β final	Δ R^2	Total R^2
Family income	.24*	.25*		.06
Drug & alcohol use (A; 13)	.24*	.24*	.05*	.11†
Maternal control (A/M; 13)	-.20*	-.22*	.04*	.15*
Maternal control (quadratic term)	.11	.11	.02	.17*

Note: $^{\dagger} < 0.10$, * < 0.05, ** < 0.01, *** < 0.001

Neither a linear (β = .04, *ns*) nor a quadratic (β = .04, *ns*) relationship between maternal control at age 13 and soft drug use at age 18 was detected for females, after adjusting for

earlier soft drug use and family income. Additionally, multiple group analyses freeing constraints placed on structural coefficients representing relationship between the maternal control at age 13 and adolescent soft drug use at age 18 revealed a trend toward an improvement in model fit when testing the linear pathway grouped by SES ($\Delta\chi^2$ (1) = 2.828, $p < .10$). Results presented in Table 10 indicate a significant negative linear relationship between maternal control at age 13 and soft drug use at age 18 (β = -.22, $p < .05$), after adjusting for earlier soft drug use and family income, for low SES adolescents. No quadratic relationship was detected (β = .07, *ns*).

Table 10. ***Hierarchical regression analyses predicting relative change in soft drug use at age 18 for low SES adolescents***

	β entry	β final	Δ R^2	Total R^2
Family income	-.35***	-.28**		.12†
Drug & alcohol use (A; 13)	.30**	.28**	.09**	.21**
Maternal control (A/M; 13)	-.20*	-.22*	.04*	.25**
Maternal control (quadratic term)	.07	.07	.01	.26**

Note: † < 0.10, * < 0.05, ** < 0.01, *** < 0.001

Neither a linear (β = .01, *ns*) nor a quadratic (β = .06, *ns*) relationship between maternal control at age 13 and soft drug use at age 18 was detected for high SES adolescents, after adjusting for earlier soft drug use and family income.

Hypothesis 2C: Maternal control & crimes against persons.

Inconsistent with the hypothesis that maternal control would be curvilinearly related to adolescent crimes against persons, results displayed in Table 11 indicate a trend toward a positive linear relationship between maternal control at age 13 and crimes against persons at age 18 (β = .13, $p < .10$), after adjusting for earlier crimes against persons and family income, but no quadratic relationship was detected (β = .04, *ns*).

Table 11. ***Hierarchical regression analyses predicting relative change in crimes against persons at age 18***

	β entry	β final	Δ R^2	Total R^2
Gender	-.21**	-.20**		
Family income	-.18*	-.11		.07†
Crimes against persons (A; 13)	.29***	.28***	.08***	.15**
Maternal control (A/M; 13)	.12†	.13†	.01	.16**
Maternal control (quadratic term)	.04	.04	.00†	.16**

Note: † < 0.10, * < 0.05, ** < 0.01, *** < 0.001

However, multiple group analyses freeing constraints placed on structural coefficients representing relationship between the maternal control at age 13 and adolescent crimes against persons at age 18 revealed a trend toward an improvement in model fit when testing this pathway grouped by gender ($\Delta\chi^2$ (1) = 5.379, p <.05). Results presented in Table 12 indicate a significant positive linear relationship between maternal control at age 13 and crimes against persons at age 18 (β = .20, p < .05), after adjusting for earlier soft drug use and family income, for males. No quadratic relationship was detected (β = .11, *ns*).

Table 12. ***Hierarchical regression analyses predicting relative change in crimes against persons at age 18 for males***

	β entry	β final	Δ R^2	Total R^2
Family income	-.20†	-.19†		.04
Crimes against persons (A; 13)	.36***	.34***	.13***	.17*
Maternal control (A/M; 13)	.23*	.20*	.05*	.22**
Maternal control (quadratic term)	.11	.11	.01	.23**

Note: † < 0.10, * < 0.05, ** < 0.01, *** < 0.001

Neither a linear (β = -.04, *ns*) nor a quadratic (β = -.11, *ns*) relationship between maternal control at age 13 and crimes against persons at age 18 was detected for girls, after adjusting for earlier soft drug use and family income. Additionally, multiple group analyses freeing constraints placed on structural coefficients representing relationship between the maternal control at age 13 and adolescent crimes against persons at age 18

revealed a trend toward an improvement in model fit when testing this pathway grouped by SES ($\Delta\chi^2(1) = 3.747$, $p < .05$). Results presented in Table 13 indicate a significant positive linear relationship between maternal control at age 13 and crimes against persons at age 18 ($\beta = .26$, $p < .05$), after adjusting for earlier crimes against persons and family income, for low SES adolescents. No quadratic relationship was detected ($\beta = .03$, *ns*).

Table 13. ***Hierarchical regression analyses predicting relative change in crimes against persons at age 18 for low SES adolescents***

	β entry	β final	Δ R^2	Total R^2
Gender	-.24*	-.27**		.06
Crimes against persons (A; 13)	.23*	.22*	.05*	.11
Maternal control (A/M; 13)	.28**	.26*	.07**	.18*
Maternal control (quadratic term)	.03	.03	.00	.18*

Note: † < 0.10, * < 0.05, ** < 0.01, *** < 0.001

Neither a linear ($\beta = -.05$, *ns*) nor a quadratic ($\beta = -.03$, *ns*) relationship between maternal control at age 13 and crimes against persons at age 18 was detected for high SES adolescents, after adjusting for earlier crimes against persons and gender.

Hypothesis 3A: Maternal engagement will mediate the relationship between maternal control and subsequent problem behaviors at low levels of maternal control.

To address this hypothesis, each problem behavior outcome was regressed onto demographic variables (i.e., gender and family income), baseline problem behaviors, and baseline maternal control, replicating the direct effect identified in Hypothesis 2. However, structural coefficients were added to the model representing relationships between a) baseline maternal control and the measure of maternal engagement (the hypothesized mediator), and b) maternal engagement (the hypothesized mediator) and the problem behavior outcome. Multiple group analyses were also conducted in order to

investigate possible differences among 1) males versus females and 2) adolescents from high SES versus low SES families.

Hypothesis 3Ai: Maternal control, maternal engagement, & risky sexual behavior.

Because a curvilinear relationship was found between maternal control and risky sexual behaviors when testing Hypothesis 2A, maternal control was split at the median, yielding high and low maternal control groups. Then, the following analyses were conducted using just the low control group for the purpose of testing this hypothesis.

Inconsistent with the hypothesis that maternal engagement will mediate the relationship between maternal control and subsequent adolescent risky sexual behaviors at low levels of maternal control, an indirect path from maternal control at age 13 to risky sexual behaviors at age 18 via maternal engagement at age 16 was nonsignificant (β = .01, *ns*). However, multiple group analyses freeing constraints placed on structural coefficients representing the hypothesized relationships from 1) maternal control at age 13 to risky sexual behaviors at age 18, 2) maternal control at age 13 to maternal engagement at age 16, and 3) from maternal engagement at age 16 to risky sexual behaviors at age 18 resulted in significant improvement in model fit when testing these pathways grouped by gender ($\Delta\chi^2$ (3) = 8.873, $p < .05$). Interestingly, results for males, presented in Figure 7, reveal an *increase* in the magnitude of the relationship between maternal control and subsequent risky sexual behavior (from β = -.19, $p < .10$ to β = -.29, $p < .01$) after statistical removal of the indirect effect of maternal engagement, indicating *suppression* rather than mediation (MacKinnon, Krull, & Lockwood, 2000). The indirect path from maternal control at age 13 to risky sexual behaviors via maternal engagement showed a trend toward significance (β = .12, $p < .10$). This suppression finding also held

up when testing this suppression effect using the entire sample, rather than just the low control group, in *post-hoc* analyses

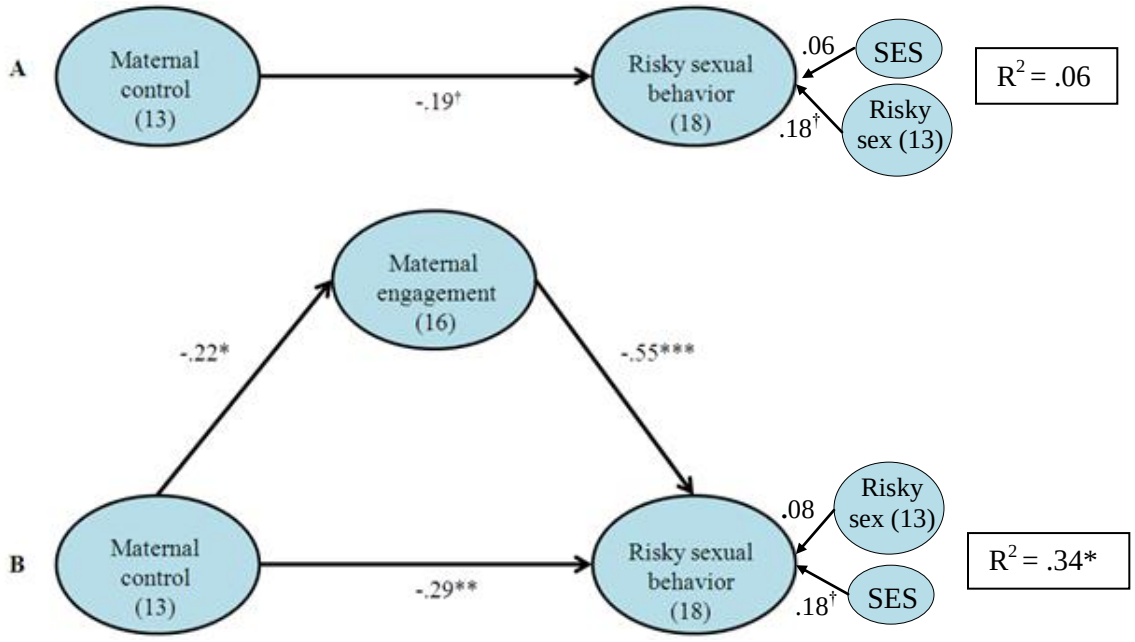


***Figure 7*. Autoregressive path analyses predicting relative change in risky sexual behavior, consistent with the mediation model requirements based on Baron and Kenny's (1986) method. A: The direct effect. B: The mediation model. Both models account for SES and baseline risky sexual behavior. † *p* < 0.10, * *p* < 0.05, ** *p* < 0.01, *** *p* < 0.001.**

Identical analyses revealed no change in the relationship between maternal control and subsequent risky sexual behavior after statistical removal of the indirect effect of maternal engagement for females. Multiple group analyses freeing constraints placed on structural coefficients representing the hypothesized relationships from 1) maternal control at age 13 to risky sexual behaviors at age 18, 2) maternal control at age 13 to maternal engagement at age 16, and 3) from maternal engagement at age 16 to risky sexual behaviors at age 18 did not result in a significant model improvement when grouped by SES, failing to find evidence of the presence of SES differences in this model ($\Delta\chi^2$ (3) = 2.603, *ns*).

Hypothesis 3Aii: Maternal control, maternal engagement, & soft drug use.

Because a linear, rather than curvilinear, relationship was found between maternal control and soft drug use when testing Hypothesis 2B, the entire sample was used to test this hypothesis, rather than just the low maternal control group. Inconsistent with the hypothesis that maternal engagement would mediate the relationship between maternal control and subsequent adolescent soft drug use, the indirect path from maternal control at age 13 to soft drug use at age 18 via maternal engagement at age 16 was nonsignificant ($\beta = .00$, *ns*). Although multiple group analyses freeing constraints placed on structural coefficients representing the hypothesized relationships from 1) maternal control at age 13 to soft drug use at age 18, 2) maternal control at age 13 to maternal engagement at age 16, and 3) from maternal engagement at age 16 to soft drug use at age 18 did result in a significant model improvement when grouped by gender ($\Delta\chi^2 (3) = 10.560$, $p < .05$) and a trend toward improvement when grouped by SES ($\Delta\chi^2 (3) = 7.348$, $p < .10$), the indirect path from maternal control at age 13 to soft drug use via maternal engagement was nonsignificant for females ($\beta = .02$, *ns*), males ($\beta = .06$, *ns*), high SES adolescents ($\beta = .02$, *ns*), and low SES adolescents ($\beta = -.01$, *ns*).

Hypothesis 3Aiii: Maternal control, maternal engagement, & crimes against persons.

Given that a positive, rather than negative, relationship was found between maternal control and crimes against persons when testing Hypothesis 2C, this hypothesis was clearly not supported and no further analyses are warranted.

Hypothesis 3B: Adolescent autonomy and relatedness will suppress the relationship between maternal control and subsequent problem behaviors at high levels of maternal control.

To address this hypothesis, each problem behavior outcome was regressed onto demographic variables (i.e., gender and family income), baseline problem behaviors, and baseline maternal control, replicating the direct effect identified in Hypothesis 2. However, structural coefficients were added to the model representing relationship between a) baseline maternal control and a composite adolescent autonomy and relatedness variable (the hypothesized suppressor), and b) the composite adolescent autonomy and relatedness variable (the hypothesized suppressor) and the problem behavior outcome. Multiple group analyses were also conducted in order to investigate possible differences among 1) males versus females and 2) adolescents from high SES versus low SES families.

Hypothesis 3Bi: Maternal control, adolescent autonomy and relatedness, & risky sexual behaviors.

Because a curvilinear relationship was found between maternal control and risky sexual behaviors when testing Hypothesis 2A, maternal control was split at the median, yielding high and low maternal control groups. Then, the following analyses were conducted using just the high control group for the purpose of testing this hypothesis. Inconsistent with the hypothesis that adolescent autonomy and relatedness would suppress the relationship between maternal control and subsequent adolescent soft drug use at high levels of maternal control, the indirect path from maternal control at age 13 to soft drug use at age 18 via adolescent autonomy and relatedness at age 16 was nonsignificant ($\beta = .01$, *ns*). Multiple group analyses freeing constraints placed on structural coefficients representing the hypothesized relationships from 1) maternal control at age 13 to soft drug use at age 18, 2) maternal control at age 13 to maternal

engagement at age 16, and 3) from maternal engagement at age 16 to risky sexual behavior at age 18 did not result in a significant model improvement when grouped by gender ($\Delta\chi^2$ (3) = 0.626, *ns*) or by SES ($\Delta\chi^2$ (3) = 1.293, *ns*).

Hypothesis 3Bii: Maternal control, adolescent autonomy and relatedness, & soft drug use.

Given that a negative, rather than positive, relationship was found between maternal control and soft drug use when testing Hypothesis 2B, this hypothesis was clearly not supported and no further analyses are warranted.

Hypothesis 3Biii: Maternal control, adolescent autonomy and relatedness, & crimes against persons.

Because a linear, rather than curvilinear, relationship was found between maternal control and crimes against persons when testing Hypothesis 2C, the entire sample was used to test this hypothesis, rather than just the high maternal control group. Inconsistent with the hypothesis that adolescent autonomy and relatedness would suppress the relationship between maternal control and subsequent adolescent crimes against persons, the indirect path from maternal control at age 13 to crimes against persons at age 18 via adolescent autonomy and relatedness at age 16 was nonsignificant (β = .01, *ns*). Multiple group analyses freeing constraints placed on structural coefficients representing the hypothesized relationships from 1) maternal control at age 13 to crimes against persons at age 18, 2) maternal control at age 13 to maternal engagement at age 16, and 3) from maternal engagement at age 16 to crimes against persons at age 18 did not result in a significant model improvement when grouped by gender ($\Delta\chi^2$ (3) = 6.188, *ns*) or by SES ($\Delta\chi^2$ (3) = 4.314, *ns*).

Adolescent Disclosure Hypotheses

Hypothesis 4: Higher levels of adolescent disclosure will be associated with greater relative increases in subsequent adolescent engagement and adolescent relatedness, but will not be associated with subsequent adolescent autonomy undermining behaviors.

To address these hypotheses, cross lagged path analyses were conducted for each adolescent-mother relationship outcome: a) maternal engagement, b) adolescent autonomy undermining behaviors, and c) adolescent relatedness. All models accounted for the demographic variables of gender and family income. Multiple group analyses were also conducted in order to investigate possible differences among 1) males versus females and 2) adolescents from high SES versus low SES families. Comparing the change in fit for these nested models allows alternative hypotheses to be evaluated systematically.

Hypothesis 4A: Adolescent disclosure & adolescent engagement.

Inconsistent with the hypothesis that adolescent disclosure would be associated with greater relative increases in subsequent adolescent engagement, no main effect of adolescent disclosure at age 13 predicting a relative increase in adolescent engagement at age 16 was found ($\beta = .05$, *ns*). Multiple group analyses freeing constraints placed on structural coefficients representing relationship between adolescent disclosure at age 13 and adolescent engagement at age 16 did not reveal an improvement in model fit when testing this pathway grouped by gender ($\Delta\chi^2 (1) = 1.475$, *ns*) or SES ($\Delta\chi^2 (1) = 0.549$, *ns*).

Hypothesis 4B: Adolescent disclosure & adolescent relatedness.

Partially consistent with the hypothesis that adolescent disclosure would be associated with greater relative increases in subsequent adolescent relatedness, results

presented in Figure 8 suggest a bidirectional relationship, such that adolescent disclosure at age 13 predicted a trend toward a relative increase in adolescent relatedness at age 16 ($\beta = .15$, $p < .10$), *and* adolescent relatedness at age 13 predicted a trend toward a relative increase in adolescent disclosure at 16 ($\beta = .14$, $p < .10$), each after adjusting for earlier adolescent behaviors (i.e., relatedness and disclosure, respectively), gender, and family income.

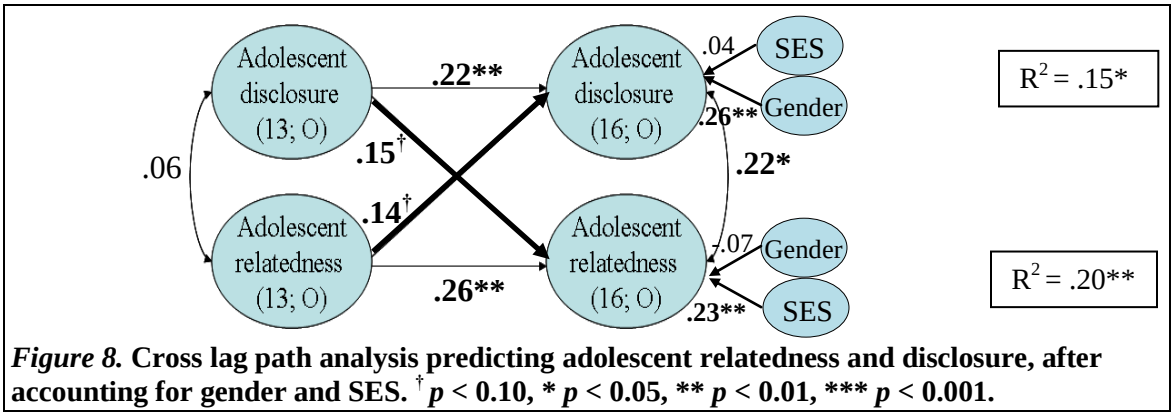


Figure 8. **Cross lag path analysis predicting adolescent relatedness and disclosure, after accounting for gender and SES. † *p* < 0.10, * *p* < 0.05, ** *p* < 0.01, *** *p* < 0.001.**

Multiple group analyses freeing constraints placed on structural coefficients representing relationship between adolescent disclosure at age 13 and adolescent relatedness at age 16 did not reveal an improvement in model fit when testing this pathway grouped by gender ($\Delta\chi^2$ (1) = 0.490, *ns*) or SES ($\Delta\chi^2$ (1) = 1.422, *ns*). However, multiple group analyses freeing constraints placed on structural coefficients representing *both* relationships between adolescent disclosure at age 13 and adolescent relatedness at age 16 *and* between adolescent relatedness at age 13 and adolescent disclosure at age 16 did indicate a trend toward an improvement in model fit when grouped by SES ($\Delta\chi^2$ (2) = 4.651, $p <$ .10). Results presented in Figure 9 indicate that adolescent disclosure at age 13 predicted a significant relative increase in adolescent relatedness at 16, after adjusting for earlier adolescent relatedness and gender, for high SES adolescents ($\beta = .26$, $p < .05$).

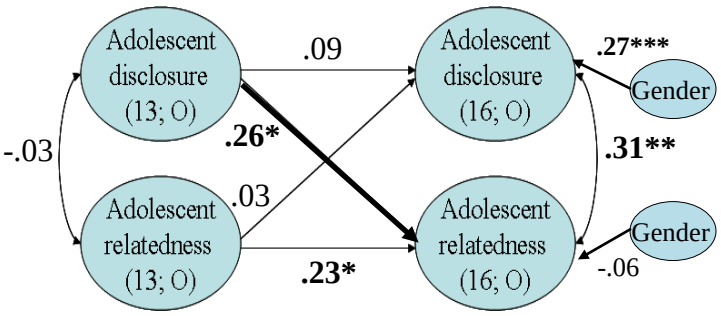


***Figure 9*. Cross lag path analysis predicting adolescent relatedness for high SES adolescents, after accounting for gender. † *p* < 0.10, * *p* < 0.05, ** *p* < 0.01, *** *p* < 0.001.**

Conversely, results presented in Figure 10 indicate that adolescent relatedness at age 13 predicted a significant relative increase in adolescent disclosure at 16, after adjusting for earlier adolescent disclosure and gender, for low SES adolescents (β = .23, *p* < .05).

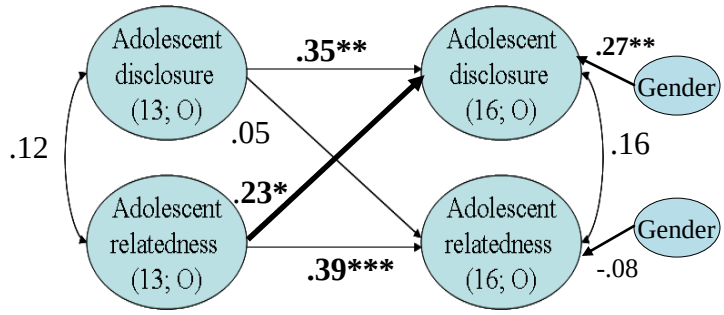


***Figure 10*. Cross lag path analysis predicting adolescent disclosure for low SES adolescents, after accounting for gender. † *p* < 0.10, * *p* < 0.05, ** *p* < 0.01, *** *p* < 0.001.**

Hypothesis 4C: Adolescent disclosure & adolescent autonomy.

Consistent with the hypothesis that would not be associated with subsequent adolescent autonomy undermining behaviors, no association between adolescent disclosure at age 13 and subsequent adolescent engagement at age 16 was found (β = -.01, *ns*). Multiple group analyses freeing constraints placed on structural coefficients representing relationship between adolescent disclosure at age 13 and adolescent

autonomy at age 16 did not reveal an improvement in model fit when testing this pathway grouped by gender ($\Delta\chi^2$ (1) = 0.654, *ns*) or SES ($\Delta\chi^2$ (1) = 0.013, *ns*).

Hypothesis 5: Adolescent disclosure will be linearly related to adolescent problem behaviors, such that the lowest levels of risk taking behaviors will be associated with high emotional disclosure.

To address this hypothesis, a series of hierarchical regression analyses were conducted for each problem behavior outcome: a) risky sexual behavior, b) soft drug use, and c) crimes against persons. At Step 1, demographic variables (i.e., gender and family income) were entered. At Step 2, baseline problem behaviors were entered. At step 3, baseline adolescent disclosure was entered. At step 4, the quadratic variable (baseline disclosure*baseline disclosure) was entered. Multiple group analyses were also conducted in order to investigate possible differences among 1) males versus females and 2) adolescents from high SES versus low SES families. Comparing the change in fit for these nested models allows alternative hypotheses to be evaluated systematically.

Hypothesis 5A: Adolescent disclosure & risky sexual behavior.

Inconsistent with the hypothesis that adolescent disclosure would be negatively related to subsequent risky sexual behavior, no linear (β = -.12, *ns*) or quadratic (β = .05, *ns*) relationships were found between adolescent disclosure at age 13 and risky sex behaviors at age 18. Multiple group analyses freeing constraints placed on structural coefficients representing relationship between adolescent disclosure at age 13 and adolescent risky sexual behaviors at age 18 did not reveal an improvement in model fit when testing this pathway grouped by gender ($\Delta\chi^2$ (1) = 1.972, *ns*). However, multiple group analyses freeing constraints placed on structural coefficients representing

relationship between the adolescent disclosure at age 13 and adolescent risky sexual behaviors at age 18 revealed a trend toward an improvement in model fit when testing this pathway grouped by family SES ($\Delta\chi^2$ (1) = 3.762, $p < .10$). Results presented in Table 14 indicate a trend toward a negative linear relationship between adolescent disclosure at age 13 and risky sexual behaviors at age 18 (β = -.24, $p < .10$), after adjusting for earlier risky sexual behaviors gender, for high SES adolescents. No quadratic relationship was detected (β = .13, *ns*).

Table 14. ***Hierarchical regression analyses predicting risky sexual behaviors at age 18 for high SES adolescents.***

	β entry	β final	Δ R^2	Total R^2
Gender	-.12	-.06		.01
Risky sexual behaviors (A; 13)	.24*	.23*	.06*	.07
Adolescent disclosure (O; 13)	-.17	-.24†	.03	.10
Adol. disclosure (quadratic term)	.13	.13	.01	.11†

Note: † < 0.10, * < 0.05, ** < 0.01, *** < 0.001

Neither a linear (β = .24, *ns*) nor a quadratic (β = -.17, *ns*) relationship between adolescent disclosure at age 13 and risky sexual behaviors at age 18 was detected for low SES adolescents, after adjusting for earlier sexual behaviors and gender.

Hypothesis 5B: Adolescent disclosure & soft drug use.

Inconsistent with the hypothesis that adolescent disclosure would be negatively related to subsequent soft drug use, no linear relationship was found between adolescent disclosure at age 13 and soft drug use at age 18 (β = -.10, *ns*). However, results depicted in Table 15 indicate a trend toward a quadratic relationship between adolescent disclosure at age 14 and soft drug use at age 18 (β = .16, $p < .10$), after adjusting for earlier soft drug use, gender, and family income, such that the lowest levels of soft drug use are associated with moderate levels of adolescent disclosure.

Table 15. ***Hierarchical regression analyses predicting soft drug use at age 18***

	β entry	β final	Δ R^2	Total R^2
Gender	-.24***	-.23**		
Family income	.24***	.25***		.13**
Drug & alcohol use (A; 13)	.19**	.17*	.04**	.17**
Adolescent disclosure (O; 13)	.01	-.10	.00	.17**
Adol. disclosure (quadratic term)	.16†	.16†	.01†	.18**

Note: † < 0.10, * < 0.05, ** < 0.01, *** < 0.001

Multiple group analyses freeing constraints placed on structural coefficients representing relationship between the quadratic term (adolescent disclosure at age 13 x adolescent disclosure at age 13) and soft drug use at age 18 did not reveal an improvement in model fit when testing this pathway grouped by gender ($\Delta\chi^2$ (1) = 0.342, *ns*) or SES ($\Delta\chi^2$ (1) = 0.679, *ns*).

Hypothesis 5C: Adolescent disclosure & crimes against persons.

Inconsistent with the hypothesis that adolescent disclosure would be negatively related to subsequent crimes against persons, no linear (β = .03, *ns*) or quadratic (β = .03, *ns*) relationships were found between adolescent disclosure at age 13 and crimes against persons at age 18. Multiple group analyses freeing constraints placed on structural coefficients representing relationship between the adolescent disclosure at age 13 and crimes against persons at age 18 did not reveal an improvement in model fit when testing this pathway grouped by gender ($\Delta\chi^2$ (1) = 0.246, *ns*) or SES ($\Delta\chi^2$ (1) = 2.515, *ns*).

To address this hypothesis, a series of path analyses were conducted for each problem behavior outcome: a) risky sexual behavior, b) soft drug use, and c) crimes against persons. Given that no relationship was found between adolescent disclosure and adolescent engagement when testing Hypothesis 4A, adolescent engagement was not included in the following analyses. Each problem behavior outcome was regressed onto demographic variables (i.e., gender and family income), baseline problem behaviors, and

baseline adolescent disclosure, replicating the direct effect identified in Hypothesis 5. However, structural coefficients were added to the model representing relationship between a) baseline adolescent disclosure and adolescent relatedness (the hypothesized mediator), and b) adolescent relatedness (the hypothesized mediator) and the problem behavior outcome. Multiple group analyses were also conducted in order to investigate possible differences among 1) males versus females and 2) adolescents from high SES versus low SES families.

Hypothesis 6A: Adolescent disclosure, adolescent engagement & relatedness, and risky sexual behaviors.

Inconsistent with the hypothesis that adolescent relatedness would mediate the relationship between adolescent disclosure and subsequent risky sexual behavior, the indirect path from adolescent disclosure at age 13 to risky sexual behavior at age 18 via adolescent relatedness at age 16 was nonsignificant ($\beta = .00$, *ns*). Multiple group analyses freeing constraints placed on structural coefficients representing the hypothesized relationships from 1) adolescent disclosure at age 13 to risky sexual behavior at age 18, 2) adolescent disclosure at age 13 to adolescent relatedness at age 16, and 3) from adolescent disclosure at age 16 to risky sexual behavior at age 18 did not result in a significant model improvement when grouped by gender ($\Delta\chi^2 (3) = 2.199$, *ns*) or by SES ($\Delta\chi^2 (3) = 5.175$, *ns*).

Hypothesis 6B: Adolescent disclosure, adolescent engagement & relatedness, and soft drug use.

Inconsistent with the hypothesis that adolescent relatedness would mediate the relationship between adolescent disclosure and subsequent soft drug use, the indirect path

from adolescent disclosure at age 13 to soft drug use at age 18 via adolescent relatedness at age 16 was nonsignificant (β = -.01, *ns*). Multiple group analyses freeing constraints placed on structural coefficients representing the hypothesized relationships from 1) adolescent disclosure at age 13 to soft drug use at age 18, 2) adolescent disclosure at age 13 to adolescent relatedness at age 16, and 3) from adolescent disclosure at age 16 to soft drug use at age 18 did not result in a significant model improvement when grouped by gender ($\Delta\chi^2$ (3) = 1.205, *ns*) or by SES ($\Delta\chi^2$ (3) = 4.507, *ns*).

Hypothesis 6C: Adolescent disclosure, adolescent engagement & relatedness, and crimes against persons.

Given that no relationship was found between adolescent disclosure and crimes against persons when testing Hypothesis 5C, this hypothesis was clearly not supported and no further analyses are warranted.

Post hoc Analyses

In order to examine the potential reciprocal relationship between maternal control and adolescent disclosure, cross-lagged path analyses were conducted accounting for the demographic variables of gender and family income. Multiple group analyses were also conducted in order to investigate possible differences among 1) males versus females and 2) adolescents from high SES versus low SES families. No significant association between maternal control at age 13 and adolescent disclosure at age 16 (β = -.09, *ns*), nor between adolescent disclosure at age 13 and maternal control at age 16 (β = -.02, *ns*), was found. Multiple group analyses freeing constraints placed on structural coefficients representing these two paths did not reveal an improvement in model fit when testing this pathway grouped by gender ($\Delta\chi^2$ (2) = .766, *ns*) or SES ($\Delta\chi^2$ (2) = .640, *ns*).

Discussion

With substantive evidence suggesting that parental control is significantly *less* effective than adolescent disclosure in protecting against problem behaviors (Eaton, Krueger, Johnson, McGue, & Iacono, 2009; Kerr & Stattin, 2000), one may conclude that parents face a formidable task. This dissertation extends the literature by using a multi-method, multi-reporter, longitudinal design to examine the mechanisms through which these different facets of parental 'monitoring,' may be protective against subsequent adolescent problem behaviors, aiming to shed light on the reasons behind the apparent discrepancy in effectiveness. Consistent with Crouter, MacDermid, McHale, and Perry-Jenkins' (1990) conceptualization of parental monitoring as a dyadic phenomenon, the preventive value of these 'monitoring' tactics were examined in terms of the engagement of both parties (both the mother and the adolescent), as well as in terms of balancing both autonomy and relatedness. More specifically, it was hypothesized that, while both maternal control and adolescent disclosure promote engagement in the mother-adolescent relationship, adolescent disclosure is a more effective protective factor against problem behaviors than maternal control because it does not undermine autonomy and relatedness.

Maternal Control

Rates of Maternal Control during Adolescence. Dyadic reports of maternal control decreased from early to middle adolescence, consistent with previous findings (Eccles, Buchanan, Flanagan, Fuligni, Midgle, & Yee (1991). However, several other popular beliefs are *not* supported in these analyses regarding maternal control. First, levels of maternal control did not differ for males and females, in contrast to early theories that daughters, and not sons, are the primary objects of parental control (e.g.,

power-control theory; Hagan, 1979) as well as more recent findings indicating that parents allow their daughters less independence, monitor them more closely, and expect them to stay closer to home than their sons (Huston & Alvarez, 1990; Kavanagh & Hops, 1994; Whiting, Edwards, Ember, Erchak, Harknness, Munroe, et al., 1988). It is possible the lack of gender difference is the result of increased gender equality in parenting practices over recent decades (Deutsch, 1999). Also surprisingly, levels of maternal control did not differ for high SES and low SES adolescents either. This contradicts the idea that parents from lower SES families may be at a disadvantage when it comes to monitoring their children, since they often have to work longer hours to support their families. Additionally, since race and SES are so highly correlated in this sample, the lack of difference is inconsistent with previous findings that use of controlling strategies varies greatly across different ethnic groups (McDade, 1995; Okagaki & Divecha, 1993; Reis, Barbera-Stein, & Bennett, 1986). It is possible, however, that this lack of finding may be due to different perceived norms for comparison among low SES and minority mothers versus high SES and non-minority mothers.

Maternal Control and Mother-Adolescent Relationship Qualities. Consistent with the current hypotheses, and with Kerr and Stattin's (2000) idea that parental control leads to greater feelings of *being* controlled on the adolescent's part, maternal control during early adolescence was indeed predictive of relative decreases in adolescent autonomy and relatedness within the mother-adolescent context by middle adolescence.

Meanwhile, an examination of the relationship between maternal control and maternal engagement yielded mixed results, revealing a trend toward predictions in the expected direction (relative increases in maternal engagement) for females, but

significant predictions in the *opposite* direction (indicating relative *decreases* in maternal engagement) for males. While perhaps surprising at first, this finding may be reconciled when considered in the context of Chodorow's (1978) theory of gendered parenting. Chodorow asserts that, since primary caregiver roles tend to be filled by women, the result is a different maturation process for boys than for girls. While both boys and girls tend to exhibit attachment to their mothers (their primary caregivers) early in life, Chodorow argues that boys begin to deny their attachment to their mothers during adolescence in order to identify with their fathers. Thus, one possibility is that adolescent boys might be particularly prone to react by disengaging even further in the face of maternal control. From a family systems perspective (Bowen, 1966), the sons' disengagement would likely result in maternal disengagement as well.

Maternal Control and Adolescent Problem Behaviors. An examination of the relationship between maternal control and subsequent adolescent problem behaviors yielded mixed results as well. Consistent with the current hypothesis, as well as with previous findings of Miller and colleagues (1986), maternal control in early adolescence was curvilinearly related to subsequent risky sexual behavior, such that the lowest levels of risky sexual behaviors were associated with moderate levels of maternal control. One possible explanation is that parents who employ moderate levels of control may best parallel Baumrind's (1967) model of the authoritative parent, who is both demanding and responsive. Baumrind theorized that these parents "monitor and impart clear standards for their children's conduct. They are assertive, but not intrusive and restrictive. Their disciplinary methods are supportive, rather than punitive. They want their children to be assertive as well as socially responsible, and self-regulated as well as cooperative"

(Baumrind, 1991, p. 62). In contrast, parents who use too little control may lack clear standards, while those too high in control may be too intrusive and restrictive, thus undermining adolescents' feelings of self-competence and self-confidence that may help them to turn down unwanted sexual advances or to demand contraceptive use from a less "disciplined" partner, for example.

Importantly, this main effect seemed to be driven by the females in this sample, among whom the curvilinear relationship was quite strong, while it was nonsignificant among males. This apparent gender difference is not entirely without precedent, as previous findings have suggested that parents' conversations about sex with their daughters are more predictive of subsequent behavior than are parents' conversations with their sons (McNeely, Shew, Beurhing, Sieving, Miller, & Blum, 2002), potentially due to the more interactive nature of the conversations between mothers and daughters (Lefkowitz, Boone, Sigman, & Au, 2002). Primary analyses suggesting that the negative association between maternal control and subsequent risky sexual behaviors is *suppressed* by declining mother-adolescent engagement for boys provide some evidence to support this idea. These findings indicated that the link between maternal control and lower rates of subsequent risky sexual behaviors appeared to be weakened somewhat because maternal control was also associated with *lower* levels of mother-adolescent engagement, which in turn were associated with greater risky behavior. In his social control theory, Nye (1958) argued that, while direct controls may be effective for females, indirect controls (i.e., the desire not to embarrass, hurt, or disappoint the parents by engaging in problem behaviors) were more important for males. Furthermore, he argued that, "since there are many times when the child is outside the sphere of direct

control, it cannot be effective by itself" (p. 7). Taken together with the current findings, this line of reasoning supports the idea that maternal control *may* be effective in preventing boys' risky sexual behavior if paired with adequate levels of engagement during middle adolescence.

Second, it is possible that, consistent with Chodorow's (1978) idea that sons tend to detach from their mothers during adolescence, boys develop models about masculinity from other sources. One likely source of this gender socialization during the period of adolescence is peer influence, which, according to Hirschi's (1969) control theory, interacts with family influences to predict the development of adolescent problem behaviors. Thus, the decline in engagement following high maternal control may lead to increased risky sexual behavior for boys simply because it is being replaced by influence from sexually uneducated peers.

Interestingly, a different picture emerged when examining the relationship between maternal control and soft drug use. While only partially consistent with the current hypothesis, the negative relationship between maternal control and soft drug use among the males and among the low SES adolescents in this sample is indeed consistent with previous research (Barnes & Farrell, 1992; Gray & Steinberg, 1999). However, inconsistent with my hypothesis, this relationship was not mediated by maternal engagement. If increases in engagement do not help to explain this association, then what does? One possible explanation is that mothers who successfully set and enforce rules regarding their adolescents' whereabouts, activities, and companions may, in effect, be more successful at limiting the opportunities for teens to find themselves in drugs and alcohol friendly environments (e.g., unsupervised parties) and, in turn, limiting their

adolescents' engagement in soft drug use. However, the interpretation of this finding hinges on one important assumption: that soft drug use is inherently problematic during adolescence. In fact, while substance *abuse* during adolescence is clearly related to a host of negative outcomes (e.g., mental and physical health problems, involvement in dangerous/deviant activities, car accidents; Chassin, Hussong, Barrera, Molina, Trim, & Ritter, 2004; Kandel, Johnson, Bird, & Canino, 1997; Lang, Waller, & Shope, 1996; O'Malley & Johnston, 1999), *experimental* (i.e., moderate) alcohol and marijuana use does not have negative long-term effects (Newcomb & Bentler, 1988; Paschall, Freisthler, & Lipton, 2005) and may even be related to better adjustment and greater social skills (e.g., Baumrind, 1991; Scheier & Botvin, 1998; Shedler & Block, 1990). With this in mind, my results may indeed suggest that moderate levels of maternal control are ideal with respect to soft drug use.

However, no relationship emerged between maternal control and soft drug use among the females or among the high SES adolescents. An intuitive explanation for this gender difference may be the difference in levels of soft drug use in late adolescence, with males using significantly more often than females. Perhaps the females were not using enough, across the board, for a relationship with maternal control to be detected. Yet this potential explanation loses steam when one recognizes that low SES adolescents, for whom maternal control seemed to be effective, used soft drugs significantly less often than high SES adolescents. Similar gender and SES differences have been underscored by previous researchers, however, with findings suggesting that monitoring is most effective in preventing problem behaviors among boys (Seydlitz, 1991) and among adolescents whose mothers are employed full-time (which may be extended to explain

the disadvantage that lower SES families face with regards to monitoring their children, since they often have to work longer hours to support their families; Crouter et al., 1990; Jacobson & Crockett, 2000). Perhaps Jacobson and Crockett were on target when they posited that, "effective monitoring may compensate for a lack of direct supervision" (2000, p. 65), whether that lack is the result of overworking or of gendered stereotypes.

Finally, yet another picture emerged when examining the relationship between maternal control and crimes against persons. Indeed, a *positive* relationship was found between maternal control and crimes against persons (e.g., assault) among the males and the low SES adolescents. This finding seems to parallel previous research showing evidence of higher levels of externalizing behaviors, such as cutting class and swearing (Barber, Olsen, & Shagle, 1994; Barber, 1996). It's not entirely surprising that, unlike soft drug use, which may be limited by successfully setting and enforcing rules regarding adolescents' whereabouts, activities, and companions may (and thus limiting the opportunities for teens to find themselves in drugs and alcohol friendly environments), externalizing behaviors are more *reactive* in nature, not requiring any particular environment, and thus opportunities likely cannot be limited in the same way.

While this explanation may shed some light on why maternal control does not *prevent* subsequent crimes against persons, why would maternal control result in an *increase* in this unwanted behavior? One possible explanation is offered by theories of adolescent autonomy development, which suggest that adolescents may use hostility in an attempt to figuratively blast themselves out of autonomy-undermining relationships rather than establish their autonomy through constructive, relationship-maintaining discussions (Allen, Hauser, O'Connor, et al., 1996; Allen, Moore, & Kuperminc, 1997).

This destructive pattern of responding to autonomy threats with hostility may become internalized and generalized to new relationships, consistent with the current findings and with previous evidence suggesting that this "blasting out" process generalizes and extends to relationships outside of the family as well (Allen, Hauser, O'Connor, & Bell, 2002).

Inconsistent with this potential explanation, though, are the current findings suggesting that adolescent autonomy and relatedness *did not suppress* the relationship between maternal control and subsequent crimes against persons. If declines in autonomy and relatedness do not help to explain this association, then what does? Considered in the context of Baumrind's (1991a; 1991b) findings that children who perceived higher levels of *coercive* control tended to engage in higher levels of problem behaviors, Dodge's (1986) hostile attribution bias may provide some guidance. Consistent with the *reactive* nature of externalizing behaviors discussed above, adolescents with hostile attribution bias attribute hostile intentions to others in the context of ambiguous circumstances more often than do other adolescents, and have been found to react to that perceived hostility by exhibiting increased aggressive behavior (Orbio de Castro, Veerman, Koops, Bosch, & Monshouwer, 2002). Similarly, these adolescents may be more likely to interpret typical maternal rule setting as "coercive" as well.

Again, consistent with the current findings regarding soft drug use as well as with the findings of previous researchers (Crouter et al., 1990; Jacobson & Crockett, 2000; Seydlitz, 1991), no such association emerged among the females or the high SES adolescents. Unfortunately, a lack of studies investigating hostile attribution bias in

females (Orbio de Castro, et al., 2002) makes it difficult to determine whether this process should apply to daughters of controlling mothers as well as sons.

Adolescent Disclosure

Rates of Adolescent Disclosure during Adolescence. Observations of adolescent disclosure decreased from early to middle adolescence, consistent with the ideas that adolescents turn from parents to peers as their confidants during the transition into adolescence (e.g., Berndt, 1996; Buhrmester, 1990, 1998). Also not surprisingly, since the recipient of disclosure in this study was the mother, rates of disclosure were higher among daughters (i.e., same-sex offspring) than among sons. There was no difference in disclosure among different SES groups.

Adolescent Disclosure and Mother-Adolescent Relationship Qualities. Inconsistent with the current hypothesis, adolescents' disclosure to their mothers was not predictive of a relative increase in engagement over time. However, similar to Criss and colleagues' (2003) findings that parent-child positive "synchrony" is correlated with parent-child emotional openness, adolescent disclosure and engagement were significantly cross-sectionally associated at each time point ($\beta = .20$, $p < .01$ at age 13 and $\beta = .27$, $p < .01$ at age 16). This suggests that those who were high in disclosure at age 13 were already high in engagement, and vice versa, making change over time difficult to detect.

Consistent with the current hypothesis and with previous research (Smetana et al., 2009), adolescents' disclosure to their mothers was predictive of a relative increase in relatedness over time among high SES adolescents. However, this association seemed to work in the opposite direction for low SES adolescents, for whom adolescents'

relatedness with their mothers was predictive of a relative increase in disclosure over time. While surprising, this finding may help to shed some light on potential methods low SES parents can use to help their adolescents feel comfortable communicating openly with them. In light of multiple studies suggesting that if an adolescent is not willing to communicate with parents openly and freely, parents' efforts to monitor their adolescents cannot be effective (Eaton et al., 2009; Kerr & Stattin, 2000), this finding suggesting that improving parent-adolescent relatedness could help to open up the lines of communication for this particularly at risk group could prove to be important.

Finally, as expected, adolescent disclosure does not appear to undermine adolescents' autonomy over time.

Adolescent Disclosure and Subsequent Problem Behaviors. The lack of significant relationships between adolescent disclosure and problem behavior outcomes is striking in light of previous findings (Kerr & Stattin, 2000; Stattin & Kerr, 2000, Soenens et al., 2006; Lahey et al., 2008). It is likely that this discrepancy is due to the use of different methodologies in assessing disclosure. While previous studies utilized surveys asking adolescents about how much they willingly shared information about their friends, activities, and whereabouts, this study employed an observational measure of *emotional* disclosure. Despite research in similar areas (Buhrmester, 1990; Buhrmester & Prager, 1995; Criss, Shaw, and Ingoldsby, 2003) leading me to expect otherwise, it appears that adolescents' *emotional* disclosure to parents is not effective in preventing subsequent problem behaviors. Thus, the use of the Supportive Behavior Task to capture adolescent disclosure may have proven to be a limitation.

Discussion of Post Hoc Analyses. Because it is possible that parental control may be linked to subsequent adolescent problem behaviors via its impact on adolescent disclosure (i.e., adolescents whose parents are overly controlling may be less willing to share information about their lives with those parents), post-hoc analyses were conducted to examine any potential reciprocal relationships between the two parental 'monitoring' tactics. Interestingly, high levels of parental control were in fact not predictive of subsequent decreases in observed adolescent emotional disclosure (nor vice versa). Future studies should investigate whether this finding holds for behavioral disclosure as well.

Conclusion

Taken together, the results outlined thus far suggest that the relationship between maternal control and subsequent changes in adolescent problem behaviors may be *domain specific*. For my purposes, maternal control was defined as the degree to which a mother controls her adolescent's behavior through direct means, such as rule setting and insistence on following rules (Schludermann & Schludermann, 1970). However, it would likely be more useful to assess the protective value of maternal control by domain rather than generally. For example, the degree to which a mother controls her adolescent's *dating* behavior may be more related to subsequent sexual behavior than to subsequent crime. Furthermore, while the current results indicate no difference in levels of general parental control by gender, there is some evidence that parental control within different *domains* may be applied differently for daughters versus sons (Papini & Sebby, 1988). While the lack of findings regarding adolescent disclosure prevents strong conclusions, previous findings support the idea that adolescents' disclosure to parents differs

depending on the type of issue (Smetana, Metzger, Gettman, & Campione-Barr, 2006), suggesting that this idea of domain specificity may extend to the area of disclosure as well. Like maternal control, adolescent disclosure was also assessed rather generally, based on the quality of information that the adolescent shared about him- or herself, including affect, controversy, and vulnerability (Allen et al., 2001), rather than capturing the protective value of adolescents' willingness to share information within specific domains.

Also, although this study focused on *mothers* as the source of control and recipient of disclosure, and, thus, these results cannot be generalized to fathers, it raises the possibility that *paternal* control may impact adolescents differently (particularly sons, who may relate better to a same-sex parent). Additionally, with some existing evidence that adolescents tend to disclose more to their mothers than to their fathers (Smetana et al., 2006), the impact of disclosure to fathers may be different as well. Future research should include both parents to get a more comprehensive picture of these phenomena.

Finally, it is important to note that causal relationships cannot be inferred from these results, because even longitudinal data are not logically sufficient to establish causal relationships. Also, due to limited sample size, power will be such that we may fail to detect some real effects in the data.

Despite its limitations, this study advances current research on the mechanisms behind effective parental monitoring. The findings shed light on the importance of using moderate levels of maternal control in early adolescence in order to prevent risky sexual behavior and substance abuse later in adolescence. However, these findings also suggest that some other strategy, perhaps avoiding *coercive* control tactics, may be better for

adolescents who are at greater risk of developing hostility problems. Finally, this study provides preliminary evidence that, while behavioral disclosure may be an effective way for parents to gain knowledge and prevent subsequent problem behaviors, emotional disclosure likely is not.

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Appendix A
Childhood Report of Parenting Behavior – Maternal Control
(teen report of mother's behavior is analogous)

We are interested in your ideas about your role as a parent. Please circle your answer below as it applies to how you think of yourself as a parent to your child in this project.

	Not Like Me	**Somewhat Like Me**	**A Lot Like Me**
3. I believe in having a lot of rules and sticking with them.	**1**	**2**	**3**
6. I insist that my daughter must do exactly as she is told.	**1**	**2**	**3**
9. I am very strict with my daughter.	**1**	**2**	**3**
12. I give hard punishment.	**1**	**2**	**3**
15. I am easy with my daughter.	**1**	**2**	**3**
18. I let my daughter off easy when she does something wrong.	**1**	**2**	**3**
21. I give my daughter as much freedom as she wants.	**1**	**2**	**3**
24. I let my daughter go any place she pleases.	**1**	**2**	**3**
27. I let my daughter go out any evening she wants.	**1**	**2**	**3**
30. I let my daughter do anything she likes to do.	**1**	**2**	**3**

Appendix B
Sexual Experiences Questionnaire – Risky Sexual Behaviors

We want to know about what actually happens with people's relationships and dating. You may find some of these questions embarrassing or awkward; please be as honest as you can. All of the answers to these questions are private and kept confidential. Your name is not on any of your responses. If you can't answer a question honestly, it is better to skip it and move on. If you have any questions, please ask your interviewer.

1. Have you had consensual sex in THE PAST YEAR? Consensual means you were not forced and you agreed to have sex.
   ___ yes ___ no

2. How many DIFFERENT sexual partners have you had IN THE PAST YEAR?
   __0 __ 1 __2 __3 __4 __5 __6 __7 __8 __9 __10 __more than 10

3. How many times have you had sex IN THE PAST YEAR?
   __ once __2-5 times __6-10 times __once or twice a month on average
   __ once a week on average __ more than once a week on average

4. How often have you or the people you've had sex with used protection against pregnancy when having sex?
   __ Never
   __ Once or twice
   __ Sometimes
   __ Most of the time
   __ All of the time
   __ Not sure- I think my partner may have used it

Appendix C
Alcohol, Tobacco and Drug Use Questionnaire – Soft Drug Use

Please answer the following questions. Remember that all of your answers are confidential. Please skip any questions you can't answer truthfully.

In the questions that follow, a "drink" is defined as a can or bottle of beer, a glass of wine or a wine cooler, a shot of liquor, or a mixed drink with liquor in it. Those times when you had only a sip or two from a drink are not considered consumption.

1. Have you ever tried alcohol (beer, wine, wine coolers, and liquor)? This does not include when you have a sip of alcohol, or on a special occasion at home.
   A. No (If NO skip to #2)
   B. Yes

   1a. During the past 30 days, on how many days did you drink one or more drinks of an alcoholic beverage?
   a. 0 times
   b. 1 or 2 times
   c. 3 to 9 times
   d. 10 or more times

4. Have you ever used marijuana? Marijuana is also called pot, dope, grass, weed, hash, hashish, and hash oil.

   A. No (If NO skip to #5)
   B. Yes

   4a. In the last 30 days, how many times have you used marijuana?

   None 1-2 3-5 6-9 10 or more

Appendix D
Problem Behavior Inventory – Crimes Against Persons

The following questions ask you about things that you have done in the past six months. Please answer how often you have done the following things.

How many times in the *past six months* have you…								
8. Attacked someone with the idea or seriously hurting or killing that person?	Never	Once Or Twice	3 or 4 Times	Once A Month	2-3 Times A Month	Once A Week	2-3 Times A Week	Once A Day
9. Been involved in a gang fight?	Never	Once Or Twice	3 or 4 Times	Once A Month	2-3 Times A Month	Once A Week	2-3 Times A Week	Once A Day
12. Threatened to hit one of your parents?	Never	Once Or Twice	3 or 4 Times	Once A Month	2-3 Times A Month	Once A Week	2-3 Times A Week	Once A Day
13. Actually hit one of your parents?	Never	Once Or Twice	3 or 4 Times	Once A Month	2-3 Times A Month	Once A Week	2-3 Times A Week	Once A Day
14. Threatened to hit anyone else (other than your parents)?	Never	Once Or Twice	3 or 4 Times	Once A Month	2-3 Times A Month	Once A Week	2-3 Times A Week	Once A Day
15. Actually hit anyone else?	Never	Once Or Twice	3 or 4 Times	Once A Month	2-3 Times A Month	Once A Week	2-3 Times A Week	Once A Day