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Parenting and Adolescent Problem Behavior: An Integrated Model with Adolescent Self-Disclosure and Perceived Parental Knowledge as Intervening Variables

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Parental monitoring, assessed as (perceived) parental knowledge of the child's behavior, has been established as a consistent predictor of problem behavior. However, recent research indicates that parental knowledge has more to do with adolescents' self-disclosure than with parents' active monitoring. Although these findings may suggest that parents exert little influence on adolescents' problem behavior, it is argued in the present study that this conclusion is premature because self-disclosure may in itself be influenced by parents' rearing style. This study (a) examined relations between parenting dimensions and self-disclosure and (b) compared three models describing the relations between parenting, self-disclosure, perceived parental knowledge, and problem behavior. Results in a sample of 10th to 12th grade students, their parents and their peers demonstrated that high responsiveness, high behavioral control and low psychological control are independent predictors of self-disclosure. In addition, SEM-analyses demonstrated that parenting is both indirectly (through self-disclosure) and directly associated with perceived parental knowledge, but is not directly related to problem behavior or affiliation with peers engaging in problem behavior.

Introduction

The important role of parents in the development of adolescent externalizing problem behaviors has been emphasized by theories from fields as diverse as clinical and family psychology (Dishion & McMahon, 1998), developmental psychology (Shaw, 2003; Shaw & Bell, 1993), and criminology (Gottfredson & Hirschi, 1994). In particular, much research attention has been devoted to one specific dimension of parenting style, namely *behavioral control*, that is, parents' attempts to regulate and structure the child's behavior, for instance by monitoring the child's whereabouts (Barber, Olsen, & Shagle, 1994). Recently, however, the utility of this construct has been questioned because adolescents' voluntary self-disclosure more strongly predicted parents' knowledge of adolescents' whereabouts and externalizing problems than parents' active attempts to monitor and supervise the adolescent's behavior (Stattin & Kerr, 2000). Such findings may suggest that child-effects (self-disclosure) are more important than parent-effects (active monitoring) in explaining links between parenting and adolescent deviant behavior.

However, it may be premature to conclude that parents have comparatively little impact on the development of problem behaviors for at least two reasons. First, in line with claims made by Stattin and Kerr (2000), we argue that parents do play an active role in protecting their adolescent children from antisocial behaviors by creating a family climate in which adolescent self-disclosure is promoted. The first aim of the present research, therefore, was to examine associations between parenting and adolescent self-disclose. Second, recently, Fletcher, Steinberg, and Williams-Wheeler (2004), have argued that parenting exerts some effects on problem behavior beyond the effect of self-disclosure and parental knowledge. The second aim of our study was to further explore whether adolescent self-disclosure can fully account for the association between parenting and problem behaviors, or whether parenting is associated with problem behavior beyond the effect of self-disclosure.

Behavioral Control and Parental Monitoring

Traditionally, behavioral control has been conceptualized as a set of *active* parental strategies

involving the communication of clear expectations for appropriate behavior and efforts to monitor the child's behavior related to these expectations (Barber, 1992, 2002; Smetana, Crean, & Daddis, 2002). Pioneering work on associations between behavioral control and delinquency was conducted by Patterson and colleagues (Patterson, 1982; Patterson & Dishion, 1985; Patterson & Stouthamer-Loeber, 1984). These authors operationalized different components of active behavioral control -- such as monitoring, discipline, problem solving, and reinforcement of rules -- by means of multiple indicators and diverse informants. In these early studies, parental monitoring was found to be the strongest predictor of adolescents' police contacts and delinquency (Patterson & Stouthamer-Loeber, 1984). Parental monitoring can be defined 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).

Subsequent research on parenting and problem behaviors strongly focused on parental monitoring, but generally relied on a more narrow operationalization of monitoring. In many empirical studies, monitoring was measured by a scale assessing the extent to which parents are perceived as knowledgeable about their child's behavior (e.g., "How much do your parents really know about where you go at night?"; e.g., Brown, Mounts, Lamborn, & Steinberg, 1993). Consistent with the initial findings by Patterson and colleagues, a wealth of studies demonstrated that children of parents who score low on such measures of 'parental monitoring' are more likely to engage in antisocial behaviors (e.g., Kim, Hetherington, & Reiss, 1999; Pettit, Laird, Dodge, Bates, & Criss, 2001), to use illegal substances (e.g., Flannery, Vazsonyi, Torquati, & Fridrich, 1994; Fletcher, Darling, & Steinberg, 1995), and to associate with deviant friends (e.g., Brendgen, Vitaro, & Bukowski, 2000; Dishion, Capaldi, Spracklen, & Li, 1995). Although these findings suggest that parental monitoring is an important protective factor in reducing adolescents' risk for problem behaviors, the conceptualization and assessment of this construct has recently been severely criticized (Crouter & Head, 2002; Stattin & Kerr, 2000).

Parental Monitoring as Parental Knowledge

Within the theories and definitions cited in the preceding paragraphs, parental monitoring is

conceptually viewed as an active parental strategy to keep track of the child's activities. According to Stattin and Kerr (2000), however, current measurements of parental monitoring are actually measurements of passive parental knowledge and not of parents' active regulating behaviors. Questions pertaining to parents' knowledge of their children's activities do not provide information about the source from which this knowledge was obtained. As a result, Stattin and Kerr (2000) suggested that parents' knowledge of behavior might be obtained through adolescents' voluntary self-disclosure, rather than through parents' active attempts to achieve this knowledge.

Consistent with these claims, it was demonstrated that the association between perceived parental knowledge of the child's whereabouts and problem behaviors stems primarily from the child's tendency to self-disclose towards parents and not from parents' active soliciting of information (Kerr & Stattin, 2000; Stattin & Kerr, 2000). Hence, adolescents appear to play a more active role in the provision of knowledge to their parents than was initially thought. Moreover, adolescents' self-disclosure was found to be a stronger predictor of norm-breaking behavior, police contact (Stattin & Kerr, 2000) and general adjustment (Kerr & Stattin, 2000) than active parental solicitation and control attempts. According to Stattin and Kerr (2000), these findings suggest that parents play a less active role in the development of externalizing problems than generally assumed in developmental theories.

Parents' Contribution to Self-Disclosure and Externalizing Problems

In a recent reply to the studies of Kerr and Stattin, Fletcher et al. (2004) raised concerns about the fact that these results may lead scholars to assume that parents have little impact on the development of their children's problem behaviors. Such a conclusion would be premature for two reasons. First, Fletcher et al. (2004) suggested that adolescents' self-disclosure may in itself be associated with what parents do, a suggestion which was also made by Stattin and Kerr (2000). Fletcher et al. (2004) found that parental warmth (i.e., responsiveness), parental active monitoring (i.e., active solicitation of information about the child's whereabouts), and parental control (i.e., the extent to which parents exert control over activities such as spending money and dating) were positive predictors

of perceived parental knowledge which, in turn, was predictive of substance use and delinquent behavior. According to Fletcher et al. (2004), these findings provide evidence for the idea that warm, responsive parents who at the same time attempt to actively regulate the child's behavior establish a family climate in which self-disclosure is promoted, which then results in greater parental knowledge. Hence, parents' behavior would at least be indirectly associated with adolescents' problem behaviors through the promotion of self-disclosure.

Second, Fletcher et al. (2004) also found some small but significant direct linkages between parental behavioral control and substance use and delinquency after controlling for perceived parental knowledge. According to Fletcher et al. (2004), these findings suggest that parenting is not only indirectly but also directly associated with adolescent problem behaviors. In their final conclusion, Fletcher et al. (2004, p. 795) state that "… parental monitoring and control are also strong predictors of whether adolescents will have the opportunity and inclination to involve themselves in behaviors deemed appropriate by their parents". In this statement, Fletcher et al. (2004) seem to refute the claim made by Stattin and Kerr (2000; Kerr & Stattin, 2000) that child-effects predominate over parent-effects in the development of behavior problems and, instead, suggest that parents do have a strong impact on adolescents' development of problem behaviors.

The Present Study

The purpose of the present study was to contribute to this controversy by exploring in greater detail linkages between parenting, self-disclosure, and externalizing problem behaviors. A first aim was to examine the role of parenting style dimensions in predicting self-disclosure. A second aim was to compare various models that examine whether and to which degree parenting style dimensions predict perceived monitoring-relevant knowledge and adolescent problem behavior beyond self-disclosure.

Aim 1: Parenting and Self-Disclosure. Although both Stattin and Kerr (2000) and Fletcher et al. (2004) suggested that parenting relates to self-disclosure, this idea has not yet been fully explored. First, although Fletcher et al. (2004) found some associations between parenting dimensions and

parental knowledge, they did not actually assess adolescents' self-disclosure. Instead, they assumed that the relation they found between parenting and parental knowledge occurs through self-disclosure. A second limitation of their study concerns the use of adolescent self-reports only. The present study will make use of both parents' and adolescents' reports of the central parenting constructs.

It has been argued by Kerr and Stattin (2003) that the relational side of parenting may be particularly predictive of adolescents' self-disclosure. Therefore, the present study did not only examine the role of behavioral control but also the role of two other critical parenting dimensions, that is, responsiveness and psychological control (Gray & Steinberg, 1999). *Responsiveness* refers to the degree to which adolescents experience a warm and affective relationship with their parents. It has been argued that adolescent self-disclosure is promoted by parents who are warm and accepting and who are empathic towards the child's interests and needs (Crouter & Head, 2002; Kerr & Stattin, 2003). Hence, it was expected that responsiveness would positively predict adolescents' self-disclosure. *Psychological control* refers to parental behaviors that intrude upon the child's psychological world (i.e., thoughts, feelings, and aspirations). Psychological control has been characterized as typical of parents who excessively use manipulative parenting techniques such as guilt-induction, shaming, and love withdrawal (Barber, 1996; Soenens, Elliot, et al., 2005). It was expected that psychologically controlling parents would inhibit self-disclosure because children of psychologically controlling parents may expect their parents to react in a negative and intrusive way when confronted with norm-trespassing behaviors. In order to avoid such reactions, children can be expected to refrain from voluntary self-disclosure.

Finally, as indicated earlier, a key component of *behavioral control* is active parental monitoring. In contrast to an operationalization of parental monitoring as (*passive*) parental knowledge, the current operationalization of behavioral control pertains to *active* parental strategies to provide structure to the child's behavior and, hence, can be considered as an aspect of parenting style. In line with the work of Patterson (Patterson, 1982; Snyder & Patterson, 1987), two components of behavioral control were operationalized in the present study, namely parental monitoring and parental expectations (i.e., the

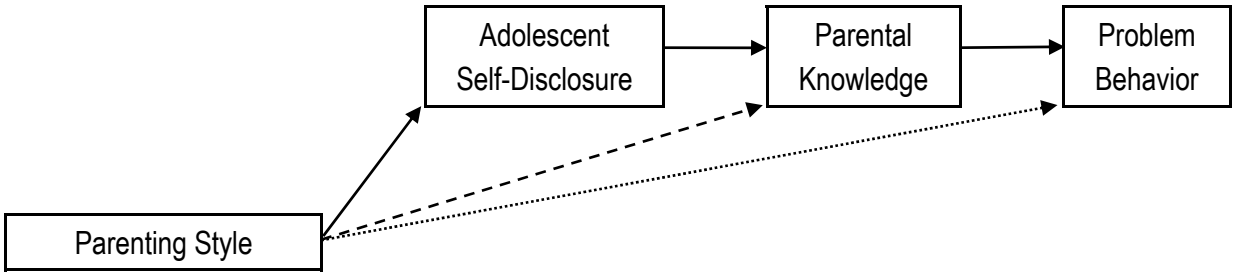
extent to which parents clearly communicate expectations regarding acceptable behavior). It was expected that behavioral control would positively predict self-disclosure because parents high on behavioral control are, by definition, likely to actively solicit information from the child and, hence, to elicit self-disclosure. In addition, such parents clearly communicate expectations and provide a structure in which the child has a better understanding of the link between his actions and parental expectations, which may, in turn, make the child more willing to communicate about his or her behavior.

Aim 2: Model Testing. A second aim of the present study was to test an integrated model of relations between parenting, self-disclosure, perceived monitoring-relevant knowledge, and problem behaviors (including substance use, delinquency, and affiliation with substance using and delinquent friends). This integrated model has not been fully tested in previous research because studies either did not include measurements of the three parenting style dimensions (e.g., Kerr & Stattin, 2000; Stattin & Kerr, 2000) or did not include measurements of self-disclosure (e.g., Fletcher et al., 2004). Past research has shown that direct effects of the three parenting dimensions on problem behaviors, if any, are relatively small. For instance, although parental responsiveness has been related to fewer problem behaviors (e.g., Dorius, Bahr, Hoffmann, & Harmon, 2004; Stice, Barrera, & Chassin, 1993), these relations often disappear after taking into account the effects of the other parenting dimensions (Gray & Steinberg, 1999; Fletcher et al., 2004). With respect to psychological control, some studies have shown significant positive associations with problem behaviors (e.g., Barber, 1996), but other studies could not confirm these links (e.g., Barber et al., 1994). Finally, some researchers have reported that active behavioral control has a significant relationship with problem behavior, whereas others have found that control has little or no effect (e.g., Bahr, Maughan, Marcos, & Li, 1998; Caron, Weiss, & Harris, 2003).

Taking the previous findings concerning effects of parenting on problem behavior into account, we compared three sets of models. The role of parenting in these three models, which are depicted in Figure 9.1, ranges from minimal over moderate to strong. Model 1 ('indirect effects only') assumes that parenting dimensions predict adolescent self-disclosure, which results in greater perceived parental

knowledge. Based on research demonstrating that perceptions of parental knowledge prospectively predict problem behavior (Laird, Pettit, Bates, & Dodge, 2003), parental knowledge, in turn, was expected to predict less problem behaviors. This model is depicted in Figure 9.1 by the full arrows. If this model provides the best fit to our data, this would imply that parenting is only indirectly related to parental knowledge and adolescent problem behaviors through self-disclosure (cf. Stattin & Kerr, 2000).

Figure 9.1 *Conceptual model of the relationships between parenting style, adolescent self-disclosure, parental knowledge, and problem behaviors.*



In our view, this first model is unlikely to hold, because active behavioral control might have an additional relation with parental knowledge that cannot be accounted for by adolescents' self-disclosure. We hypothesize that parents high on active behavioral control may have other sources of gaining knowledge beyond their child's self-disclosure, including direct observation of child's activities, solicitation of information from one's spouse ('the spouse method'; Waizenhofer, Buchanan, & Jackson-Newsom, 2004), and solicitation of information from other people who are aware of the child's behavior such as teachers, neighbors, and the child's friends (Crouter, Helms-Erikson, Updegraff, & McHale, 1999; Waizenhofer et al., 2004). Hence, Model 2 ('direct effects on parental knowledge') assumes that parenting behaviors and in particular behavioral control, have a direct effect on *parental knowledge* in addition to their indirect effect through self-disclosure, as depicted by the dashed path in Figure 9.1.

Model 3 ('direct effects on problem behavior') assumes that parenting is also directly related to adolescent problem behaviors beyond the processes of adolescent self-disclosure and parental knowledge. This possibility is depicted in Figure 9.1 by means of the dotted path from parenting to

problem behaviors and would be consistent with the claim by Fletcher et al. (2004) that parenting behaviors directly influence problem behaviors beyond self-disclosure. However, because self-disclosure was not included as an intervening variable in their models, the possibility exists that Fletcher et al. (2004) have overestimated the direct effects of parenting on adolescent problem behaviors.

Background Variables. Past research has shown that adolescents' age and gender are significantly related to the variables under study. For instance, boys have been shown to be less likely to self-disclose toward parents (Crouter & Head, 2002) and to be more likely to engage in problem behaviors (Allen, Moore, & Kuperminc, 1997) than girls. Moreover, levels of knowledge are expected to decrease with age (Patterson & Stouthamer-Loeber, 1984), and mean levels of delinquent behavior are expected to show a curvilinear relation with adolescents' age (Laird, Pettit, Bates, et al., 2003; Moffit, 1993). Hence, we controlled for the effects of age and gender in all primary analyses. Because the possibility exists that associations between parenting constructs and problem behaviors vary by gender or age (e.g., Rogers, Buchanan, & Winchell, 2003; Shaw & Bell, 1993), we also tested the moderating role of gender and age. Based on past research, it was expected that despite potential mean (age and gender) differences in the study variables, structural relationships among the constructs would hold across adolescent age and gender (Caron et al., 2003; Kerr & Stattin, 2000; Smetana et al., 2002).

Method

Participants

Participants were 690 adolescents (348 boys and 342 girls) from three secondary schools in a mid-sized Belgian city. The adolescents' age ranged from 15 years to 21 years with a mean of 17 years (*SD* = 0.97). A total of 247 students were in 10th grade (36%), 230 students were in 11th grade (33%), and 213 students were in 12th grade (31%). Of the 690 participating students, 426 (62%) attended a regular high school (academic track) and 264 (38%) attended a trade / vocational school. Concerning family structure, 86% of the adolescents came from intact families (parents are married and living together), 12% had divorced parents, and 2% came from a family in which one of the parents had

deceased. All participants were White and had the Belgian nationality. Of the 690 adolescents, 566 mothers (82%) and 519 fathers (75%) participated. Mothers' mean age was 44 years (*SD* = 4.51). On a 6-point scale their mean educational level was 3.31 (*SD* = 1.06), indicating that they had at least 12 years of education on average. Fathers' mean age was 46 years (*SD* = 4.27). On a 6-point scale fathers' mean educational level was 3.40 (*SD* = 1.22), indicating that they also had at least 12 years of education on average.

Procedure

As recommended by the ethical committee of the researchers' university, active informed consent was obtained from the adolescents and passive informed consent was required from parents. The latter procedure implied that parents received a letter about the general purpose and method of the study two weeks before the beginning of the data collection and they were asked to fill out a form if they did not want their child to participate in this study. Less than 3% of the parents did not allow their child to participate in the study and none of the students with parental permission refused participation. In addition, parents received a questionnaire that they were asked to fill out and to deliver to the school's principal by the time the data collection would take place. The questionnaires for adolescents were administered to the students during a class period. At least one of the researchers was always present during data collection. The students had approximately 45 minutes to complete the surveys. Students who did not have their parents' permission to participate worked on school work at their desks.

Measures

All questionnaires included in the present study were translated from English to Dutch, the participants' mother tongue, according to the guidelines of the International Test Commission (Hambleton, 1994). Unless otherwise indicated, items were scored on 5-point Likert scales, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Both parents and adolescents completed the measures of parenting, self-disclosure, and perceived knowledge. Measures of substance use and delinquency were completed by the adolescents only and measures of friends' substance use and delinquency were

obtained through a friendship nomination procedure.

Parenting Dimensions. The adolescent participants rated the parenting items for both their mother and their father. Parents rated the items with respect to their own parenting behavior toward their child, and the items for each measure were revised slightly to make them amenable to parent self-report (e.g., an item reading “My mother gives me a lot of care and attention” was revised into “I give my son/daughter a lot of care and attention”).

Responsiveness was tapped with 7 items from the Children’s Report on Parenting Behavior Inventory (CRPBI; Schaefer, 1965). These 7 items were selected because they had the strongest loadings on the acceptance/rejection factor of the CRPBI in past factor-analytic studies on the CRPBI dimensions (e.g., Schwartz, Barton-Henry, & Pruzinsky, 1985). In our own research, the reliability of this scale (Cronbach’s alpha) has been shown to range between .88 and .92 (Soenens, Vansteenkiste, Luyten, Duriez, & Goossens, 2005). A sample item reads “My father/mother makes me feel better after I discussed my worries with him/her”.

Psychological control was assessed with the 8-item Psychological Control Scale-Youth Self Report (PCS-YSR; Barber, 1996) which is an adaptation of Schaefer’s (1965) original CRPBI. Barber (1996) provided evidence for the unidimensional factor structure of this scale and reported Cronbach’s alpha’s ranging from .72 to .86. A sample item reads: “My mother/father is always trying to change how I feel or think about things”.

Behavioral control was assessed with two scales from the Parental Regulation Scale – Youth Self Report (PRS-YSR; Barber, 2002), namely ‘parental expectations for behavior’ (8 items, e.g., “My mother/father has clear expectations for how I should behave in and outside the home”) and ‘parental monitoring of behavior’ (8 items, e.g., “My mother/father makes efforts to know who my friends are, where I spend my time, etc.”). Because no published study has previously reported on the psychometric properties and the factor structure of this scale, we performed a Principal Components Analysis on the items of these two scales. The PCA’s identified a single factor underlying the relations among these 16

items. In the scree test, a clear kink (elbow) could be identified after the first component. The eigenvalues of the first three factors on adolescents' self-reported ratings were 4.76, 1.51, and 1.24 for paternal ratings and 5.15, 1.55, and 1.34 for maternal ratings. Eigenvalues of the first three factors in a PCA on parent-reported ratings were 4.77, 1.80, and 1.17 for fathers and 4.43, 1.78, and 1.04 for mothers. Given these results, a composite score for active behavioral control was computed by taking the mean of the 16 items tapping parental expectations and parental monitoring.

It should be noted that this operationalization of behavioral control slightly differs from the measures used by Stattin and Kerr (2000) and Fletcher et al. (2004). In each of these studies, two constructs related to behavioral control were measured, namely parental control and active parental monitoring (labeled parental solicitation in the study of Stattin & Kerr, 2000). Whereas our scale tapping 'parental monitoring of behavior' resembles their scales of active parental monitoring, there is a difference with respect to the parental control construct. In the studies of Stattin and Kerr (2000) and Fletcher et al. (2004), the measurement of parental control taps the extent to which decisions in key areas of adolescents' lives are made by parents instead of adolescents (e.g., "Must you ask your parents before you can make plans with friends about what you will do on a Saturday night?"). Our 'parental expectations for behavior' scale, in contrast, merely taps the extent to which parents clearly communicate their expectations and rules for behavior and does not imply that these expectations are dictated by parents. These expectations and rules may (or may not) have been agreed upon after a joint decision-making process between parents and adolescents. Hence, our measurement taps a less domineering or overprotective type of parental control, which, in turn, may explain why our items tapping 'parental monitoring' and 'parental expectations' load together on one factor. Our behavioral control measurement is consistent, however, with the conceptualization and operationalization of this construct in numerous other studies (e.g., Bahr et al., 1998; Barber, 2002; Coombs & Landsverk, 1988; Dorius et al., 2004; Hayes, Hudson, & Matthews, 2004; Kosterman, Haggerty, Spoth, & Redmond, 2004; Melby & Conger, 1996; Smetana et al., 2002; Snyder & Patterson, 1987).

Self-Disclosure. Parents and adolescents answered five items tapping adolescents' voluntary *self-disclosure*. This five-item scale was developed by Stattin and Kerr (2000; Kerr & Stattin, 2000). Kerr and Stattin (2000) report Cronbach's alpha reliabilities of .80 for parents' reports and .78 for children's reports and a 2-month test-retest correlation of .70. A sample item reads "I spontaneously tell my parents about my friends (which friends I hang out with and how they feel about various things)".

Perceived Parental Knowledge. Parents and adolescents answered five questions pertaining to perceptions of *parental knowledge* of the child's activities. These items were used in the study of Fletcher et al. (2004) as well as in the studies of Stattin and Kerr (Kerr & Stattin, 2000; Stattin & Kerr, 2000). Kerr and Stattin (2000) report Cronbach's alpha reliabilities of .82 for parents' reports and .85 for children's reports and a 2-month test-retest reliability of .83. A sample item reads "My mother/father knows what I do during my free time".

Substance Use. Participants completed five items from the Deviant Behavior Scale (DBS; Weinmann, 1992) tapping their frequency of substance use during the last 12 months on a scale ranging from 0 (*never*) to 3 (*4 times or more*). Weinmann (1992) reports a Cronbach's alpha of .71 for the full 13-item scale. In the present study, we only used the 5 items which specifically tap substance use, namely: "I have smoked cigarettes (not marihuana)"; "I drank one or more glasses of beer or liquor"; "I used too much alcohol or I have been drunk"; "I smoked soft-drugs (like marihuana and hash)"; and "I used other drugs than soft-drugs (like XTC and speed)".

Delinquency. Delinquency was assessed by a questionnaire developed by Baerveldt (1992; Houtzager & Baerveldt, 1999). Houtzager and Baerveldt (1999) provide evidence for the unidimensional factor structure of this scale and report a Cronbach's alpha of .87. Respondents are asked to indicate how many times they committed 23 offenses such as shoplifting, petty theft, vandalism, and unarmed fights over the last 12 months on a scale ranging from 0 (*never*) to 3 (*4 times or more*).

Friendship Nominations. Adolescents were asked to name their three best same-grade, same-school friends. This information was used to match adolescents and their friends to obtain measures of

friends' substance use and delinquency. For instance, a participant's score for friends' substance use was computed by summing the substance use scores of the three friends that were nominated by this participant. In a similar way, scores for best friends' delinquency were computed (see Mounts, 2001, 2002 for this procedure). According to Mounts (2001), because adolescents might inflate the degree of similarity between themselves and their friends, having friends report on their own substance use and delinquency increases the validity of the assessment.

Results

Preliminary Analyses

Construct Validity of the Parent-Child Relation Constructs. To evaluate the distinctiveness of the five parent-child relationship constructs (i.e., responsiveness, behavioral control, psychological control, self-disclosure, and knowledge), confirmatory factor analyses (CFA) were performed using Lisrel 8.54 (Jöreskog & Sörbom, 1996a). This test of factorial distinctiveness is particularly relevant for the distinction between parental responsiveness and self-disclosure because it has been argued in past research that these constructs are strongly overlapping (e.g., Fletcher et al., 2004). Four CFA's were performed, one for adolescents' ratings of the maternal constructs, one for adolescents' ratings of the paternal constructs, one for the mothers' own ratings, and one for the fathers' own ratings. Instead of using the individual items as indicators of the five latent factors, we created three item parcels for each construct. Items were randomly assigned to one of the parcels and the same parcels were used in the four CFA's. This parceling procedure was followed because it reduces the number of indicators, which is preferable in analyses on large item sets (40 in our case) (Marsh, Hau, Balla, & Grayson, 1998). The factors were allowed to correlate but we did not allow any cross-loadings or correlated error variances. Two fit indices were inspected to evaluate the goodness of fit of the measurement models: the Comparative Fit Index (CFI; Bentler, 1990) and the Root Mean Squared Error of Approximation (RMSEA; Steiger & Lind, 1980). In general, a CFI higher than 0.95 and a RMSEA-value lower than .06 indicate acceptable fit (Byrne, 2001; Hu & Bentler, 1999). Estimation of the five-factor model yielded

acceptable fit indices for each of the four solutions (i.e., CFIs > .96, RMSEAs < .06) and the loadings of the indicators on their respective latent variables were all moderate to high (from .52 to .95) and statistically significant (p < .001). More importantly, the fit of each possible alternative model assuming four latent constructs instead of five was significantly worse in terms of χ^2 difference tests (all ps < .001) compared to the fit of the five-factor model, providing evidence for the differentiation between the five parent-child relationship constructs under study. As such, these results also demonstrate that parental responsiveness and adolescent self-disclosure, although positively correlated (see Table 9.2 and 3), are distinct constructs.

As a further test of the construct validity of our measurements, correlations were computed between adolescents' and parents' ratings of the five constructs. Correlations between adolescents' reports of the maternal constructs and mothers' own reports ranged from .25 to .43 (all ps < .001), with a mean correlation of .33. Correlations between adolescents' reports of the paternal constructs and fathers' own reports ranged from .35 to .48 (all ps < .001), with a mean correlation of .41. The magnitude of these relationships is similar to those observed in other research using parent and child reports of parental socialization (e.g., Schwartz, et al., 1985), thereby further testifying to the construct validity of our measurements. Despite the significant congruence between adolescents' and parents' reports of the constructs under study, it was decided to analyze adolescents' and parents' reports in separate models (instead of using them as indicators of the same underlying construct) (a) because this approach allowed us to replicate the proposed models across parents' and children's reports and (b) because we aimed to maximize the comparability of our analyses with those reported by Kerr and Stattin (2000; Stattin & Kerr, 2000), who also analyzed parent and child reports separately.

Descriptive Statistics and Correlational Analyses. Due to the large sample size, our analyses attained high power. To preclude that small effects were flagged as significant, an alpha-level of .01 was used in our analyses. Means, standard deviations, ranges, and internal consistencies (Cronbach's alpha) of the study variables are shown in Table 9.1.

Table 9.1 Means, Standard Deviations, Range, and Internal Consistency of the Study Variables

Variable	*N*	Mean	Standard Deviation	Possible Range	Observed Range	Cronbach Alpha
	Paternal parenting, paternal knowledge and self-disclosure					
Responsiveness CR	675	3.34	0.87	1.0-5.0	1.0-5.0	.90
Responsiveness PR	519	3.84	0.69	1.0-5.0	1.1-5.0	.89
Behavioral control CR	675	3.40	0.55	1.0-5.0	1.6-5.0	.82
Behavioral control PR	519	3.79	0.51	1.0-5.0	2.0-4.9	.80
Psychological control CR	675	2.03	0.73	1.0-5.0	1.0-5.0	.82
Psychological control PR	519	2.25	0.63	1.0-5.0	1.0-4.6	.74
Self-disclosure CR	675	3.20	0.92	1.0-5.0	1.0-5.0	.79
Self-disclosure PR	519	3.73	0.74	1.0-5.0	1.0-5.0	.75
Knowledge CR	675	3.69	0.94	1.0-5.0	1.0-5.0	.84
Knowledge PR	519	4.07	0.71	1.0-5.0	1.0-5.0	.84
	Maternal parenting, maternal knowledge and self-disclosure					
Responsiveness CR	680	3.88	0.80	1.0-5.0	1.0-5.0	.91
Responsiveness PR	566	4.25	0.54	1.0-5.0	1.0-5.0	.83
Behavioral control CR	680	3.62	0.55	1.0-5.0	1.6-4.9	.83
Behavioral control PR	566	3.92	0.49	1.0-5.0	1.6-5.0	.76
Psychological control CR	680	2.05	0.76	1.0-5.0	1.0-5.0	.84
Psychological control PR	566	2.11	0.58	1.0-5.0	1.0-4.6	.68
Self-disclosure CR	680	3.63	0.88	1.0-5.0	1.0-5.0	.81
Self-disclosure PR	566	4.09	0.71	1.0-5.0	1.0-5.0	.77
Knowledge CR	680	4.15	0.76	1.0-5.0	1.0-5.0	.85
Knowledge PR	566	4.42	0.50	1.0-5.0	1.0-5.0	.74
	Problem behaviors					
Substance use CR	690	0.95	0.67	0.0-3.0	0.0-3.0	.70
Delinquency CR	690	0.17	0.30	0.0-3.0	0.0-2.2	.90
Friends' substance use	581	2.77	1.23	0.0-9.0	0.0-6.6	--
Friends' delinquency	581	0.48	0.57	0.0-9.0	0.0-3.3	--

Note: CR = Child Report; PR = Parent Report.

Preliminary analyses were conducted to investigate gender and age differences in the study variables. Three sets of MANOVAs were conducted with gender as between subjects-variable and with paternal parenting variables, maternal parenting variables, and problem behavior variables as dependent variables. First, a significant multivariate effect of gender on the paternal parenting variables (displayed in the upper pane of Table 9.1) was found (Wilk's lambda = 0.94; F (10, 457) = 3.04; p < .001; η^2 = .06). In line with past research (Stattin & Kerr, 2000), girls scored higher on self-reported self-disclosure towards their father (M = 3.34; SD = 0.97) than did boys (M = 3.19; SD = 0.84; F (1, 673) = 7.30; p < .01). No other gender differences emerged.

Second, a significant multivariate effect of gender on the maternal parenting variables (displayed in the middle pane of Table 9.1) was found (Wilk's lambda = 0.93; F (10, 508) = 3.99; p < .001; η^2 = .07). Again as expected, girls scored higher on self-reported self-disclosure towards mother (M = 3.83; SD = 0.87) than did boys (M = 3.47; SD = 0.84; F (1, 517) = 15.94; p < .001). In addition, girls showed higher levels of self-reported maternal responsiveness (M = 4.04; SD = 0.81) and self-reported maternal knowledge (M = 4.32; SD = 0.65) than did boys (M = 3.78; SD = 0.75 and M = 4.11; SD = 0.76, respectively; F (1, 517) = 8.61; p < .001 and F (1, 517) = 5.71; p = .001, respectively).

Third, significant gender differences were found on the four problem behavior variables displayed in the lower pane of Table 9.1 (Wilk's lambda = 0.88; F (4, 574) = 19.81; p < .001; η^2 = .12). In line with past research (Moffit, 1993), girls scored lower on substance use (M = 0.82; SD = 0.59) and delinquency (M = 0.10; SD = 0.19) than did boys (M = 1.08; SD = 0.71 and M = 0.24; SD = 0.37, respectively; F (1, 686) = 27.46; p < .001 and F (1, 686) = 38.09; p < .001, respectively). In addition, girls were less likely to affiliate with substance-using friends (M = 2.54; SD = 1.20) or with delinquent friends (M = 0.31; SD = 0.42) than were boys (M = 3.00; SD = 1.31 and M = 0.65; SD = 0.65, respectively; F (1, 577) = 20.00; p < .001 and F (1, 577) = 56.47; p < .001, respectively).

With respect to age differences in the study variables, significant negative correlations were obtained between adolescents' age and both self-reported (r = -.10; p < .01) and parent-reported

paternal behavioral control (r = -.13; p < .01). With increasing age, both adolescents and fathers report a decrease in paternal behavioral control. No significant correlations were obtained between age and maternal behavioral control or any other maternal parenting constructs. Finally, significant correlations were found between age and both substance use (r = .21; p < .001) and friends' substance use (r = .22; p < .001). Given that both gender and age differences were evident in a number of study variables, we controlled for the effects of these variables in all primary analyses.

Table 9.2 shows correlations between ratings of paternal parenting and problem behaviors as reported by adolescents (below diagonal) and fathers (above diagonal). Across adolescent and father reports, high responsiveness, high behavioral control, and low psychological control are related to high levels of self-disclosure and perceived parental knowledge which, in turn, are negatively correlated with problem behaviors. Paternal responsiveness, behavioral control, and low psychological control are generally related to lower substance use and delinquency, although these correlations primarily obtain significance when using adolescent self-reports. In general, neither adolescent-reported paternal parenting nor father-reported paternal parenting were significantly correlated with friends' substance use and friends' delinquency.

Table 9.3 shows correlations between ratings of maternal parenting and problem behaviors as reported by adolescents (below diagonal) and mothers (above diagonal). In line with the findings obtained on the paternal ratings, the three maternal parenting dimensions are significantly related to self-disclosure and perceived parental knowledge which, in turn, are negatively correlated with substance use, delinquency, friends' substance use, and friends' delinquency. Also similar to the paternal ratings, maternal responsiveness, behavioral control, and low psychological control are correlated negatively with substance use and delinquency. In addition, adolescent-reported maternal responsiveness was negatively correlated with friends' substance use and mothers' self-reported psychological control was positively correlated with friends' substance use.

Table 9.2 *Correlations between Ratings of Paternal Parenting, Self-Disclosure, Knowledge, and Problem Behaviors*

Measure	1	2	3	4	5	6	7	8	9
1. Responsiveness		.45**	-.38**	.55**	.56**	-.15**	-.08	-.04	-.07
2. Behavioral control	.26**		-.06	.31**	.45**	-.07	.01	-.04	-.01
3. Psychological control	-.46**	.14**		-.37**	-.32**	.08	.10	-.01	-.01
4. Self-disclosure	.64**	.22**	-.38**		.52**	-.17**	-.17**	-.07	-.09
5. Knowledge	.54**	.40**	-.31**	.62**		-.25**	-.19**	-.12*	-.12*
6. Substance use	-.26**	-.16**	.14**	-.34**	-.35**		.53**	.38**	.24**
7. Delinquency	-.23**	-.13**	.15**	-.30**	-.30**	.53**		.20**	.19**
8. Friends' substance use	-.13*	-.06	.07	-.14**	-.13*	.38**	.20**		.57**
9. Friends' delinquency	-.08	-.02	-.01	-.09	-.05	.24**	.19**	.57**	

Note: Correlations between parenting, self-disclosure and knowledge as reported by adolescents (below diagonal) and fathers (above diagonal). Substance use and delinquency are assessed via adolescent self-report. Friends' substance use and delinquency are assessed via friendship nominations. * $p < .01$ ** $p < .001$.

Table 9.3 *Correlations between Ratings of Maternal Parenting, Self-Disclosure, Knowledge, and Problem Behaviors*

Measure	1	2	3	4	5	6	7	8	9
1. Responsiveness		.32**	-.41**	.51**	.51**	-.19**	-.16**	-.03	-.01
2. Behavioral control	.16**		-.02	.22**	.37**	-.01	.02	.05	.02
3. Psychological control	-.52**	.13**		-.30**	-.25**	.15**	.08	.12*	.01
4. Self-disclosure	.62**	.18**	-.44**		.46**	-.19**	-.17**	-.15*	-.14*
5. Knowledge	.50**	.29**	-.33**	.62**		-.19**	-.19**	-.11*	-.07
6. Substance use	-.23**	-.17**	.13**	-.33**	-.33**		.53**	.38**	.24**
7. Delinquency	-.23**	-.17**	.16**	-.31**	-.33**	.53**		.20**	.19**
8. Friends' substance use	-.12*	-.05	.09	-.16**	-.15**	.38**	.20**		.57**
9. Friends' delinquency	-.10	-.01	.00	-.10*	-.04	.24**	.19**	.57**	

Note: Correlations between parenting, self-disclosure and knowledge as reported by adolescents (below diagonal) and mothers (above diagonal). Substance use and delinquency are assessed via adolescent self-report. Friends' substance use and delinquency are assessed via friendship nominations. * $p < .01$ ** $p < .001$.

Primary Analyses: Structural Equation Modeling

In order (a) to examine the relative contribution of the three parenting dimensions to the prediction of self-disclosure and (b) to test and compare the three models presented in the Introduction and graphically displayed in Figure 9.1, structural equation modeling with manifest variables was performed. Data screening of the study variables using Prelis 2.54 (Jöreskog & Sörbom, 1996b) indicated partial non-normality of the data, both at the univariate and at the multivariate level. Therefore, in all subsequent models we used the matrix of asymptotic covariances among the study variables as input, and we inspected the Satorra-Bentler Scaled chi-square (SBS-χ^2, Satorra & Bentler, 1994) to correct for non-normality. In order to compare the different models proposed, we used the Scaled Difference Chi-Square Test Statistic, which was developed by Satorra and Bentler (1999) to compare SBS-χ^2 values of nested models.

Model testing was performed separately for maternal and paternal parenting and for adolescents' and parents' reports of parenting, resulting in four sets of structural equation models. In each of these models, both adolescents' own problem behavior as well as their friends' problem behavior were included as dependent variables. Furthermore, within each set of statistical models, the three theoretical models mentioned earlier were tested. Model 1 ('indirect effects only') assumes paths from the three parenting variables to self-disclosure which, in turn, shows a path to parental knowledge. Paths are assumed from parental knowledge to each of the four problem behavior outcomes. Model 2 ('direct effects on parental knowledge') additionally assumes direct paths from the three parenting variables to perceived parental knowledge. In addition to the paths assumed in Model 2, Model 3 ('direct effects on problem behavior') contains direct paths from the parenting variables to the problem behavior outcomes. In order to control for the effects of age and gender, paths were allowed from both control variables to each construct in the models. Fit indices for the four sets of models can be found in Table 9.4.

Table 9.4 *Fit Indices of the SEM-Models*

Model	SBS-χ^2	*df*	CFI	RMSEA
Paternal Ratings				
Child-Report				
Model 1	108.24	19	0.93	0.09
Model 2	17.06	16	1.00	0.01
Model 3	7.03	4	1.00	0.04
Parent-Report				
Model 1	75.81	19	0.94	0.09
Model 2	8.72	16	1.00	0.00
Model 3	0.37	4	1.00	0.00
Maternal Ratings				
Child-Report				
Model 1	70.95	19	0.96	0.07
Model 2	22.97	16	0.99	0.03
Model 3	8.49	4	0.99	0.04
Parent-Report				
Model 1	97.82	19	0.91	0.10
Model 2	32.99	16	0.98	0.05
Model 3	3.66	4	1.00	0.00

Paternal Parenting, Self-Disclosure, and Knowledge. As can be seen in the upper pane of Table 9.4, Model 1 did not provide a good fit to the data pertaining to adolescents' reports of paternal parenting, self-disclosure, and perceived knowledge. In comparison to Model 1, Model 2 showed a significantly better fit (SBS-χ^2_{diff} (3) = 58.41; $p < .001$). Model 3, however, did not fit the data significantly better than Model 2 (SBS-χ^2_{diff} (12) = 10.03; $p = .61$). Because Model 2 is more parsimonious than Model 3, the former model was preferred over the latter. Moreover, when estimating Model 3, none of the direct paths from parenting to the problem behavior constructs were significant. When evaluating the model based on fathers' reports of parenting, self-disclosure, and perceived knowledge, Model 2 again showed a superior fit compared to Model 1 (SBS-χ^2_{diff} (3) = 37.88; $p < .001$). Adding the paths assumed in Model 3 did not improve the model fit in comparison to Model 2 (SBS-χ^2_{diff} (12) = 8.57; $p = .74$) and none of these additional paths were significant.

In sum, Model 2 ('direct effects on perceived parental knowledge') provided the best fit to the data for both adolescent-reported and father-reported paternal parenting. Figure 9.2 displays the structural coefficients associated with both sets of models. (For clarity of presentation, the effects of age and gender are not shown in the figure). Figure 9.2 shows that each of the three paternal parenting constructs independently contribute to the prediction adolescent self-disclosure towards father, with paternal responsiveness providing the strongest contribution. Self-disclosure, in turn, predicts greater perceived paternal knowledge. In addition to this indirect effect of parenting on knowledge through self-disclosure, paternal responsiveness and behavioral control show significant direct paths to perceived paternal knowledge. In addition, paternal psychological control negatively predicts perceived paternal knowledge, albeit only in adolescents' self-reported ratings. Perceived paternal knowledge, in turn, is significantly predictive of substance use, delinquency, and affiliation with substance-using friends.

Maternal Parenting, Self-Disclosure, and Knowledge. As shown Table 9.4, Model 1 did not provide an acceptable fit to the data pertaining to adolescents' reports of maternal parenting, self-disclosure, and knowledge. Model 2 showed a better fit compared to Model 1 (SBS-χ^2_{diff} (3) = 36.91; p < .001). Model 3, however, did not show a better fit than Model 2 (SBS-χ^2_{diff} (12) = 13.63; p = .33). None of the direct paths from parenting to problem behaviors assumed in Model 3 were significant.

When evaluating the model based on mothers' reports of maternal parenting, self-disclosure, and knowledge, Model 2 again proved to fit significantly better to the data than Model 1 (SBS-χ^2_{diff} (3) = 37.85; p < .001). However, although Model 2 showed an acceptable fit to the data, Model 3 showed an even better fit compared to Model 2 (SBS-χ^2_{diff} (12) = 29.97; p < .01). Inspection of the structural paths in Model 3 revealed that this significant difference in model fit was due to a direct path from mother-reported psychological control to friends' substance use (β = .14; p < .01). None of the other 11 paths from parenting dimensions to problem behavior outcomes were significant. Because this isolated finding only occurred in one model out of four, it should be interpreted with caution. The structural coefficients of the best fitting models for the maternal data are depicted in Figure 9.3.

Figure 9.2 *Standardized path coefficients for the model predicting relationships between paternal parenting style, adolescent self-disclosure toward father, paternal knowledge, and problem behaviors. The first coefficient shown is for the model including adolescent reports of parenting, self-disclosure, and knowledge. The second coefficient shown is for the model including fathers' reports of parenting, self-disclosure, and knowledge. * p < .01, ** p < .001.*

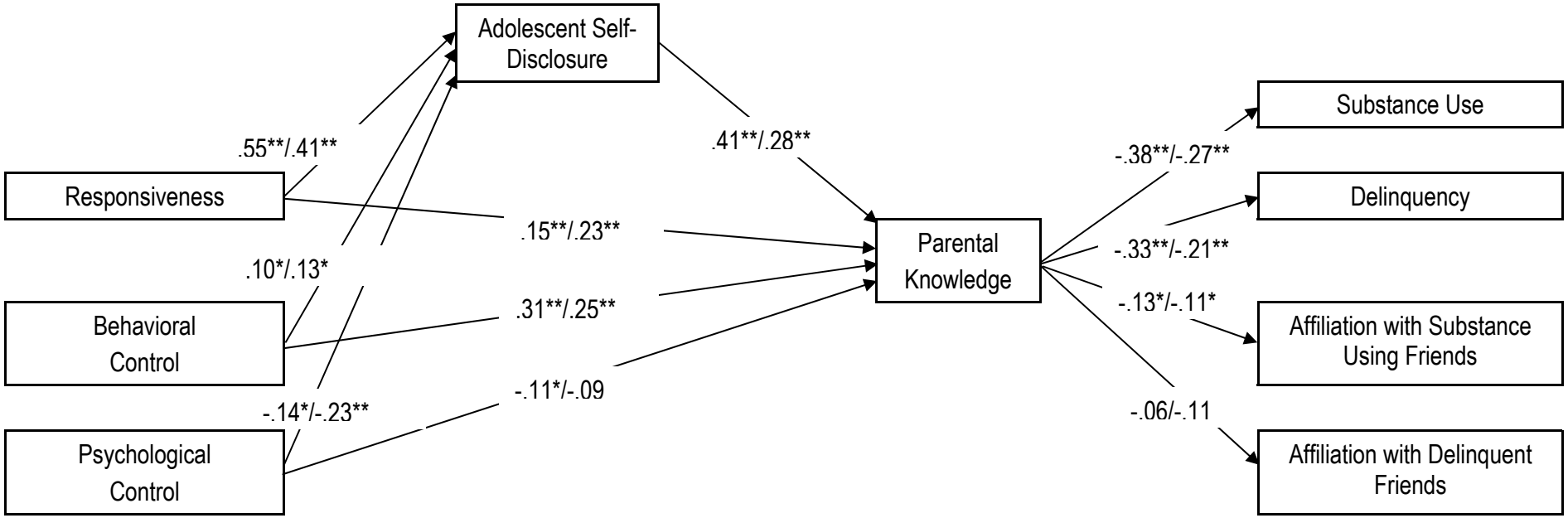


Figure 9.3 *Standardized path coefficients for the model predicting relationships between maternal parenting style, adolescent self-disclosure toward mother, maternal knowledge, and problem behaviors. The first coefficient shown is for the model including adolescent reports of parenting, self-disclosure, and knowledge. The second coefficient shown is for the model including mothers' reports of parenting, self-disclosure, and knowledge. * p < .01, ** p < .001*

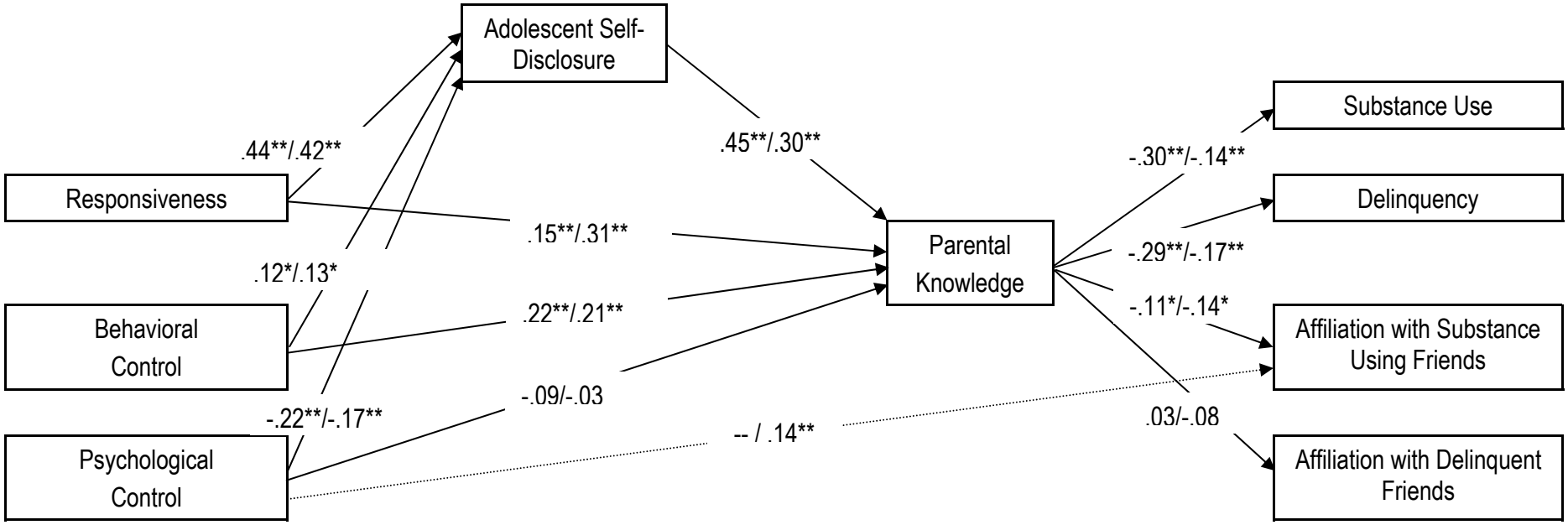


Figure 9.3 shows that maternal responsiveness, behavioral control, and psychological control independently predict adolescent self-disclosure towards mother. As in the paternal data, maternal responsiveness has the strongest contribution to the prediction of self-disclosure. Self-disclosure, in turn, predicts greater perceived maternal knowledge. In addition to the indirect effect of maternal parenting on knowledge through self-disclosure, maternal responsiveness and behavioral control (but not psychological control) show significant direct paths to perceived maternal knowledge. As in the paternal data, perceived maternal knowledge is, in turn, significantly predictive of three out of the four problem behavior outcomes, namely substance use, delinquency, and affiliation with substance-using friends. None of the maternal parenting variables significantly predict the problem behavior outcomes beyond the effects of knowledge and self-disclosure, except for a direct negative path from psychological control to affiliation with substance using friends in the mother-reported ratings.[1]

Moderating Effects of Adolescent Age and Gender. In order to assess whether and to what extent the structural relationships in the models described above are invariant across adolescent gender and age, we performed ancillary multi-group analyses. In these analyses, a comparison is made between a constrained model, that is, a model in which the structural coefficients are set equal across gender or across age group, and an unconstrained model, that is, a model in which these coefficients are allowed to vary between levels of gender or age. The constrained and the unconstrained model are compared in terms of the chi-square difference corresponding to the number of degrees of freedom. A significant difference implies that the model differs significantly across groups (boys vs. girls or younger vs. older). A non-significant difference implies that the model holds invariantly across groups. These

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[1] We conducted an ancillary set of analyses in which a different causal ordering of the constructs under study was tested. More specifically, we examined the possibility that youth's problem behaviors would drive the processes of self-disclosure and monitoring-relevant knowledge rather than the other way around. In the alternative model suggested by the reviewer, parenting style dimensions predicted problem behaviors, which, in turn were modeled as predictors of self-disclosure and parental knowledge. Across parents' gender and across type of reporter (child vs. parent), these models failed to show an adequate fit to the data (CFIs < .85, RMSEAs > .15). Although our data are cross-sectional and do not allow to draw firm inferences concerning direction of effects, these ancillary analyses do provide some evidence for the causal ordering proposed in the models tested in this study.

multi-group analyses were performed on the best fitting model for the total sample.

With respect to gender, no significant differences were found between the constrained and the unconstrained model in any of the models (SBS-χ^2_{diff} (11) = 23.18; p > .01; SBS-χ^2_{diff} (11) = 24.65; p > .01; SBS-χ^2_{diff} (11) = 22.49; p > .01; SBS-χ^2_{diff} (12) = 19.06; p > .01 for the four models in Table 9.4, respectively), indicating that adolescent gender does not moderate the structural relationships in the models. In order to test for the moderating role of adolescent age, two groups were created based on a median split of the age variable, namely younger (M_{age} = 16.48; SD = 0.52) and older adolescents (M_{age} = 18.19; SD = 0.48). In none of the models did we find a significant difference between the constrained and the unconstrained model (SBS-χ^2_{diff} (11) = 11.03; p > .01; SBS-χ^2_{diff} (11) = 5.21; p > .01; SBS-χ^2_{diff} (11) = 5.93; p > .01; SBS-χ^2_{diff} (12) = 13.73; p > .01 for the four models in Table 9.4, respectively), indicating that adolescent age does not moderate the structural relationships in the models.

Discussion

The present study was conducted in light of the ongoing controversy in the literature (Fletcher et al., 2004; Kerr & Stattin, 2000) on the question whether parents play an active or rather minimal role in the prevention of substance abuse and delinquent behavior. Structural equation modeling analyses proved substantial evidence for a 3-step model in which parenting relates to the extent to which adolescents disclose information to their parents (Step 1); self-disclosure, in turn, is positively associated with perceived parental knowledge (Step 2), which, in turn, negatively predicts both substance use and delinquent behavior (Step 3). Parenting did not only affect parental knowledge and problem behavior through adolescents' self-disclosure, but also showed a direct path to perceived parental knowledge. In contrast, direct effects of parenting on adolescent problem behaviors or on affiliation with delinquent or substance using friends were not found. Importantly, this model fitted the data equally well for mothers as well as fathers and for adolescents' as well as parents' reports. These findings and their implications are discussed in greater detail below.

The concept of parental monitoring, as a key dimension of parental behavioral control, has

undergone an interesting conceptual shift over the past years. Being initially considered as a strong predictor of a decreased risk for substance use and delinquent behavior, a closer examination of the items in many instruments that assess parental monitoring revealed that there is a discrepancy between its operationalisation and its intended conceptualization (Stattin & Kerr, 2000). Specifically, whereas parental monitoring was defined as *active* parental attempts to pay attention to and keep track of children's whereabouts and behaviors, the items tapping the construct rather assessed how much knowledge parents are perceived to have regarding their offspring's activities. A series of studies by Stattin and Kerr (2000) and Kerr and Stattin (2000) showed that this parental knowledge primarily originates from adolescents' willingness to disclose information. Even more importantly, adolescents' self-disclosure was found to be a stronger predictor of problem behaviors than active parental regulation strategies. Hence, any relationship that was found in previous research between measures of parental knowledge and problem behaviors may have been due to adolescents' willingness to self-disclose. Obviously, these findings suggest a more active role for adolescents in relations between parent-child relationships and problem behaviors than has traditionally been assumed in socialization theories (Kerr & Stattin, 2003). Does this exclude the possibility that parents play an active role in the reduction of problem behavior? We believe it does not, for two reasons.

First, through their rearing, parents might create a family climate that fosters the disclosure of personal information by their offspring. According to Stattin and Kerr (2003), the relational side of parenting may be particularly predictive of the processes involved in adolescents' willingness to self-disclose. In line with this suggestion, we did not only examine the role of behavioral control (as assessed through active parental monitoring and setting parental expectations that limit unacceptable behaviors), but also the role of parental responsiveness and psychological control in the prediction of self-disclosure. Although the results demonstrate that each of the three parenting dimensions independently predict self-disclosure, the effect of responsiveness appeared to be twice as large in all four models compared to the effects of behavioral control and psychological control. Apparently, if

parents manage to develop a warm, understanding, and personal relationship with their adolescents, this results in a family climate in which adolescents are more likely to speak openly about their whereabouts. As in previous studies, self-disclosure, in turn, consistently relates to higher levels of parental knowledge (Kerr & Stattin, 2000; Stattin & Kerr, 2000).

Second, two of the parenting style dimensions were predictive of perceived parental knowledge beyond the effect of self-disclosure on knowledge. High parental responsiveness and high behavioral control had independent positive effects on parental knowledge. As expected, this finding indicates that parents who are involved in the behavior of their child and who actively attempt to provide structure to the child's behavior have other means beyond adolescents' self-disclosure to obtain knowledge about the child's behaviors. Such other means may include direct observation as well as solicitation of information from significant others such as spouses, peers, and teachers (Crouter & Head, 2002; Waizenhofer et al., 2004). In sum, parents' positive involvement in their children's behavior and the active structuring and monitoring of the child's behavior appears to be associated with gaining knowledge both through the promotion of adolescent self-disclosure as well as through other means (such as direct observation and soliciting information from others).

Importantly, our results also indicate that (dimensions of) parenting style are only related to problem behaviors through the processes of self-disclosure and monitoring-relevant knowledge. Specifically, the three parenting dimensions did not have any substantial effects upon adolescents' problem behaviors or affiliation with friends who are engaged in problem behaviors beyond the effect of parental knowledge. Highly responsive, low psychologically controlling and highly behaviorally controlling parents only reduce their offspring's problem behavior to the extent that they foster self-disclosure and through parents' ability to gain additional knowledge by themselves concerning their offspring's whereabouts. Perceived parental knowledge, in turn, consistently predicts less problem behaviors and less affiliation with friends engaging in problem behaviors. Notably, these results were obtained across type of reports (adolescent versus parent) and across parents' and adolescents'

gender. The lack of direct linkages between parenting and problem behaviors somewhat contradicts the findings obtained in the study by Fletcher et al. (2004), in which some direct paths from parenting to problem behaviors were evident. However, apart from the fact that the direct effects in the Fletcher et al. (2004) study were generally small, Fletcher et al. (2004) did not actually tap self-disclosure as an intervening variable in relations between parenting and problem behaviors, as was the case in the present study. This may have caused an overestimation of the direct effects of parenting on problem behaviors. Both studies, however, point to the important intervening role of parental knowledge in associations between parenting and problem behaviors.

More generally, the results of this study point to the importance of the relational side of parenting in the development of adolescent problem behaviors. Most research on parenting and adolescents' externalizing problems focuses on parents' regulatory capacities, as indexed by the degree to which parents structure the child's behavior, set limits, communicate expectations, and discipline the child's behavior when norms are trespassed. The present research, however, suggests that the degree to which parents are warm and involved and avoid the use of intrusive parenting techniques is at least equally important because such a warm and non-intrusive parenting style gives rise to a family climate in which children are better able to openly communicate about their behavior and in which parents are more aware of their children's whereabouts. Such a family climate, in turn, appears to be highly effective in protecting adolescent children from externalizing problems and associations with deviant friends.

The finding that the relational qualities of the parent-child relationship provide additional pathways through which children are protected against problem behaviors is not only theoretically important but also has important implications for prevention and intervention programs. It suggests that prevention programs might not only focus on teaching parents to provide structure and to apply appropriate levels of behavioral control, but also on developing trusting and non-intrusive parent-child relationships that foster honest self-disclosure and that provide parents with accurate monitoring-relevant knowledge (Crouter & Head, 2002). It should be noted, however, that this may be primarily true for normative

samples such as the one in the present study. The sample in this study was European and predominantly White, middle class and from intact families and, hence, cannot be considered as a sample at high risk for severe externalizing problems. Some studies suggest that the developmental processes and parenting dynamics involved in children's externalizing problems may be somewhat different in high risk samples (Crouter & Head, 2002). Walker-Barnes and Mason (2001), for instance, found that behavioral control (i.e., the regulatory side of parenting) served a more protective function against problem behaviors for Black youth (who lived in poorer and more dangerous neighborhoods) than for White youth. Such findings may suggest that, whereas interventions focusing on the relational side of parenting are useful within normative samples, samples characterized by multiple risk factors may profit more from interventions aimed at improving parents' regulatory skills (such as the Family Check-Up program described by Dishion & McMahon, 1998). Future research that examines the processes described in the present study in high-risk samples is needed to draw more definite conclusions on these issues.

Besides the reasons discussed in the preceding paragraphs, there are other reasons why it would be inappropriate to conclude that parents play only a minimal role in the development of problem behaviors (Parke & Buriel, 1998). Parents do not only (indirectly) influence their children through the quality of their parenting style, they also have a more direct function as arrangers of the social environment of the child. For instance, through their choice of a neighborhood or through the encouragement of involvement in organized activities, parents can protect their children from high risk social influences. Moreover, parents may also directly influence their children's involvement with certain peers in their role of instructor or educator. For instance, parents may give advice about managing peer relationships and supervise and assist in relations with peers. To the extent that such peer management strategies keep their children away from the influence of antisocial peers, parents are likely to protect their children from engaging in problem behaviors themselves. Further, parents may also directly model their children's behavior through their own behaviors (e.g., smoking and involvement in risky behavior).

An important aim for future research could be to integrate analyses of parents' roles as arrangers, educators or role models with analyses of the quality of parents' rearing style. This could be achieved, for instance, by examining the combined and interactive impact of parenting style dimensions and parental peer management strategies in predicting peer relations and problem behavior (see Mounts, 2002 and Soenens, Vansteenkiste, Smits, Lowet, & Goossens, in press for initial steps in this direction).

Limitations and Future Research

Despite a number of strengths, including the assessment of parenting dimensions covering a wide range of the parenting domain and the use of multiple informants, an important limitation of the present study is its correlational and cross-sectional design. As such, our data do not allow drawing firm conclusions about the direction of the effects in our model and should therefore be considered as preliminary. Based on previous research (Kerr & Stattin, 2003; Laird, Pettit, Bates, et al., 2003; Laird, Pettit, Dodge, & Bates, 2003) it is deemed most likely that the relationships in our model are reciprocal. For instance, although we modeled parenting dimensions as predictors of self-disclosure and problem behaviors, adolescents' willingness to self-disclose and their engagement in problem behaviors probably has an influence on parents' rearing style. Parents may react to their adolescents' secretiveness and frequent engagement in problem behaviors by communicating and behaving in a less responsive fashion and by increasing their use of coercive and intrusive control attempts. Such reactions may result in even less parental knowledge and more adolescent secretiveness, which, in turn, increase the likelihood of problem behaviors. Future longitudinal research with cross-lagged designs would be ideally suited to reveal such reciprocal causal relations between parenting, self-disclosure, monitoring-relevant knowledge, and problem behaviors.

Although the direction of effects in the link between parental knowledge and problem behaviors could not be inferred from the present study, it has previously been demonstrated that parental knowledge predicts over-time changes in problem behaviors (Laird, Pettit, Bates, et al., 2003), a finding which justifies the directional path from perceived parental knowledge to problem behaviors in our

models. Given this result and given the important intervening role of parental knowledge demonstrated in the present paper, an additional challenge for future research will be to gain insight in the mechanisms through which monitoring-relevant knowledge is linked to problem behavior. It has often been suggested that lack of parental knowledge is associated with higher involvement with antisocial and delinquent peers or with higher susceptibility to antisocial peer pressure, which, in turn, results in higher antisocial and delinquent behavior (Brown et al., 1993; Dishion & McMahon, 1998). In addition to such behavioral mechanisms to explain links between parental knowledge and problem behavior, future research may also take into account psychological processes, such as the degree to which adolescents have fully internalized the parental and societal norms for conduct (Grolnick & Farkas, 2002).

Other limitations of this study pertain to our measurement of behavioral control and to the characteristics of our sample. The scale that was used to measure behavioral control was only recently developed. Although the reliability and validity analyses performed in the present study yield promising results, future research is needed to more fully examine the validity and internal structure of this scale, as well as its generalizability across different age groups. More generally, future research would do well to include observational measures of the parenting constructs in addition to the parent and child reports used in the present study. Our measure of parental knowledge, for instance, taps *perceptions* of parental knowledge and does not directly assess how much parents *actually* know. With respect to the characteristics of our sample, the high percentage of adolescents from intact families precludes generalization of our findings to contexts in which a single parent status is more common. Also, participants in the present study were in their mid- through late adolescent years at the time of data collection. It may be worthwhile to examine monitoring processes at an earlier age in order to examine links between monitoring-relevant processes and early developmental trajectories of problem behavior.

Conclusion

The present research suggests that crucial dimensions of parents' rearing style have a significant impact on their offspring's display of problem behavior and delinquency through the process of

gathering monitoring-relevant knowledge. The extent to which parents have knowledge regarding their offspring's behavior, in turn, protects them from engaging in problem behavior. Such knowledge is gained through two different routes. First, parents who create a warm and involved family climate, who avoid the use of psychologically controlling strategies, and who provide sufficient and clear expectations concerning their adolescents' behavior, promote the disclosure of personal whereabouts among their offspring which, in turn, provides them with more knowledge concerning their adolescents' behavior. Second, high responsiveness and high behavioral control additionally give rise to an increase in parental knowledge.

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