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Mothers' and Fathers' Autonomy-Relevant Parenting: Longitudinal Links with Adolescents' Externalizing and Internalizing Behavior

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Abstract

The goal of this study was to advance the understanding of separate and joint effects of mothers' and fathers' autonomy-relevant parenting during early and middle adolescence. In a sample of 518 families, adolescents (49% female; 83% European American, 16% African American, 1% other ethnic groups) reported on their mothers' and fathers' psychological control and knowledge about adolescents' whereabouts, friends, and activities at ages 13 and 16. Mothers and adolescents reported on adolescents' externalizing and internalizing behaviors at ages 12, 14, 15, and 17. Adolescents perceived their mothers as using more psychological control and having more knowledge than their fathers, but there was moderate concordance between adolescents' perceptions of their mothers and fathers. More parental psychological control predicted increases in boys' and girls' internalizing problems and girls' externalizing problems. More parental knowledge predicted decreases in boys' externalizing and internalizing problems. The perceived levels of behavior of mothers and fathers did not interact with one another in predicting adolescent adjustment. The results generalize across early and late adolescence and across mothers' and adolescents' reports of behavior problems. Autonomy-relevant mothering and fathering predict changes in behavior problems during early and late adolescence, but only autonomy-relevant fathering accounts for unique variance in adolescent behavior problems.

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Authors' Contributions

JEL conceived of the study, participated in its design and coordination, and drafted parts of the manuscript; RDL contributed to the conceptualization of the study, participated in the design and interpretation of the data, performed the statistical analyses, and drafted parts of the manuscript; GSP, JEB, and KAD participated in the design and coordination of the study and provided constructive feedback on drafts of the manuscript. All authors read and approved the final manuscript.

Keywords

externalizing; internalizing; father; mother; parental knowledge; psychological control

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Introduction

During adolescence, a key developmental task is establishing autonomy. Some adolescents are more successful at this than others, and some parents are better at fostering adolescents' autonomy than others. Greater parental knowledge of the adolescents' whereabouts, friends, and activities can be considered an indicator of an effective autonomy balance, as parents grant adolescents autonomy and adolescents respond by keeping parents informed. Psychological control, in contrast, can be considered a restriction of autonomy or an intrusion by parents into adolescents' establishment of autonomy.

The present study represents the merging of two bodies of research into a conceptual model of change in behavioral adjustment from early to middle adolescence. The first body of research distinguishes between parents' efforts to control the adolescents' thoughts and feelings (i.e., psychological control) and parents' efforts to remain aware of, and potentially redirect, the adolescents' behavior (i.e., behavioral control). The second body of research involves examining the common and unique contributions from mothers' and fathers' parenting to adolescents' adjustment. Highlights of each of these bodies of research are reviewed in turn. The result of merging these areas of inquiry is a model that attends to two different autonomy-relevant aspects of parenting (psychological control and parental knowledge) within the context of family systems that go beyond individual parent-child dyads.

As childhood proceeds, different aspects of parenting become salient. For example, predictability, warm sensitivity, and responsiveness predict infant adjustment via the formation of secure attachment relationships (De Wolff & van IJzendoorn, 1997). Parental warmth continues to be important in middle childhood, but both proactive and reactive discipline strategies take on more importance (Collins, Madsen, & Susman-Stillman, 2002). Warmth and discipline are still important during adolescence, but parenting behaviors more central to autonomy development assume greater importance (e.g., Barber, Stolz, & Olsen, 2005). The present study focuses on two autonomy-relevant aspects of parenting in both early and middle adolescence.

Psychological control and parental knowledge about adolescents' whereabouts, friends, and activities are similar in that they constitute autonomy-relevant aspects of parenting that may be important during adolescence. Psychological control serves as an indicator of parenting behaviors and parent-adolescent interactions that inhibit autonomy whereas parental knowledge serves as an indicator of parenting behaviors and parent-adolescent interactions that promote autonomy effectively. Psychological control has been defined in terms of manipulation and intrusion into children's emotional and cognitive worlds through behaviors such as invalidating children's feelings and pressuring them to think in particular ways (Barber, 2002). In several studies, these psychologically controlling behaviors have been found to relate to worse adolescent adjustment such as more delinquency, more

depression, and poorer academic achievement, both cross-sectionally and longitudinally (e.g., Herman, Dornbusch, Herron, & Herting, 1997).

The current view of parental knowledge is that it is the outcome of a dyadic (or family) process that may include parental monitoring behaviors, but which is more proximally determined by adolescents' disclosure of their whereabouts and activities (Kerr & Stattin, 2000; Stattin & Kerr, 2000). Although adolescent disclosure is likely the proximal source of parents' knowledge, adolescents are more willing to disclose when they feel close to their parents (Yau, Taspoulos-Chan, & Smetana, 2009), when they have a high quality relationship with parents (Smetana, Villalobos, Rogge, & Taspoulos-Chan, 2010), when parents are responsive (Soenens, Vansteenkiste, Luyckx, & Goossens, 2006), and when parents respond to disclosure in a positive manner (Tilton-Weaver, Kerr, Pakalniskeine, Tokic, Salihovic, & Stattin, 2010). Likewise, adolescents are more likely to disclose when they feel that parental authority is legitimate (Laird & Marrero, 2010), when they feel obliged to obey (Darling, Cumsille, Peña-Alampay, & Coatsworth, 2009), and when parents are promoting autonomy (Smetana, 2011). High levels of parental knowledge, likely reflecting high levels of disclosure and an autonomy-supportive parent-child relationship, generally have been found to relate to better adolescent behavioral adjustment (Pettit, Laird, Dodge, Bates, & Criss, 2001). In contrast, low levels of parental knowledge may be indicative of inappropriate or premature autonomy, which has been linked to poorer behavioral adjustment (Dishion, Nelson, & Bullock, 2004). Although behavioral adjustment likely influences adolescents' decisions regarding whether or not to disclose information to parents (Laird, Marrero, Melching, & Kuhn, 2013), parental knowledge about adolescents' whereabouts, friends, and activities appears to improve adolescents' behavioral adjustment over time rather than simply reflect which adolescents already are better adjusted (Lahey, Van Hulle, D'Onofrio, Rodgers, & Waldman, 2008).

Day and Acock (2004) noted that there has been a "glaring absence" of research on relationships between adolescents and their fathers. The lack of attention to fathers in the developmental literature historically has been a major limitation in understanding parenting behavior and outcomes for children and adolescents. Although recent studies (e.g., Simons & Conger, 2007) have addressed this gap in the literature by including separate assessments of mothers' and fathers' behavior, several questions remain.

Researchers with separate scores indexing maternal and paternal behavior (or separate perceptions of maternal and paternal behavior) typically choose one of three options. The first option combines maternal and paternal behavior into an aggregated parenting construct (e.g., Galambos, Barker, & Almeida, 2003). This combining option increases reliability to the extent to which mothers and fathers within the same family are similar, but this option provides no information as to whether mothering and fathering function similarly, or as to whether mothering and fathering may be redundant versus unique influences on behavior problems. The second option is to analyze maternal and paternal data separately (e.g., Soenens, Luyckx, Vansteenkiste, Duriez, & Goossens, 2008). This separate option can reveal whether mothering and fathering function similarly, but researchers rarely test for differences between mothering and fathering because common statistical techniques (e.g., r to z transformations) assume independent samples, an assumption that is violated in family-

based datasets. The third option is to include separate variables indexing mothering and fathering simultaneously in the same analysis (e.g., Bean, Barber, & Crane, 2006). This simultaneous option can reveal whether mothering and fathering are each unique incremental predictors of behavior problems. Mothers' and fathers' behaviors may function similarly and make independent contributions to adolescents' adjustment (sometimes referred to as additive models; e.g., McElwain, Halberstadt, & Volling, 2007). However, it is also possible that the way in which the father's behavior relates to adolescent adjustment depends, in part, on the way in which the mother behaves toward the adolescent. The simultaneous option also provides an opportunity to test, via mother X father interactions, whether the effect of one parent is conditioned by the behavior of the other parent. The same interactions also can detect whether similarities or differences in parenting between mothers and fathers are associated with behavior problems (see Laird & De Los Reyes, 2013). An interactive model would suggest, for example, that the detrimental effects of negative fathering behaviors could be offset by positive mothering behaviors (e.g., Field, 1995) such that poor outcomes would only be expected when both mothers and fathers engage in negative behaviors (i.e., lack knowledge or are psychologically controlling).

There is some evidence that adolescents perceive mothers as using more psychological control than fathers (Barber & Harmon, 2002), that adolescents believe that mothers are more knowledgeable than fathers about their whereabouts, friends, and activities (Crouter & Head, 2002), and that adolescents report disclosing more to mothers than fathers (Keijsers, Branje, VanderValk, & Meeus, 2010). Previous studies that analyzed mothers and fathers separately found more maternal, but not paternal, knowledge about adolescents' activities during the previous day was related to less adolescent deviance in cross-sectional analyses (Waizenhofer, Buchanan, & Jackson-Newsom, 2004), and that both mothers' and fathers' psychological control predicted change in adolescents' adjustment (Barber, 1996). Previous studies that tested mothering and fathering simultaneously found that maternal, but not paternal, psychological control was related to adolescents' adjustment (Baron & MacGillivray, 1989) and that externalizing and internalizing problems were associated with fathers' psychological control only when adolescents also perceived their mothers as being high in psychological control (Rogers, Buchanan, & Winchell, 2003).

Even rarer than examining differences between mothers' and fathers' parenting is whether the gender composition of the dyad matters. In one study that examined the association of psychological control of mothers and fathers with aggression of sons and daughters, fathers' psychological control was related to adolescents' aggression when adolescents perceived low quality relationships with their mothers, and mothers' psychological control was related to adolescents' aggression when adolescents perceived low quality relationships with their fathers (Murray, Dwyer, Rubin, Knighton-Wisor, & Booth-LaForce, 2013). However, sons did not have higher levels of aggression if they had a high quality relationship with their father, even if their mother was high in psychological control. In another study that examined mother-daughter, mother-son, father-daughter, and father-son dyads, Barber (1996) found a link between psychological control and children's depression only for mother-daughter dyads and a link between behavioral control and children's depression only for father-son dyads. These intriguing findings suggest that it is important not only to understand independent and joint contributions of mothering and fathering to adolescents'

adjustment but also to examine how mothers' and fathers' behavior might be differently related to the adjustment of sons and daughters.

The Present Study

The present study extends prior work by providing a longitudinal examination of associations of psychological control and knowledge with adolescents' externalizing and internalizing behaviors, examining adolescents' perceptions of mothers and fathers separately and jointly to understand both additive and interactive links between mothers' and fathers' parenting and adolescents' adjustment. In the present study, we controlled for adolescents' externalizing and internalizing problems one year prior to the assessment of psychological control and knowledge. Doing so provided the opportunity to examine whether psychological control and knowledge about adolescents' whereabouts, friends, and activities were related to subsequent externalizing and internalizing problems while controlling for prior adjustment (which may have influenced the extent to which mothers and fathers behaved in autonomy restrictive or autonomy supportive manners; see Albrecht, Galambos, & Jansson, 2007). Therefore, controlling for early externalizing and internalizing was an important design feature of this study. The rationale for controlling for both prior externalizing and internalizing was to take a conservative approach in testing whether psychological control and knowledge were related to subsequent externalizing and internalizing above and beyond a range of adjustment problems that could have led to higher or lower levels of psychological control or knowledge in the first place.

Our research was guided by the overarching question of whether adolescents' perceptions of their mothers' and fathers' psychological control and knowledge predict adolescents' externalizing and internalizing problems. More psychological control and less knowledge were expected to predict more externalizing and internalizing problems. We addressed four different, but complementary, issues regarding the functioning of mothering and fathering using the second and third analysis options described earlier. First, using the separate option, we modeled how mothering and fathering are separately associated with adolescents' externalizing and internalizing problems. To do so, we used mixed effects modeling, which allowed formal tests of whether mothers' and fathers' behavior are similarly linked with change in behavior problems. We expected mothering and fathering to be equivalent predictors of change in behavior problems. Second, using the simultaneous option, we tested whether mothering and fathering are additive predictors of change in behavior problems. We expected that both mothering and fathering would account for unique variance in subsequent behavior problems. Third, also using the simultaneous option, we tested whether mothering and fathering are interactive such that the effect of one parent is conditioned by the behavior of the other parent. For psychological control, we hypothesized that the largest increases in externalizing and internalizing problems would be found for adolescents who perceived both their mothers and fathers to be high in psychological control. In contrast, we hypothesized that we would find a "one-is-enough" effect of parental knowledge such that either parent's knowledge would be most strongly associated with decreases in externalizing and internalizing problems when the other parent lacked knowledge of their adolescents' whereabouts and activities. Fourth, we tested whether information pertinent to each of the other three options differs for sons and daughters, or in other words, whether mothering and

fathering are differentially associated with behavior problems for sons and daughters. Each hypothesis was tested using parallel measures from early (i.e., ages 12–14) and middle (i.e., ages 15–17) adolescence to determine whether associations differed developmentally. Likewise, each hypothesis was tested using mother and adolescent reports of behavior problems to determine whether associations differed as a function of informant.

Method

Participants

The families in the current investigation were participants in the longitudinal, multi-site Child Development Project (Dodge, Bates, & Pettit, 1990). Participants were recruited when the children entered kindergarten in 1987 or 1988 at three sites: Knoxville and Nashville, TN and Bloomington, IN. Parents were approached at random during kindergarten preregistration and asked if they would participate in a longitudinal study of child development. About 15% of children at the targeted schools did not preregister; these children were recruited on the first day of school or by letter or telephone. Of those asked, approximately 75% agreed to participate.

The sample consisted of 585 families at the first assessment. Data for the present analyses were drawn from annual follow-up assessments when children were ages 12 to 17. Eighty-nine percent of the original sample ($n = 518$) provided data during one or more of the follow-up assessments. Participants providing data were of higher kindergarten socioeconomic status, $t(568) = 2.74, p = .006$, and were more likely to be European American, $\chi^2(2) = 9.18, p = .01$, compared to the portion of original sample that did not provide data, but did not differ by gender. Males comprised 51% of the analysis sample. Eighty-three percent of the participants were European American, 16% were African American, and 1% were from other ethnic groups. Families' Hollingshead (1979) socioeconomic status when the children were in kindergarten ranged from 8 to 66 ($M = 40.10, SD = 14.34$), which corresponds to a range from unskilled laborers to professionals such as doctors and lawyers.

Procedures and Measures

Psychological control and knowledge—At ages 13 and 16, adolescents completed measures assessing their perceptions of their mothers' and fathers' psychological control and knowledge. At both ages 13 and 16, 80% of adolescents reported on both parents, 19% of adolescents on just mothers, and 1% of adolescents on just fathers. Our analysis scheme made use of all available data and did not restrict the sample to adolescents only reporting on both parents. Adolescents reported separately on their mothers' and fathers' psychological control. Each of 11 items developed by Barber (1996; Barber, Olsen, & Shagle, 1994; e.g., My mother/father is less friendly when I don't see things her/his way, My mother/father likes to tell me how to think and feel all the time) was rated on a 3-point scale with 1 = *not like her/him*, 2 = *somewhat like her/him*, and 3 = *a lot like her/him*. The items were averaged to create scales reflecting adolescents' perceptions of their mothers' and fathers' psychological control ($\alpha = .76$ and $.78$ for mothers and fathers, respectively, at age 13 and $\alpha = .86$ and $.83$ for mothers and fathers, respectively, at age 16). This

psychological control scale has also been found to be a valid and reliable measure in previous research (e.g., Barber et al., 1994). Adolescents also reported on items developed by Steinberg, Fletcher, and Darling (1994; see also Fletcher, Steinberg, & Williams-Wheeler, 2004) reflecting how much their mothers and their fathers really know about where they go at night, where they are most afternoons after school, how they spend money, what they do with free time, and who their friends are, using a 3-point scale with 1 = *she/he doesn't know about these things*, 2 = *she/he knows a little*, 3 = *she/he knows a lot*. The five items were averaged to create scales reflecting adolescents' perceptions of their mothers' and fathers' knowledge of the adolescents' whereabouts and activities ($\alpha = .65$ and $.71$ for mothers and fathers, respectively, at age 13 and $\alpha = .78$ and $.81$ for mothers and fathers, respectively, at age 16). This measure of parental knowledge has demonstrated good psychometric properties in previous research as well (Fletcher et al., 2004).

Adolescents' externalizing and internalizing behavior—Adolescents and their mothers completed the Youth Self Report and Child Behavior Checklist, respectively (Achenbach, 1991) when adolescents were ages 12, 14, 15, and 17. Adolescents and mothers reported on each item using a 3-point scale with 0 = *not true*, 1 = *somewhat or sometimes true*, and 2 = *very or often true*. The 30 items (for adolescent report) and 33 items (for mother report) in the externalizing behavior scale (e.g., whether the child gets in fights or is disobedient at school) were summed to create measures of adolescent-reported and mother-reported externalizing behavior problems in each year. The 31 items in the internalizing behavior scale (e.g., whether the child cries a lot or is too fearful or anxious) were summed to create measures of internalizing behavior problems in each year. Alphas exceeded $.80$ for all years and both reporters.

Results

Preliminary Analyses

We began by examining whether adolescents' perceptions of their mothers' psychological control and knowledge differ from their perceptions of their fathers' psychological control and knowledge. T-tests revealed that at both ages 13 and 16, adolescents perceived their mothers as being more psychologically controlling and having more knowledge than their fathers, $t(350) = 2.89$ and $t(349) = 10.54$, for psychological control and knowledge, respectively, at age 13 and $t(365) = 2.10$ and $t(367) = 9.61$ for psychological control and knowledge, respectively, at age 16, all $p < .001$. Descriptive statistics for the psychological control and knowledge variables are provided in Table 1. Despite these mean level differences, there were also strong positive correlations between adolescents' perceptions of their mothers' and fathers' psychological control and knowledge, as hypothesized (ranging from $.44$ – $.71$, all $p < .001$; see Table 1). Taken together, these findings suggest a degree of rank-order consistency along with mean level differences. That is, adolescents who perceived their mothers as being psychologically controlling also perceived their fathers as being psychologically controlling, while at the same time regarding their mothers as being more psychologically controlling than their fathers.

Mothers' and Fathers' Autonomy-Relevant Parenting and Adolescents' Externalizing and Internalizing Problems

Our primary research question addressed whether adolescents' perceptions of their mothers' and fathers' psychological control and knowledge relate to adolescents' externalizing and internalizing problems. As shown in Table 1, bivariate correlations indicated that all four psychological control variables were significantly related to more externalizing and internalizing problems and that all four knowledge variables were significantly related to fewer externalizing and internalizing problems reported by mothers and adolescents at most times points (ages 12, 14, 15, and 17).

Testing the equivalence of mothering and fathering—We wanted to know if mothering and fathering predict change in externalizing and internalizing behavior to the same degree when they are not competing with one another. To test within-person differences in mothering and fathering we stacked our dataset so that we had a single psychological control variable and a single knowledge variable, with a separate variable indexing mother versus father. Stacking the dataset in this way resulted in two rows of data for each participant, with one row specific to mothering and one row specific to fathering, with the other variables identical in the two rows (e.g., for adolescent sex, mother versus adolescent report of behavior problems, early versus middle adolescence. We then fit a mixed-effect regression model to this dataset using MPLUS (Muthén & Muthén, 2010). The “type = complex” specification was used to model parent, informant, and developmental period as within-person effects (i.e., repeated measures) and to adjust the standard errors to take into account the nested data structure. Missing data were handled using full information maximum likelihood estimation, which results in estimates that are generally better than estimates obtained with listwise deletion or other ad hoc methods (Schafer & Graham, 2002). The bivariate regression model tested psychological control and knowledge as predictors of externalizing and internalizing problems controlling for prior externalizing and internalizing problems (i.e., controlling for age 12 problems in the prediction of age 14 problems and controlling for age 15 problems in the prediction of age 17 problems), adolescent sex, developmental period, informant, and parent. The main effects of adolescent sex, psychological control and knowledge on change in externalizing and internalizing problems were tested as between-person effects with effects pooled over parent, developmental period, and informant. In a hierarchical fashion, we added a series of two-way interaction terms to test whether effects differed for girls and boys, mothers and fathers, in early versus late adolescence, and when predicting mothers' versus adolescents' reports of externalizing and internalizing problems. The interaction terms tested sex as a between-person effect but tested parent, developmental period, and informant as within-person effects. Autonomy-relevant parenting interactions with sex, parent, developmental period, and informant were tested in individual models to maximize statistical power. In a similar manner, we tested three-way interaction terms to test whether differences in mothers' and fathers' effects differed for sons and daughters. The three-way interactions were tested controlling for all two-way interactions. All models were just-identified and thus provided a perfect fit to the data.

Step 1 in Table 2 summarizes main effects when predicting rank-order change in externalizing and internalizing problems. There was stability in both externalizing and internalizing problems. Girls experienced smaller decreases in internalizing problems than did boys. There was a bigger decrease in externalizing problems in middle adolescence than in early adolescence. Adolescents reported smaller decreases in both externalizing and internalizing problems than did mothers. More psychological control was associated with more adolescent externalizing and internalizing problems when controlling for prior externalizing and internalizing problems, developmental period, informant, and parent. The non-significant main effects for knowledge indicate that more knowledge was not significantly associated with rank-order increases in externalizing or internalizing problems. The main effects were qualified by four significant interactions (see Table 2, Steps 2 and 3).

Three of the four significant interactions involved adolescent sex. Decomposition of the psychological control X sex interaction revealed that greater psychological control was associated with rank-order increases in externalizing problems for girls, $B = 2.74$, $S.E. = .70$, $\beta = .15$, $p < .001$, but not for boys, $B = .65$, $S.E. = .60$, $\beta = .03$, $p = .28$. Decomposition of the knowledge X sex interactions revealed that greater knowledge was associated with rank-order decreases in both externalizing and internalizing problems for boys, $B_s = -2.02$ & -1.23 , $S.E.s = .52$ & $.48$, $\beta_s = -.12$ & $-.09$, $ps < .001$ & $.01$, but not for girls, $B_s = .35$ & $.75$, $S.E.s = .64$ & $.66$, $\beta_s = .02$ & $.04$, $ps = .59$ & $.26$. Decomposition of the knowledge X informant interaction revealed that knowledge was not associated with either parent-reported, $B = .54$, $S.E. = .43$, $\beta = .04$, $p = .21$, or adolescent-reported internalizing problems, $B = -.99$, $S.E. = .62$, $\beta = -.06$, $p = .11$, although the non-significant associations differed in valence.

Rank-order increases in externalizing and internalizing problems were associated with higher levels of psychological control by mothers, $B_s = 1.52$ & 1.30 , $S.E.s = .53$ & $.55$, $\beta_s = .08$ & $.07$, $ps = .004$ & $.02$, for externalizing and internalizing problems, respectively, and fathers, $B_s = 2.82$ & 2.11 , $S.E.s = .70$ & $.67$, both $\beta_s = .11$, $ps = .03$ & $.04$. Although fathers' coefficients were larger than mothers' coefficients, the non-significant psychological control X parent interaction terms show that the associations between psychological control and change in adolescents' externalizing and internalizing problems did not differ significantly across mothers and fathers.

Fathers' greater knowledge was significantly associated with less externalizing problems, $B = -1.13$, $S.E. = .47$, $\beta = -.07$, $p = .02$, but not with less internalizing problems, $B = -.49$, $S.E. = .46$, $\beta = -.03$, $p = .29$, whereas mothers' knowledge was not significantly associated with externalizing or internalizing problems, $B_s = -.46$ & $.03$, $S.E.s = .55$ & $.54$, $\beta_s = -.02$ & $.01$, $ps = .41$ & $.96$. However, the non-significant parent X knowledge interaction terms show that the associations between knowledge and adolescents' externalizing and internalizing problems did not differ across mothers and fathers.

The non-significant psychological control X developmental period and knowledge X developmental period interaction terms show that the associations linking behavior problems with psychological control and knowledge did not differ across early and late adolescence. Likewise, the non-significant psychological control X informant and knowledge X

informant interaction terms show that the associations between psychological control and behavior problems did not differ across mothers' and adolescents' reports of the adolescents' behavior problems. Finally, the non-significant 3-way interactions show that differences between mothers and fathers are equivalent for boys and girls.

In sum, results show that mothers' and fathers' autonomy-relevant parenting are equivalent predictors of change in externalizing and internalizing problems, and that associations generalize across early and middle adolescence, and across mother and adolescent reports of behavior problems. However, results also show that psychological control is more strongly associated with rank-order increases in girls' externalizing problems than with boys' externalizing problems, and that parental knowledge is more strongly associated with rank-order decreases in boys' externalizing problems and internalizing problems than with girls' problems.

Testing additive and interactive contributions of mothering and fathering—To test whether mothering and fathering are additively or interactively associated with adolescents' externalizing and internalizing problems, we reorganized our dataset so that mothers' and fathers' psychological control and knowledge were separate variables. The reorganization was necessary to model mothers' and fathers' contributions as separate, but potentially competing and interacting, predictors of behavior problems. The bivariate regression model tested mothers' and fathers' psychological control and mothers' and fathers' knowledge as predictors of externalizing and internalizing problems controlling for prior externalizing and internalizing problems, adolescent sex, developmental period and informant. As before, the effects of sex, psychological control and knowledge were tested as between-person effects pooled across developmental period and informant as were the mother X father interactions. Models were just-identified and thus provided a perfect fit to the data.

Main effects (shown in Step 1, Table 3) again show stability in behavior problems, that girls experienced smaller decreases in internalizing problems than did boys, that there were bigger decreases in externalizing problems in middle than early adolescence, and that adolescents reported smaller decreases in externalizing and internalizing problems than did mothers. More father psychological control was uniquely associated with more adolescent externalizing and internalizing problems and more father knowledge was associated with less adolescent externalizing problems. Mother psychological control and knowledge were not significant unique predictors of internalizing or externalizing problems. Main effects were qualified by one significant interaction. Father knowledge interacted with adolescent sex in predicting externalizing behavior such that more father knowledge was associated with rank-order decreases in externalizing problems for boys, $B = -2.41$, $S.E. = .70$, $\beta = -.16$, $p < .001$, but not for girls, $B = .02$, $S.E. = .70$, $\beta = .00$, $p = .98$.

The non-significant mother X father interaction terms show that links between fathering and behavior problems are not conditioned by mothering and by extension that consistencies or inconsistencies between mothering and fathering are not associated with internalizing or externalizing problems. The non-significant mother X father X sex interaction terms show that such associations are not further conditioned by adolescent sex. In sum, results show

that fathers' but not mothers' psychological control is a unique predictor of adolescents' externalizing and internalizing problems, and that fathers' (but not mothers') knowledge is a unique predictor of boys' (but not girls') externalizing problems.

Discussion

Previous research has demonstrated the importance of distinguishing between psychological control and knowledge as two autonomy-related aspects of parenting during adolescence and has documented the importance of considering contributions of both mothers and fathers to adolescents' adjustment. The present study contributes to the literature by providing a longitudinal examination of associations of psychological control and knowledge with adolescents' externalizing and internalizing behaviors. It examines adolescents' perceptions of mothers and fathers separately and jointly to understand both additive and interactive links between mothers' and fathers' parenting and adolescents' adjustment. More parental psychological control predicted increases in boys' and girls' internalizing problems and girls' externalizing problems. More parental knowledge predicted decreases in boys' externalizing and internalizing problems. As hypothesized, there were no statistically significant difference between mothers and fathers in the degree to which either form of autonomy-relevant parenting predicted externalizing and internalizing behavior problems. However, when mothers' and fathers' psychological control were tested as simultaneous predictors, only fathers' psychological control accounted for unique variance in boys' and girls' externalizing and internalizing problems. Likewise, when mothers' and fathers' knowledge were tested as simultaneous predictors, only fathers' knowledge accounted for unique variance in boys' externalizing problems. The effect of one parent's behavior was not conditioned by the other parent's behavior, and findings generalize across early and middle adolescence as well as across mother and adolescent reports of behavior problems.

Although standardized betas for fathers' psychological control were larger than standardized betas for mothers' psychological control, and father' knowledge, but not mothers' knowledge was significantly associated with less externalizing problems, statistical tests of differences in associations for mothers and fathers showed that mothers and fathers were equivalent predictors of adolescents' behavior problems. Two previous studies (i.e., Barber, 1996; Soenens et al., 2008) analyzed mothers' and fathers' psychological control separately and reported very similar patterns for mothers and fathers, but they did not test whether mothers' and fathers' associations were equivalent. Waizenhofer et al. (2004), in contrast, found significant associations between adolescents' deviance and mothers' knowledge, but not fathers' knowledge, but again, did not test whether mothers' and fathers' associations differed statistically from one another. Findings from the current study demonstrated that there were no differences in how mothers' and fathers' autonomy-relevant parenting were linked with subsequent externalizing and internalizing problems. These results suggest that mothering and fathering function very similarly. Nonetheless, only fathers' psychological control was uniquely associated with increases in externalizing and internalizing problems, and only fathers' knowledge was uniquely associated with decreases in externalizing problems. These results contrast with Baron and MacGillivray's (1989) results showing unique effects for mothers', but not fathers', psychological control. However, Baron and MacGillivray (1989) did find unique effects for fathers', but not mothers', rejection of the

child, suggesting that fathering has unique value. More broadly, results from the current study are consistent with Pleck and Masciadrelli's (2004) review of research on parental involvement showing evidence of positive associations between fathers' involvement and child outcomes. Furthermore, results add to the growing body of evidence that fathers make a unique contribution to their children's development (Parke, 2002).

When the two indices of autonomy-relevant parenting were tested as competing predictors of change in behavior problems, findings showed sex differentiation. Although more psychological control predicted rank-order increases in internalizing problems for both boys and girls, more psychological control only predicted increases in girls' externalizing problems. In contrast, more parental knowledge predicted rank-order decreases in both internalizing and externalizing problems, but only among boys. As in previous studies that have examined whether parenting is related differently to girls' and boys' adjustment (e.g., Murray et al., 2013), these findings stress the importance of children's gender as well as incorporating information about both mothering and fathering.

Adolescents perceived their mothers as engaging in more psychological control and having more knowledge than their fathers. These mean-level differences are consistent with prior studies showing that mothers use more psychological control than do fathers (Barber & Harmon, 2002), and the mothers are more knowledgeable than fathers (Waizenhofer et al., 2004). Despite these mean level differences in adolescents' perceptions of their mothers and fathers, we also found moderate correlations between adolescents' perceptions of their mothers' and fathers' psychological control and knowledge. Several factors could have accounted for the moderate correlations between adolescents' perceptions of their mothers' and fathers' parenting. First, mothers and fathers may show similarities in parenting because they are responding to the stimulus of the same child. In addition, because of assortative mating in which partners who are similar in attitudes and beliefs tend to select into relationships with one another (Luo & Klohnen, 2005), one would expect a certain degree of similarity between parents. Once in a relationship with one another, partners also tend to influence each other and to become more similar over time (Luo & Klohnen, 2005). Therefore, as parents operate as a co-parenting unit, they may adopt each other's parenting practices, for better or worse. It may be adaptive for mothers and fathers to parent in similar ways because they may then be more consistent in their responses to their child and less in conflict as coparents (Belsky, Crnic, & Gable, 1995). Finally, adolescents' biases in how they perceive their parents also might have produced cross-parent similarities on the measure.

Strengths of the current study include the longitudinal design, replication of associations across two developmental periods, and replication of associations across mothers' and adolescents' reports of behavior problems. Controlling for initial levels of adjustment in evaluating the impact of the parenting variables on subsequent adjustment makes a parenting effect more plausible. However, there still could be a child effect embedded in the finding. Just as the field has increasingly recognized that parental knowledge reflects a combination of what the parent does and what the child does (e.g., Stattin & Kerr, 2000), the same case could be made for psychological control. These parenting behaviors represent attempts by parents to solve an attitude or behavior problem they perceive their adolescent to have. To

the extent that the CBCL or YSR captures all of these perceived problems at the initial assessment, then psychological control can be conceptualized as having an effect on subsequent adjustment above and beyond the adolescent's initial adjustment problems. However, it is possible that psychological control predicts growth in adjustment problems because it reflects qualities of the adolescent such as hostile attitudes or oversensitivity that are not well measured by the CBCL or YSR.

Primary weaknesses of the study include the reliance on adolescents' reports of mothers' and fathers' parenting. Research on psychological control has emphasized the importance of adolescents' perceptions that they are being controlled (Barber & Harmon, 2002), which is how we operationalized psychological control in the present study. Nevertheless, including parents' perspectives on their own psychological control would help test the generalizability of our findings. Likewise, knowledge has been operationalized in the literature in a variety of ways that reflect both what parents know and how they come to know it (Racz & McMahon, 2011). Our measure of knowledge captured adolescents' perceptions of how much their mothers and fathers know about their friends, how they spend their time, and so forth but did not capture what parents might do to gain such knowledge.

Finally, evidence of generalizability across parent, developmental period, and informant is based on a failure to detect significant interactions, which is a function of both the magnitude of the effect and the statistical power of the study. Power analyses conducted in G*Power indicate that the current study had sufficient power (.89) to detect a small effect ($f^2 = .02$; Cohen, 1992) for a single beta in a 10-predictor regression model (Faul, Erdfelder, Buchner, & Lang, 2009). Although the power analysis only approximates the mixed effects model used in the current study, the results suggest that statistical power should have been sufficient to detect substantively meaningful interaction effects given that within-person designs are typically more statistically powerful than between-person designs.

Conclusion

Findings from the present study support two main conclusions. First, both fathers' and mothers' autonomy-relevant parenting were important. More psychological control predicted rank-order increases from age 12 to age 17 in boys' and girls' internalizing problems and girls' externalizing problems, and there were no differences in associations for mothers and fathers. Although more knowledge only predicted change in boys' behavior problems over time, there were also no differences in associations for mothers and fathers. When incremental effects of mothers' and fathers' behaviors were examined, however, fathers' psychological control and knowledge conferred risks and benefits above and beyond mothers' psychological control and knowledge, suggesting the importance of both fathers and mothers in helping adolescents establish autonomy appropriately. Second, although adolescents perceived their mothers as being more psychologically controlling and more knowledgeable than their fathers, they also perceived their parents as being similar to one another in these forms of autonomy-relevant parenting. Taken together, the findings support the importance of mothers' and fathers' psychological control and knowledge as autonomy-relevant aspects of parenting that are related to girls' and boys' adjustment during adolescence.

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Table 1
Descriptive Statistics and Correlations among Parenting Variables and Behavior Problem Variables

	Age	n	M	SD	1	2	3	4	5	6	7	8	9
1. Female Sex	--	518	--	--	--								
2. M Psych Control	13	434	1.42	.34	-.00	--							
3. F Psych Control	13	355	1.38	.34	-.09	.71***	--						
4. M Psych Control	16	457	1.45	.42	.10*	.37***	.23***	--					
5. F Psych Control	16	370	1.40	.37	.04	.25***	.38***	.44***	--				
6. Mother knowledge	13	434	2.60	.37	.05	-.30***	-.24***	-.17**	.00	--			
7. Father knowledge	13	355	2.42	.44	-.09	-.24***	-.28***	-.18**	-.17**	.63***	--		
8. Mother knowledge	16	457	2.58	.43	.19***	-.23***	-.12*	-.35***	-.13*	.34***	.24***	--	
9. Father knowledge	16	372	2.36	.52	.05	-.08	-.08	-.18***	-.25***	.20***	.38***	.51***	--
10. M-R Externalizing	12	459	9.24	7.14	-.02	.13**	.24***	.16**	.23***	-.17***	-.16**	-.21***	-.16**
11. M-R Internalizing	12	459	7.37	6.39	.07	.11*	.13*	.07	.10	-.03	-.00	-.10*	-.08
12. A-R Externalizing	12	409	11.12	6.42	-.08	.32***	.30***	.21***	.21***	-.32***	-.26***	-.30***	-.18**
13. A-R Internalizing	12	409	11.46	7.25	.09	.25***	.18**	.22***	.10	-.15**	-.07	-.22***	-.11
14. M-R Externalizing	14	412	8.20	8.16	-.03	.17**	.24***	.19***	.27***	-.17**	-.17**	-.29***	-.15**
15. M-R Internalizing	14	410	6.17	5.97	.07	.20***	.22***	.11*	.08	-.05	-.05	-.20***	-.15*
16. A-R Externalizing	14	411	10.46	6.72	-.05	.27***	.28***	.26***	.29***	-.33***	-.26***	-.38***	-.22***
17. A-R Internalizing	14	411	9.45	7.43	.19***	.22***	.23***	.25***	.14*	-.17**	-.19**	-.27***	-.13*
18. M-R Externalizing	15	410	7.83	8.07	-.00	.14**	.25***	.22***	.22***	-.19***	-.20**	-.30***	-.17**
19. M-R Internalizing	15	410	6.06	6.30	.09	.07	.18**	.14**	.11	-.02	-.09	-.21***	-.13*
20. A-R Externalizing	15	405	10.99	6.98	.02	.26***	.20**	.32***	.31***	-.24***	-.23***	-.37***	-.25***
21. A-R Internalizing	15	405	9.87	7.87	.22***	.21***	.17**	.34***	.19**	-.12*	-.15**	-.29***	-.19**
22. M-R Externalizing	17	430	7.19	7.62	-.01	.14**	.22***	.22***	.28***	-.13*	-.12*	-.17**	-.19**
23. M-R Internalizing	17	427	5.90	6.18	.13*	.09	.23***	.13**	.12*	-.03	-.04	-.06	-.10
24. A-R Externalizing	17	429	9.54	6.94	-.07	.17**	.18**	.30***	.36***	-.12*	-.14*	-.29***	-.28***

	Age	n	M	SD	1	2	3	4	5	6	7	8	9
25. A-R Internalizing	17	427	9.05	7.74	.20***	.13*	.17**	.27***	.25***	-.07	-.13*	-.21***	-.17***

* $p < .05$.

** $p < .01$.

*** $p < .001$. M-R = Mother-reported. A-R = Adolescent-reported.

Table 2
Psychological Control and Knowledge as Predictors of Externalizing and Internalizing Problems

Predictor	Externalizing Problems			Internalizing Problems		
	B	SE	β	B	SE	β
Step 1						
Prior Externalizing	.64	.03	.63***	.06	.03	.07*
Prior Internalizing	-.01	.03	-.01	.51	.03	.53***
Female	-.19	.31	-.03	1.07	.33	.08***
Developmental Period	-.66	.31	-.04*	.56	.29	.04
Informant	.80	.27	.05**	1.02	.26	.07***
Parent	.00	.04	.00	.00	.03	.00
Psychological Control	1.80	.47	.09***	1.58	.50	.08**
Knowledge	-.80	.43	-.05	-.24	.42	-.02
Step 2A						
PC X Female	1.93	.91	.07*	1.14	.96	.05
Knowledge X Female	2.48	.88	.10**	1.79	.84	.08*
Step 2B						
PC X Parent	.62	.72	.02	.70	.64	.02
Knowledge X Parent	-.65	.50	-.03	-.48	.53	-.02
Step 2C						
PC X DP	.57	1.03	.02	-.32	.90	-.01
Knowledge X DP	1.42	.94	.06	.63	.83	.03
Step 2D						
PC X Informant	-.84	.75	-.03	-.08	.79	-.00
Knowledge X Informant	-.94	.64	-.04	-1.41	.65	-.06*
Step 3						
PC X Parent X Female	.98	1.41	.02	.25	1.25	-.01
Knowledge X Parent X Female	1.63	1.03	.05	.85	1.10	.04

* $p < .05$.

***
 $p < .01$,
 ***
 $p < .001$.

Note: Female coded 0 = male, 1 = female. Developmental Period (DP) coded 0 = early adolescence, 1 = late adolescence. Behavior problem informant coded 0 = mother, 1 = adolescent. Parent coded 0 = mother, 1 = father. PC = Psychological Control.

Table 3
Mothing and Fathering as Unique Predictors of Externalizing and Internalizing Problems

Predictor	Externalizing Problems			Internalizing Problems		
	B	SE	β	B	SE	β
Step 1						
Prior Externalizing	.63	.03	.61***	.05	.03	.05
Prior Internalizing	-.01	.03	-.01	.52	.03	.53***
Female	-.57	.33	-.04	1.02	.34	.07**
Developmental Period	-.68	.31	-.05*	.55	.29	.04
Informant	.83	.27	.06**	1.04	.26	.07***
Mother (M) Knowledge (K)	.28	.65	.02	.42	.66	.02
Father (F) Knowledge	-1.13	.50	-.08*	-.65	.52	-.05
M. Psychological Control (PC)	.40	.70	.02	.24	.67	.01
F. Psychological Control	2.29	.88	.11*	2.11	.80	.11**
Step 2A						
M. K. X Female	-.21	1.28	-.01	.63	1.31	.03
F. K. X Female	2.37	1.00	.11*	.92	1.06	.05
M. PC. X Female	.62	1.28	.02	.33	1.27	.01
F. PC. X Female	1.93	1.58	.07	1.46	1.48	.06
Step 2B						
M. K. X F. K.	-1.95	1.40	-.06	-.29	1.29	-.01
M. PC X F. PC	.22	1.48	.01	1.92	1.54	.05
Step 3						
M. K. X F. K. X Female	-1.65	2.41	-.04	-3.53	2.11	-.09
M. PC X F. PC X Female	2.26	2.73	.04	4.95	2.73	.10

* $p < .05$,

** $p < .01$,

*** $p < .001$.

Note: Female coded 0 = male, 1 = female. Developmental Period coded 0 = early adolescence, 1 = late adolescence. Behavior problem Informant coded 0 = mother, 1 = adolescent. Know. = Knowledge. PC = Psychological Control.