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Permalink

<https://escholarship.org/uc/item/1z1877jm>

Journal

Family Process, 57(3)

ISSN

0014-7370

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Publication Date

2018-09-01

DOI

10.1111/famp.12330

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Peer reviewed



Published in final edited form as:

Fam Process. 2018 September ; 57(3): 679–693. doi:10.1111/famp.12330.

Parent–Child Attunement Moderates the Prospective Link between Parental Overcontrol and Adolescent Adjustment

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Abstract

Parental overcontrol (OC), behavior that intrusively or dominantly restricts child autonomy, has been identified as a transdiagnostic risk factor for youth. However, it is as yet unknown whether the association between parental OC and child maladjustment remains even when OC is exerted infrequently or by attuned parents. Rather, the selective use of OC might steer children away from danger. Taking a developmental psychopathology approach, this study focuses on the larger parent–child relationship context, testing whether either the dose at which parents demonstrate OC or the degree to which children perceive their parents as attuned determines whether OC is risky or protective for adolescents' adjustment. Among a community sample of 114 families of children followed from the ages of 12–18, we examine whether OC, behaviorally coded from triadic mother–father–child discussions in middle childhood, is associated with later risky behavior and anxiety symptoms in adolescence. Overcontrol exerted by either mothers or fathers had a curvilinear effect on adolescent risky behaviors, and this effect was moderated by children's perceived attunement. Although OC generally was associated with increased risky behaviors, low doses of OC or OC exerted by highly attuned parents protected against engagement in risky behaviors. No main effect of OC was observed on adolescent anxiety; however, mothers' OC interacted with perceived parental attunement, such that OC exerted by less attuned parents predicted greater anxiety. Results underscore that the effect of parenting behaviors depends on the larger parent–child relationship context.

Keywords

Risky Behavior; Anxiety; Overcontrol; Adolescence; Parent–Child Relationships

Despite efforts to link specific parenting practices to the development of discrete child outcomes, the same overt parenting behavior is often associated with both detrimental and beneficial sequelae. This problem of multifinality is exemplified in the literature on parental control, which has been shown to confer both transdiagnostic risk (e.g., Bögels & Brechman-Toussaint, 2006) and protection (e.g., Stice, Barrera, & Chassin, 1993). Focusing on one type of controlling parenting, parental overcontrol (OC), we test whether even dominant, intrusive, and autonomy-limiting control in childhood can have either a beneficial

or detrimental effect on adjustment, depending on its dose. Using a developmental psychopathology framework, we then address the problem of multifinality by measuring the parent–child relationship as a salient context (Darling & Steinberg, 1993) that may influence whether OC amplifies or attenuates engagement in risky behavior and anxiety symptoms. This study employs a longitudinal, multimethod design involving behaviorally coded data from mothers, fathers, and children, to test whether OC exerted infrequently or by highly attuned parents may protect rather than endanger youth from exhibiting risky behaviors and anxiety symptoms across the transition to adolescence.

PARENTAL OC

Although one of the core responsibilities of parents is to regulate child behavior, OC represents an extreme manifestation of this role, such that parents exert influence in ways that intrusively or dominantly restrict child autonomy (Grolnick & Pomerantz, 2009; Grusec & Davidov, 2007). OC can manifest as high vigilance, excessive regulation of child's routines, intrusion into child's decision-making, inhibition of child's motivation to solve problems independently, or constraint of child's emotions and cognitions (Bögels & Brechman-Toussaint, 2006; Borelli, Margolin, & Rasmussen, 2014). Thus, OC involves coercion, intrusiveness, and dominance, in contrast to forms of parenting structure (consistency, predictability, guidance) sometimes described as control elsewhere in the literature (Grolnick & Pomerantz, 2009).

Although both mothers and fathers report engaging in OC, it is unclear whether mothers' OC and fathers' OC influence children's adjustment differently, as research has primarily focused on mothers (Bögels & Brechman-Toussaint, 2006). Additionally, the majority of research on parental OC has been questionnaire-based, despite findings that observed and self-reported OC are only weakly correlated (e.g., Greco & Morris, 2002) and that observational measures of related constructs, such as autonomy granting, explain a greater portion of variance in child anxiety than do self-report measures (Wood, McLeod, Sigman, Hwang, & Chu, 2003). Naturalistic observation of OC is advantageous not only to address self-report pitfalls, such as shared-method variance and reporting biases, but also to isolate the effect of overt parenting behaviors, apart from parental attitudes or child attributions that may confound parent and child reports of those behaviors. In response to calls for observational studies of OC across both parents (Bögels & Brechman-Toussaint, 2006), this study rates OC from triadic (father–mother–child) discussions.

OC Confers Risk

Overcontrol confers risk for child maladjustment via excessive restriction of child autonomy. As described in self-determination theory, children have a need to experience a sense of volition and psychological freedom by acting in accordance with their own interests, values, and needs (Deci & Ryan, 1985). When OC prevents children from exerting independence in developmentally appropriate contexts, they may resort to exerting autonomy impulsively or indiscriminately. Additionally, children whose behaviors are generally externally controlled by parents have less opportunity to develop internal systems of behavioral regulation. Without internal regulation, children may have little incentive to conform to expectations in

situations that parents are unable to monitor (e.g., when alone or with peers). Therefore, OC may increase youths' engagement in risky behaviors, particularly across the transition to adolescence, as access to drugs and alcohol, opportunities for risky sex, and contact with deviant peers increase (Arnett, 2000). Indeed, both cross-sectionally and longitudinally, autonomy-restricting parenting puts children at increased risk for delinquency, substance abuse, and externalizing behavior (Herman, Dornbusch, Herron, & Herting, 1997; Rogers, Buchanan, & Winchell, 2003).

Similarly, autonomy restriction may account for links between OC and child anxiety. Impingement upon children's independent decisions about low-risk behaviors conveys that the world is unsafe, the child is not competent to cope independently, and the stakes for making the wrong decision are high (Becker, Ginsburg, Domingues, & Tein, 2010; Chorpita & Barlow, 1998; Wood et al., 2003). Children exposed to OC then learn both that the world is a hostile place and that they are not equipped to handle such a world; these beliefs confer increased likelihood of interpreting ambiguous or benign situations as threatening and avoiding facing these perceived threats, launching a cycle of increasingly anxious emotion and avoidant behavior. In support of this model, parental OC both cooccurs with and predicts anxiety in childhood and adolescence (Bögels & Brechman-Toussaint, 2006; Wood et al., 2003). Although anxiety symptoms typically decrease over the transition to adolescence (Grills-Taquechel, Norton, & Ollendick, 2010), OC exerted during this phase may maintain anxiety symptoms and keep youth on maladaptive trajectories (Pettit, Laird, Dodge, Bates, & Criss, 2001).

Notably, OC does not arise in a vacuum. Rather, the association between parental OC and youth anxiety is bidirectional such that more anxious children also elicit more controlling behavior from parents (see Crowley & Silverman, 2016, for review). Similarly, risky youth behaviors have evocative effects on parents such that parents attempt to exert more control over youth who act out (Anderson, Lytton, & Romney, 1986; Pettit et al., 2001), leaving parent and child locked in coercive cycles of mutual increasingly maladaptive behavior (Patterson, 1982).

Might OC Also Confer Benefit?

Although the detrimental sequelae of OC are well documented, it is unclear at what threshold OC begins to confer harm. Low doses of OC may be insufficient to restrict children's felt autonomy; rather, when used sparingly, dominant, intrusive parenting may instead effectively communicate that a given behavior or environment carries urgent peril. Correspondingly, structuring forms of parental control (Grolnick & Pomerantz, 2009), such as monitoring, rule setting, and discipline, display curvilinear associations with adolescent risk behaviors, such that at low and moderate levels, greater parental control is protective, but beyond a certain point, more controlling parenting is instead associated with more adolescent substance use (Stice et al., 1993), externalizing symptoms (Stice et al., 1993), risky sex (Miller, McCoy, Olson, & Wallace, 1986), and criminal delinquency (Harris-McKoy, 2016). However, as prior linear models of OC have not allowed for sufficient flexibility to detect possible curvilinear effects, it is unclear whether more extreme, autonomy-limiting forms of control similarly protect against adolescent risky behavior at

low levels. Similarly, restricting child autonomy may also protect against anxiety in some instances (e.g., parents who force children to “face their fears” to overcome avoidance) or at some doses (e.g., low or moderate levels of controlling behavior may prevent children from struggling to manage autonomy that exceeds their competence, a situation which may also foster anxiety; Bögels & Brechman-Toussaint, 2006). Therefore, this study uses curvilinear models to test for protective effects of OC at low doses, across both youth risky behaviors and anxiety symptoms.

OC IN CONTEXT: PARENTAL ATTUNEMENT

In addition to dose, the broader parent–child relational context also may be critical in determining whether OC is protective or harmful. Attuned parents demonstrate greater understanding of their children’s abilities and activities, as well as their thoughts, feelings, and desires (Holigrocki, Kaminski, & Frieswyk, 1999; Kohut, Stepansky, & Goldberg, 1984). Parental attunement may protect against the impact of OC in two ways, which we discuss below.

First, more attuned parents may be better able to flexibly match their use of OC to the changing demands of the environment and variable abilities of the child. Attuned parents may be more aware of circumstances in the child’s environment that pose real risk such that the repercussions for making the wrong choice are significant (e.g., association with gang-affiliated peers). Even highly controlling, intrusive, and autonomy-limiting parental behavior may be more protective than the alternative in the face of real threat (e.g., Baldwin, Baldwin, & Cole, 1990). Additionally, attuned parents may be able to better gauge the extent to which their children are equipped to handle the demands of the environment independently. Youths’ need for guidance is highly variable, both from one individual to another and within an individual across development and domain. Stage–environment fit theory highlights the importance of parents’ ability to synchronize their behaviors, including the extent to which they grant autonomy, with adolescents’ variable aptitudes (Eccles et al., 1993). Parents who have better knowledge of both the child and his environment may be better equipped to exert OC only as circumstances demand. Said differently, attunement may be a psychological prerequisite for sensitive parental behavior—parents who know their children and the context in which their children are embedded in this emotionally intimate way can target their behavior to match their children’s needs.

Second, adolescents may interpret OC exerted by attuned parents differently. Youth see attuned parents as understanding their internal states and supporting them in their goals. If OC is understood as a supportive attempt to help children reach their own objectives, felt autonomy is not constrained, and the downstream consequences of autonomy restriction on youth adjustment may be avoided. In support of this model, other contextual factors, such as ethnicity, have been shown to moderate the extent to which youth interpret OC as loving and protective (Mason, Walker-Barnes, Tu, Simons, & Martinez-Arrue, 2004). This framework also highlights the centrality of youth’s *perceptions* of attunement. Consistent with this conceptualization, child-reported (but not mother-reported) parent–child closeness moderates the association between OC and depressive symptoms in middle childhood (Sichko, Borelli, Rasmussen, & Smiley, 2015).

THE PRESENT STUDY

We examine the conditions under which parental OC in childhood predicts anxiety and risky behavior in adolescence. We propose that parent–child attunement is crucial in determining whether OC amplifies or attenuates symptoms. Using a behaviorally coded index of mothers' and fathers' OC, we test for associations between overcontrolling parenting behavior in middle childhood and risky behaviors and anxiety symptoms in adolescence, using both linear and curvilinear models to allow for maximum flexibility in detecting patterns. We predict that, across all or a majority of values of parental OC, more OC will predict more symptoms of risky behaviors (Hypothesis 1A) and anxiety (Hypothesis 1B). Next, we predict that these associations will depend on attunement such that when exposed to higher OC, children who view their parents as insensitive or unsupportive will have greater susceptibility to risky behaviors (Hypothesis 2A) and anxiety symptoms (Hypothesis 2B), but OC exerted by highly attuned parents will be neutral or protective for youth adjustment.

METHOD

Participants

Families ($N = 114$, mothers, fathers, and children) were drawn from a longitudinal, community study investigating the intergenerational transmission of aggression (see Margolin, Vickerman, Oliver, & Gordis, 2010). To be included in these analyses, participants must have completed study procedures at two waves of this study, conducted approximately 5 years apart and spanning the transition to adolescence. On average, youth (46% female) were 12.69 years old ($SD = 0.79$, range = 11–14) at Time 1 and 18.12 ($SD = 1.08$, range = 15–21) at Time 2. Eligibility for the larger study required families to have a child of the target recruitment age living with two parental figures and be fluent in English. Nonbiological parental figures had to live in the same home with the child for at least 3 years prior to study enrollment. Participants were recruited via flyers, newspaper advertisements, and word of mouth; families were paid \$150 for their participation at Wave 1, and youth were compensated with \$80 for their participation at Wave 2. Participants were diverse in terms of race/ethnicity (ethnically 32% Hispanic/Latino, racially 55% White/Caucasian, 19% Black/African American, 19% multiracial, 7% Asian/Pacific Islander), reflecting the community from which they were drawn. At the first assessment, 10% of participating families had combined incomes below \$30,000, 20% between \$30 and 60,000, 26% between \$60 and 90,000, 18% between \$90 and 120,000, and 26% above \$120,000. Adolescents were invited to return for the second wave via phone call or e-mail. Participants who returned to complete study procedures at Time 2 ($n = 114$) did not differ from those who did not return ($n = 29$) in terms of demographic factors or any other study covariates or predictors, with the exception of paternal anxiety: Children of more anxious fathers were more likely to return to participate as adolescents. Adolescents were allowed to skip any questions at their discretion—as a result $n = 104$ in analyses predicting risky behaviors and $n = 101$ in analyses predicting anxiety.

Procedures

At Time 1, each family engaged in a triadic (mother, father, and child) discussion of desired areas of change in their family. To identify discussion topics, each family member separately selected two items from a 26-item questionnaire of commonly disputed aspects of family life (e.g., chores, TV watching). Families were then given a list of items each member wanted to change and instructed to engage in a 15-minute discussion, focusing on any combination of selected topics, and doing so in whatever way they found most helpful. Over 80% of parents reported that the in-laboratory discussion was somewhat, fairly, or very typical of their family discussions at home. Each member of the family also completed self-report questionnaires (children: anxiety, perceived parental attunement; parents: child externalizing symptoms, their own anxiety symptoms, and family demographics). At Time 2, adolescents returned to the laboratory to provide a second report of anxiety symptoms and risky behaviors.

Measures

Overcontrol—We coded parental OC from the 15-minute triadic family discussion. Our observational coding system was adapted from existing scales for measuring OC (Hudson & Rapee, 2002; Siqueland, Kendall, & Steinberg, 1996; Whaley, Pinto, & Sigman, 1999) and mirrors other behavioral measures of OC in middle childhood (e.g., Borelli, Burkhart, Rasmussen, Smiley, & Hellemann, 2017a). Coders rated the extent to which the parent attempted to constrain or control the child's behaviors, cognitions, or emotions. Behavioral indices of OC included the following: telling child how to think, feel, or behave; dictating what topic is discussed in the task; directing the flow of the discussion; demanding a response from child; dominating the conversation in terms of talking the most and interrupting the child. OC was coded not just by the content of parents' statements but also the process, for example, leaving little room for child's input due to parents' interruptions or long talk turns; an ask-and-answer dynamic of presenting the child with leading questions in which it is clear there is a "correct" answer, etc.

We divided discussions into three 5-minute segments for rating; mothers and fathers each received a score ranging from 1 (*Not at all controlling*) to 5 (*Highly controlling*) describing their overall behavior across each 5-minute segment. When parents exhibited behaviors that could have the effect of controlling or constraining children's thoughts, behaviors, or emotions to any extent, they received a score greater than 1; when no OC was observed, the segment was scored a 1. When OC was present, higher scores were awarded for both more frequent and more severe overcontrolling behaviors. Three undergraduate coders viewed each tape once, pausing after each 5-minute segment to rate OC. Data were normally distributed, and most parents (72.5% of mothers, 68.7% of fathers) displayed some OC in at least one segment. We calculated each parent's OC score as the mean across segments. Ten triadic discussion videos from a prior wave of data collection were used to train coders to rate OC and help them distinguish OC from scaffolding, collaboration, and disagreement, which were not scored. A second coder rated 50% of the triadic discussions, yielding moderate-to-good interrater reliability; $ICC_{\text{mothers}} = 0.70$ and $ICC_{\text{fathers}} = 0.67$. A subset of parents ($n = 78$) also completed a self-report of OC (USC Parental Overcontrol Scale;

Borelli et al., 2014). Consistent with prior studies (Greco & Morris, 2002), associations were modest for fathers ($r = .23, p = .03$) and nonsignificant for mothers ($r = .13, p = .24$).

Attunement—Children reported on parental attunement using the 15-item Child's View Questionnaire (Margolin, 2000), which assesses the extent to which both parents understood and supported them across a number of domains (e.g., school, home, hobbies), on a scale from 0 (*Never*) to 4 (*Always*). Items measured children's beliefs that parents support and understand them (e.g., *My parents understand me*) as well as children's observations of responsive parenting behavior indicative of understanding and support (e.g., *My parents talk to me about my day at school*). The measure had high internal consistency, $\alpha = .93$.

Adolescent risky behavior—Adolescents completed the Youth Risky Behavior Survey (Brener, Collins, Kann, Warren, & Williams, 1995). Adolescents reported how many times in the past year they had engaged in each of 43 behaviors, using a scale from 0 (*Never*) to 5 (*40 times*). The mean of all items was computed. Items tapped academic dishonesty (e.g., *Cheated on tests*), substance use (e.g., *Had at least one drink of alcohol*), criminal behavior/delinquency (e.g., *Took something from a store*), aggression (e.g., *Been in a physical fight*), and unsafe sex (e.g., *Had sex without a condom*), with high internal consistency, $\alpha = .87$. Most teens (96%) reported engaging in at least one past-year risky behavior. The most frequent behaviors were drinking alcohol (64%), cheating on tests (56%), skipping class (50%), and using marijuana (40%).

Adolescent anxiety—Adolescents completed the anxiety subscale of the Symptom Checklist-90 (Derogatis, 1977). Using a 5-point scale from 0 (*Not at all*) to 4 (*Extremely*), participants indicated the extent to which they were bothered, over the past week, by 10 symptoms (e.g., *Worrying too much about things, Nervousness, or shakiness inside*); the mean of these items provided the anxiety score. The 10-item subscale includes measures of nervousness, panic, and somatic manifestations of anxiety, which were internally consistent, $\alpha = .87$.

Covariates measured at Time 1 Child externalizing—As a putative proxy for baseline risky behavior, mothers reported on children's aggression, opposition, and delinquency, using the 32-item externalizing subscale ($\alpha = .90$) of the Child Behavior Checklist (CBCL; Achenbach, 1991).

Child anxiety: Children completed the 20-item trait anxiety scale of the State-Trait Anxiety Inventory for Children (STAIC; Spielberger, 1973; e.g., *I worry too much*) that measure how prone to anxiety children generally feel ($\alpha = .89$).

Parental anxiety: Mothers' ($\alpha = .81$) and fathers' ($\alpha = .87$) reported their own anxiety symptoms on the anxiety subscale of the SCL-90 (Derogatis, 1977); item scores were averaged for each parent.

Analytic Plan

We tested for differences in key study variables by child age, gender, race, and ethnicity. To test for confounders, we repeated each of our proposed analyses with child age, gender,

family income, and race/ethnicity (coded as White/non-White, Black/non-Black, Asian/non-Asian, Latino/non-Latino) included. Because these demographic variables did not substantially alter the estimated magnitude of the predictor, they were excluded from analyses. As prior research has linked parental OC with parents' own anxiety and the intergenerational transmission of psychopathology (e.g., Borelli et al., 2014), we adjusted for parents' anxiety symptoms by including them in all regression models. We additionally adjusted for baseline values of childhood anxiety and externalizing behaviors when predicting adolescent anxiety and risky behaviors, respectively, to isolate change in child adjustment and account for possible evocative effects of child symptoms on parents' OC. As OC was coded from triadic discussions, both parents' OC scores were included simultaneously in all models to isolate the effect of one parent's OC, using regressions to account for covariance across mothers' and fathers' OC.

Study hypotheses were tested using hierarchical linear regressions in SPSS, with child baseline symptoms and parent anxiety entered at step 1, across five models, repeated to predict adolescent anxiety symptoms and risky behavior. To maximize ease of interpretation, standardized betas are reported alongside raw values. Model 1 tested for linear main effects; models 2 and 3 tested for curvilinear main effects (for mothers and fathers separately) by mean centering and squaring each OC term. Models 4 and 5 added attunement by OC interactions for mothers and fathers, respectively, by mean centering and multiplying each factor. When curvilinear effects were observed, they were retained in models of interactive effects. Iterative models were used to increase parsimony and account for limited power (to achieve power of $1 - \beta = 0.8$, no more than nine predictors could be included simultaneously, anticipating medium, $f^2 = 0.15$, effect sizes). The points at which curvilinear effects became significant were calculated using an extension of the Johnson–Neyman technique (Miller, Stromeyer, & Schweiterman, 2013), which calculates confidence intervals; the region of significance is calculated at the first value at which confidence intervals do not include zero.

RESULTS

Table S1 in the supporting information presents the mean, standard deviations, and range for each study variable as well as zero-order correlations among study variables. Although none of the parenting variables were associated with the later adolescent outcomes, fathers' OC was concurrently negatively associated with parent–child attunement and positively associated with child externalizing and his own anxiety. Parent–child attunement was inversely associated with adolescent risky behavior as well as mother, father, and child anxiety. Mothers' anxiety was associated with child externalizing and adolescent risky behaviors. Anxiety was autocorrelated from childhood to adolescence, and childhood externalizing was associated with adolescent risk-taking behaviors. Concurrently, higher income families exhibited more maternal OC and less paternal anxiety.

T-tests revealed that mothers and fathers did not differ on OC or anxiety. Neither parents' OC differed by race, ethnicity, or sex of child. No differences by child sex emerged in anxiety at either time point or externalizing behaviors in childhood. Female adolescents engaged in fewer risky behaviors than males, $t(100.31) = -2.61, p = .01$, Cohen's $d = 0.50$.

Adolescent risk-taking behaviors also varied by race/ethnicity such that Hispanic/Latino youth reported more, $t(51.32) = -2.07, p = .04, d = 0.45$, and Black youth reported fewer, $t(41.10) = 2.34, p = .02, d = 0.51$.

Longitudinal Effects of OC on Risky Behavior and Anxiety

Results support that the association between parental OC and adolescent risky behavior is curvilinear, rather than linear (Hypothesis 1A). Neither mothers' ($\beta = .004, b = .002, SE = .041, p = .969$) nor fathers' ($\beta = .119, b = .046, SE = .038, p = .228$) OC had a linear effect on adolescent risky behaviors (see Table 1, Model 1A). OC instead had a curvilinear effect on adolescent risky behavior when exhibited by either mothers ($\beta = .305, b = .164, SE = .054, p = .003$, see Table 1, Model 2A) or fathers ($\beta = .370, b = .125, SE = .044, p = .005$, see Table 1, Model 3A). As shown in Figure 1, the association between mothers' OC and adolescent risky behavior was negative when OC was low ($-0.16 SD, b = -.101, 95\%$ confidence interval [CI] $-.202, .001$), nonsignificant when OC was moderate and positive when OC was high ($+0.78 SD, b = .112, CI .001, .225$). Similarly, fathers' OC predicted fewer child risky behaviors at low levels ($-0.37 SD, b = -.123, CI -.247, -.001$), was not significantly associated at moderate levels, but predicted more risky behaviors at high levels ($+0.75 SD, b = .094, CI .001, .189$). No support was found for Hypothesis 1B; neither mothers' nor fathers' OC had a curvilinear or linear main effect on adolescents' anxiety symptoms (see Table 1, models 1–3B).

Attunement as a Moderator

Consistent with Hypothesis 2A, after adjusting for the quadratic nature of the relationship between OC and risk-taking, the effect of OC on adolescent risky behaviors varied by attunement for both mothers ($\beta = -.187, b = -.009, SE = .004, p = .049$, see Table 1, Model 4A) and fathers ($\beta = -.197, b = -.008, SE = .004, p = .044$, see Model 5A). As shown in Figure 2a, at low levels of attunement ($-1 SD$), mothers' OC did not predict fewer risky behaviors. As mothers' OC increased ($+0.45 SD$), more OC predicted greater adolescent risky behavior ($b = .110, SE = .056, CI .001, 0.220$). At high levels of attunement ($+1 SD$), the association between mothers' OC and adolescent risky behaviors was negative when OC was low or moderate ($+0.15 SD, b = -.115, SE = .058, CI -.230, -.001$) but became positive at high levels of OC ($+2.30 SD, b = .334, SE = .170, CI .001, .668$). Similar patterns were observed for fathers' OC and adolescent risky behavior, as shown in Figure 2a. At low levels of attunement ($-1 SD$), fathers' OC moved from nonsignificantly ($< +0.75 SD$) to positively ($+0.75 SD$) associated with risky behavior ($b = .143, SE = .073, CI .001, 0.287$) as OC increased. At high levels of attunement ($+1 SD$), the association between OC and risky behaviors was negative when OC was low ($-0.01 SD, b = -.138, SE = -.070, CI -.276, -.001$) but became positive when OC was high ($+2.40 SD, b = .310, SE = .158, CI .001, .620$).

In partial support of Hypothesis 2B, perceived parent–child attunement interacted with mothers' OC to predict adolescents' anxiety symptoms ($\beta = -.197, b = -.014, SE = .007, p = .038$, see Table 1, Model 4B). As shown in Figure 2b, at low levels of attunement ($-0.14 SD$), greater OC predicted greater adolescent anxiety ($b = .0115, SE = .058, p = .05$); however, at moderate levels of attunement ($> -0.14 SD$), this association became

nonsignificant. In contrast, no interaction was supported for fathers' OC by parental attunement in predicting adolescent anxiety ($\beta = -.052$, $b = -.003$, $SE = .006$, $p = .621$, see Table 1, Model 5B, and Figure 2b).

DISCUSSION

In support of Hypothesis 1A, maternal and paternal OC had curvilinear associations with adolescent risky behaviors such that very low doses of OC were protective, but at greater doses, OC conferred risk. These associations were moderated by children's perceptions of parental attunement (Hypothesis 2A). In contrast to Hypothesis 1B, OC did not have a direct linear or curvilinear effect on adolescent anxiety. However, in partial support of Hypothesis 2B, maternal OC interacted with parental attunement such that OC in childhood conferred risk for adolescent anxiety symptoms when exerted by less attuned mothers but was benign when exerted by more attuned mothers. Attunement and paternal OC did not interact to predict adolescent anxiety.

The curvilinear nature of the association between OC in childhood and risky behaviors in adolescence partially echoes effects observed for related controlling parenting constructs, such as monitoring and rule setting. However, whereas these structuring forms of control are largely beneficial but begin to confer risk at their highest levels (e.g., Stice et al., 1993), OC is largely detrimental, except at its lowest doses. Only parents who displayed *an absence* of OC had children who engaged in more risky aggressive, sexual, substance use, delinquent, and academically dishonest behaviors, as compared to parents who showed *the lowest observable* rates of OC. Exhibiting some OC may be indicative of parental engagement in the discussion, as other research has positively linked behaviorally coded support and OC (Borelli, Hong, Rasmussen, & Smiley, 2017b). However, very low doses of firm, intrusive control may also function to effectively steer children away from harm. However, OC quickly reaches a tipping point at which the potential benefits of dominantly directing children away from risk are outweighed by the potential harms of impeding children's needs for self-determination.

The impact of OC also varies based on parent-child relationship quality. Across both risk-taking and anxiety outcomes, OC exerted by less attuned parents predicts risk, whereas attuned parents must demonstrate high OC before adolescents are more likely to engage in risky behaviors. This finding highlights that OC cannot be understood in isolation from its context (Darling & Steinberg, 1993). Maternal warmth, closeness, and child ethnicity each moderate the effects of OC on preschoolers' externalizing behaviors (Akcinar & Baydar, 2014), children's depression (Sichko et al., 2015), and adolescents' affect (Mason et al., 2004), respectively.

The pathways by which context moderates OC remain to be explored in future studies. Attuned parents may be more adroit at exerting OC only in appropriate contexts or with children who have a greater need for firm guidance. In fact, by some definitions, attunement involves not only understanding children's thoughts, feelings, and abilities, but also sensitively adjusting parenting accordingly (e.g., Holigrocki et al., 1999). If attuned parents allow children a greater deal of autonomy within areas of strength but step in to provide firm

direction when necessary, they may help children avoid real dangers. Alternatively, children who see parents as attuned may interpret OC differently. As active recipients of parents' behaviors, children draw upon their internalized history of experiences to understand any single interaction. Youth who believe that parents understand and support them may regard even overcontrolling behaviors as autonomy affirming rather than autonomy limiting. Finally, attunement may moderate because it provides a counterweight of parental responsiveness to the demanding nature of OC (Baumrind, 1971). Having a parent who is sensitive and understanding is inherently autonomy affirming, as parents' awareness of the child's own thoughts, feelings, and priorities acknowledges the child's free and separate mind, even if parents are also unambiguously intrusive in some instances.

Notably, our measure of attunement may have some overlap with previously measured indices of structuring control. For instance, both measures of parental monitoring and measures of attunement ask youth to report whether parents know how or with whom they like to spend time (e.g., Barber, 1996). It therefore may be little wonder that these seemingly different constructs both protect youth from risk-taking, as they are measured using parallel items. This conceptual overlap reminds us that the array of parenting practices is not particularly amenable to being carved at its joints. Parental knowledge about a child may be an index of close monitoring (structuring *control*) or supportive understanding (*attunement*). However, how scientists choose to categorize this parenting behavior may influence the mechanisms posited to drive its effects. For instance, the demonstrated benefits of structuring control strategies may be due not only to the presence of clearly defined behavioral limits and accountability for keeping those limits, as previously proposed, but also due to emotional benefits derived from viewing one's parent as "tuned in." Similarly, attunement may be beneficial not only because of the felt autonomy support it provides, but also because informed parents may better know when and how to set limits and enforce behavioral contingencies.

Although we address multifinality by using the relationship context to determine when OC is risky versus protective, determining when OC leads to anxiety versus risk-taking is beyond the scope of our study. Anxiety and engagement in risky behaviors are comorbid among adolescents (e.g., Burns & Teesson, 2002), as supported by their positive association in our sample, and OC may provide a pathway into both outcomes simultaneously. Insofar as adolescents do reach discretely anxious versus risk-taking outcomes, this divergence may be the result of temperament differences in how youth respond to the same stimuli. For example, Barrett and colleagues (Barrett, Rapee, Dadds, & Ryan, 1996) have proposed that both internalizing and externalizing behaviors arise in response to the message that the world is unsafe, but some youth cope with that threat via avoidance and withdrawal, while others cope via aggressive engagement.

Our study focuses on the impact of OC across the transition to adolescence, a period when youth exhibit increased desire and opportunity for autonomy, and formerly hierarchical relationships with parents are renegotiated to provide youth more responsibility (e.g., Eccles et al., 1993). Although OC has been identified as a risk factor throughout childhood (e.g., Akcinar & Baydar, 2014), OC may be particularly detrimental during adolescence, insofar as it interferes with these autonomy- and identity-building developmental tasks (Erikson,

1950). As OC and attunement were measured only once, our study cannot distinguish when these parenting practices emerged, whether they waxed or waned over time, or whether different trajectories of OC confer different risks or benefits. Although we adjust for baseline child symptoms to isolate the effects of OC, our single time point measurement of OC precludes us from identifying potential evocative effects of child maladjustment on parenting behavior. Finally, we measured attunement as a global measure of how understood a child felt by both parents. It is unclear how a child who felt a high degree of attunement with one parent, but not the other, would have answered such a questionnaire, a limitation which may have contributed to our inability to detect significant interactions between father OC and parent-child attunement on adolescent anxiety. Future research should measure attunement separately for each parent across time.

Several other limitations of our study should be noted. First, it is beyond the scope of the present study to directly test the extent to which OC overlaps with or is distinct from other controlling parenting constructs. However, the present proliferation of conceptualizations of controlling parenting, which span both supportive and autonomy-restricting behaviors (Grolnick & Pomerantz, 2009), muddies the literature and makes our results more difficult to interpret in the context of the larger state of the science. Future studies would benefit from using the extent to which parenting behaviors limit autonomy as a guiding principle for the operationalization of OC. Second, studies conducted in time-limited laboratory settings may have limited generalizability to real-world parent-child interactions (Greco & Morris, 2002), as parents may constrain the amount of OC displayed in response to being observed. However, the demands of our interaction task may have also encouraged parents to “take the lead,” as more than two-thirds of parents demonstrated at least low levels of OC. Moreover, although the triadic nature of our discussion adds ecological validity, it is possible that when one parent exhibited high OC, the other parent’s opportunity to exert OC was constrained (e.g., because the other parent was already directing the conversation, dominating in terms of talk time, etc.). Finally, by its nature, OC is inherently difficult to observe objectively, both because the boundary between scaffolding and intrusive control is difficult to discern and because constraint of one’s sense of autonomy is ultimately subjective and can only be inferred from behavioral measures. These limitations underscore the importance of combining observational with self-report methods, as a behavior’s impact depends on the interaction of the objective and subjective. Additionally, the generalizability of our findings is limited by our use of a nonclinical sample of two-parent families. Use of larger and more diverse samples would also allow us to measure the parent-child relationship context more broadly, including factors such as single-parent status, neighborhood risk, and broader culture, which may multiplicatively interact to influence the effect of OC on child development. Larger samples would also provide power to test multiple predictions simultaneously. Finally, findings for OC predicting anxiety must be interpreted with caution, as only one of four anxiety hypotheses was supported, increasing the possibility of type I error.

Despite these limitations, study findings may have important bearings for clinical intervention. Even intrusively controlling parenting behavior need not confer risk when exerted sparingly, suggesting that clinicians may triage addressing OC based on its dose. Moreover, parents may benefit from learning to exert firm control selectively, in order to

reduce child engagement in risky behaviors. Our findings underscore the need for interventions that target not only parents' control behaviors, but also their awareness of children's internal states (e.g., Dishion & Kavanagh, 2003), which itself may reduce OC when parents are physiologically aroused (Borelli et al., 2017b). The results of our study support the notion that there are multiple, intersecting parenting behaviors involved in the development of adolescent anxiety symptoms and risky behaviors, and there are likely equivalently multiple pathways out.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

Funding for this study was provided, in part, by NIH NICHD R01 HD046807 awarded to the third author and NSF Graduate Research Fellowship DGE-0937362 awarded to the first author. The authors would like to thank the research participants and USC Family Studies Project colleagues, particularly Sara Bethel, Mary Hakimeh, Natasha Philips, and Stephanie Sorady. Preliminary data from this study were presented at the 2015 Society for Research on Child Development Biennial Meeting and the 2015 Association for Behavioral and Cognitive Therapies Convention.

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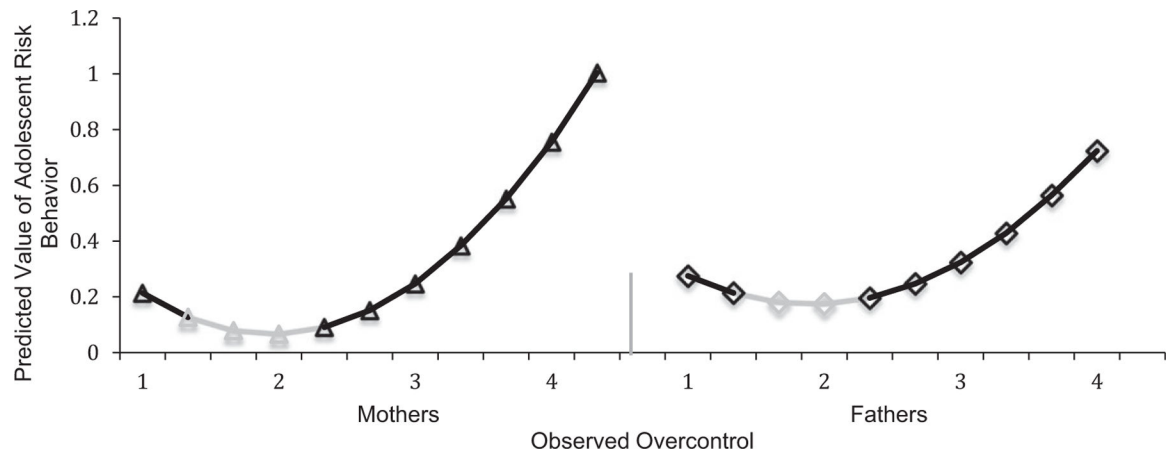


FIGURE 1.
Curvilinear Association Between Overcontrol and Adolescent Risky Behavior, with Significant Slopes Presented in Black and Nonsignificant Slopes Presented in Gray.

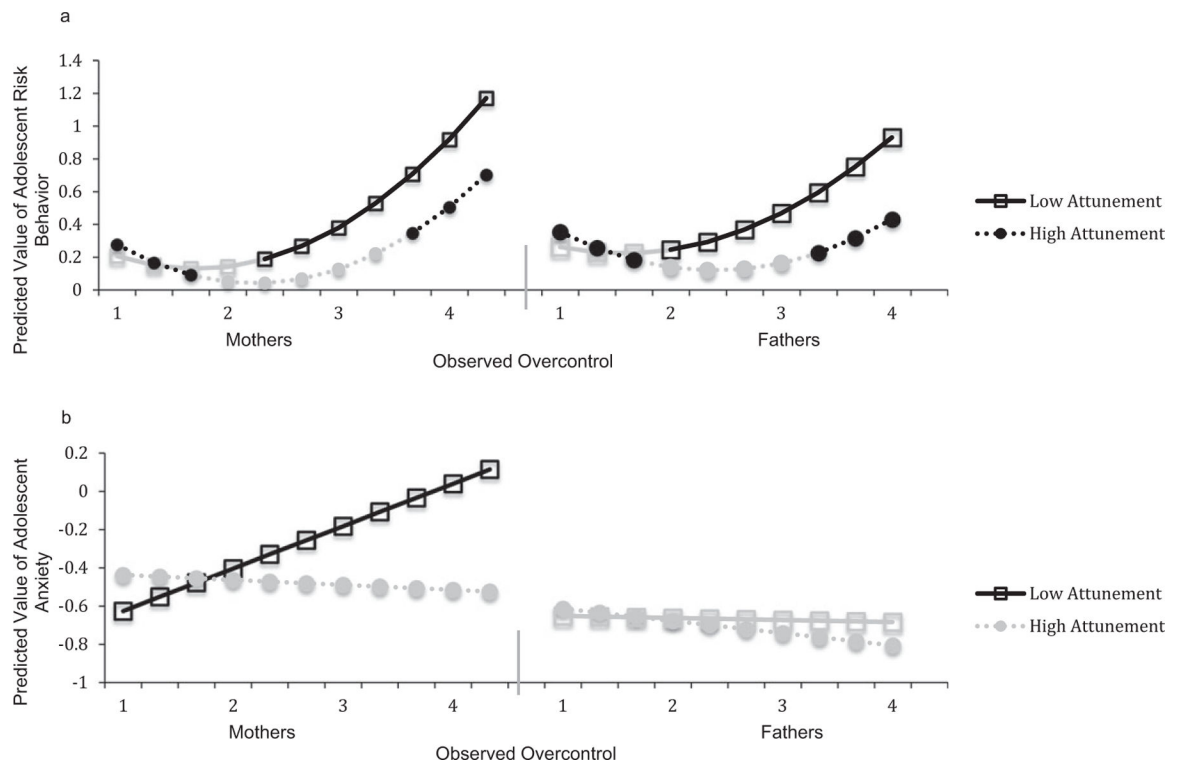


FIGURE 2. Interaction of Overcontrol (OC) and Attunement, with Significant Slopes Presented in Black and Nonsignificant Slopes Presented in Gray. (a) Adolescent Risk Behavior Regressed on Interaction of OC and Attunement. (b) Adolescent Anxiety Regressed on Interaction of OC and Attunement.

Hierarchical Linear Regression to Predict Adolescent Risky Behaviors (Left Panel) and Anxiety Symptoms (Right Panel)

TABLE 1

Predictors	Adolescent Risky Behaviors					Adolescent Anxiety Symptoms						
	Models					Models						
	0A	1A	2A	3A	4A	5A	0A	1B	2B	3B	4B	5B
Baseline child symptoms ^a	.007	.005	.007	.003	.008	.002	.020***	.022***	.021***	.022***	.025***	.024***
Mother anxiety	.386**	.398**	.408**	.400**	.339*	.421**	.043	.029	.038	.035	-.026	.029
Father anxiety	.029	-.002	-.039	-.025	-.062	-.072	.023	.091	.084	.094	.133	.090
Mother overcontrol (MO)	.002	.002	-.062	.001	-.064	-.014	.086	.086	.062	.087	.109	.095
Father overcontrol (FO)	.046	.046	.046	-.048	.030	-.063	-.018	-.018	-.013	-.008	-.042	-.035
MO × MO			.164**		.151**			.085				
FO × FO				.125**		-.063**				-.022		
Attunement					-.003	-.002					.001	.001
MO × attunement					-.009*						-.014*	
FO × attunement						-.008*						-.003
Adjusted R-squared	.115**	.111**	.177***	.170***	.203***	.194***	.093**	.119**	.120**	.110**	.160**	.122**

Notes: All values are unstandardized betas from final step. Terms used to compute interactions and quadratics are mean centered. Model 0 shows the values of covariates entered as the first step in all subsequent models. Model 1 adds mother and father overcontrol as predictors entered at step 2. Models 2 and 3 test for curvilinear effects of mothers' and fathers' overcontrol, respectively, added as separate step 3s. Models 4 and 5 test for interactive effects of attunement with mothers' and fathers' overcontrol, respectively. When significant curvilinear effects are found in step 3 (models 2 or 3), they are retained in tests of interactions (step 4, models 4A and 5A). When no significant curvilinear effects are found in step 3, they are not retained, and interactions are tested in a new step 3 (models 4B and 5B). Left panel N = 104. Right panel N = 101.

^aLeft panel: baseline child externalizing symptoms; right panel: baseline child anxiety symptoms.

* p < .05

** p < .01

*** p < .001.