Mindfulness
https://doi.org/10.1007/s12671-019-01119-5

ORIGINAL PAPER

Mindful Parenting, Parenting Cognitions, and Parent-Youth Communication: Bidirectional Linkages and Mediational Processes

Melissa A. Lippold[1] · Todd M. Jensen[1] · Larissa G. Duncan[2] · Robert L. Nix[2] · J. Douglas Coatsworth[3] · Mark T. Greenberg[4]

Abstract

Objectives Mindful parenting and parenting cognitions likely have important linkages to each other and to parent-child communication, but these linkages have not been tested. In this article, we test the bidirectional linkages between mindful parenting and parenting cognitions (sense of competence, parent-centered attributions) and the underlying mediational processes that link them to parent-child communication (parental solicitation and youth disclosure).

Methods Longitudinal, autoregressive cross-lagged models were run within a longitudinal sample of rural and suburban early adolescents and their mothers ($n = 421$; mean adolescent age = 12.14, 46% male, 73% white).

Results Significant bidirectional linkages were found between mindful parenting and parenting cognitions across Time 1 and Time 2. Greater mindful parenting at Time 1 was associated with more positive parenting cognitions (e.g., greater perceptions of parental competence and fewer negative parent-centered attributions or self-blame) at Time 2. More positive parenting cognitions at Time 1 were also associated with greater levels of mindful parenting at Time 2. Mindful parenting at Time 2 mediated the association between parenting cognitions (both parent-centered attributions and sense of competence) at Time 1 and parental solicitation at Time 3.

Conclusions Mindful parenting and parenting cognitions influence each other over time. Parenting cognitions can affect parental solicitation via increases in mindful parenting. The discussion focuses on potential underlying processes.

Keywords Mindfulness · Mindful parenting · Adolescent disclosure · Parental monitoring · Parenting cognitions · Parenting efficacy · Parenting attributions

Parent-child communication is a critical aspect of effective parenting during early adolescence, and one that has been associated with youth outcomes in a broad array of research (Lippold et al. 2013a; Racz and McMahon 2011). Adolescents whose parents know more about their activities and location are less likely to engage in substance use, delinquency, and risky behavior (Racz and McMahon 2011). Research suggests that parental knowledge of youth activities may emerge through a mutual communication process (Lippold et al. 2013b), whereby parents solicit information from youth (Laird et al. 2010; Lippold et al. 2014), and youth decide what information to disclose about their activities (Kerr et al. 2010). Understanding parent-child communication may be especially important during the early adolescent transition because parent-child communication often degrades during this period, with levels of solicitation and disclosure typically declining during early adolescence (Keijsers and Poulin 2013). At the same time, parents often need to adapt their communication strategies, as youth begin spending less time with their parents, and parents must adapt to support new autonomy needs (Lam et al. 2012; Wray-Lake et al. 2010). Although parent-child communication is a central aspect of parenting, with important implications for youth adjustment, little is

✉ Melissa A. Lippold
mlippold@unc.edu

[1] School of Social Work, The University of North Carolina at Chapel Hill, 320 Pittsboro St., Tate Turner Kuralt Bldg., CB #3550, Chapel Hill, NC 27599, USA

[2] Human Development and Family Studies, The University of Wisconsin at Madison, Madison, WI, USA

[3] Human Development and Family Studies, Colorado State University, Fort Collins, CO, USA

[4] Human Development and Family Studies, The Pennsylvania State University, State College, USA

Published online: 21 February 2019

known about what factors predict effective parent-child communication during early adolescence. Mindful parenting and parenting cognitions likely play a key role in predicting parent-child communication, but research on these constructs is limited.

One potentially important influence on parent-child communication during early adolescence is mindful parenting. Mindful parenting is the extension of mindfulness to the parent-child relationship. Mindfulness is the process of paying attention to individual cognitive, physical, and affective processes in a nonjudgmental manner (Goldstein 2002). By shifting awareness and cognitive focus to the present moment, mindfulness may help individuals cultivate self-awareness, emotion regulation, and compassion for others (Brown et al. 2007). Indeed, mindfulness training in adults has been linked to improved psychological well-being and self-control (Bögels et al. 2008).

Mindful parenting was originally described by Kabat-Zinn and Kabat-Zinn (1997) as being present and paying attention to your child nonjudgmentally. Subsequent conceptual work by Duncan et al. (2009a) identified five aspects of mindful parenting. First, mindful parenting practice involves listening with full attention. Cultivating present-centered awareness while parenting may allow parents to listen carefully and concentrate fully when communicating with their youth. Second, mindful parenting includes practicing self-regulation in the parent-child relationship. Because of their increased attention to their affective, cognitive, and physical sensations, parents may be less automatic or impulsive and more intentional and conscious in their responses to youths' behavior. Third, mindful parenting includes emotional awareness of self and child. Present-centered awareness may enable parents to notice not only their own emotions moment by moment, but also the emotions that their children are exhibiting during their daily interactions, even when subtle. Fourth, nonjudgmental acceptance of self and child is a key component of mindful parenting. Parents may exhibit openness and acceptance about their own characteristics and behavior as a parent, as well as their adolescents' traits and attributes, when engaging in mindful parenting. Lastly, mindful parenting includes compassion for self and child. Mindful parenting involves a focus on compassion and concern for the struggles that parents face in the parenting role, as well as the struggles of their child (Duncan et al. 2009a; Lippold and Duncan 2018). The efficacy of these principles has been demonstrated in practice, as parents' training in mindful parenting has been associated with reduced parental reactivity, improved anger management, increased parental involvement, and improved relationships with their children (Coatsworth et al. 2010; Coatsworth et al. 2015; Duncan et al. 2009b).

Only one prior study has examined mindful parenting and parent-child communication. Lippold et al. (2015) examined how factors in the parent-child relationship mediate the impacts of mindful parenting on parent-child communication. They found that mindful parenting was associated with greater levels of youth disclosure and parental solicitation. That is, parents who were more mindful were more likely to solicit information and to have children disclose information with them. These linkages were mediated by factors in the parent-child relationship, namely parental reactions to disclosure, youth perceptions of parental over-control, and the affective quality of the parent-child relationship. When parents were more mindful in their parenting, they subsequently had fewer negative reactions to youth disclosure, youth felt less controlled, and the quality of the parent-child affective relationship improved—all of which led to improved communication.

It is likely that mindful parenting also affects parent-child communication through other processes—specifically by changing parents' cognitions about their parenting role (Belsky 1984). Two aspects of parenting cognitions may be especially important during early adolescence: parents' sense of competence and parent-centered attributions about the source of their child's behavior. Similar to the concept of parental efficacy, parental competence reflects whether parents feel confident, capable, and effective in their parenting role and their ability to positively affect child behavior (Gibaud-Wallston and Wandersman 1978). Parent-centered attributions, on the other hand, reflect the extent to which parents blame themselves for their children's behavior. Parents who have negative parent-centered attributions may believe that poor behavior in their children is due to their own ineffective parenting skills and inadequacy as a parent.

According to social cognitive theory, as conceptualized by Bandura (1997, 1989), parents' cognitions may affect parents' motivation to engage in parenting in the face of challenges. Parents who feel more efficacious and competent in their role as a parent may be more likely to persist when faced with challenging tasks related to their parenting role rather than withdraw and resign themselves to having little control over child outcomes. A sense of competence may also help parents enjoy their parenting role, leading to their engagement in more frequent supportive behaviors (Coleman and Karraker 1998). In contrast, feelings of low competence and negative parent-centered attributions, such as self-blame, may lead to a decrease in motivation to persist in parenting and increased negative affective responses to a child's behavior, as well as greater disengagement (Bugental and Johnston 2000; Dix and Grusec 1985; Miller 1995; Slep and O'Leary 1998). Because many parents express anxiety about adolescence and hold negative stereotypes about adolescence being a period of "storm and stress" (Buchanan and Hughes 2009), it is not surprising then that parents show decreases in feelings of competence and efficacy during the early adolescent transition (Ballenski and Cook 1982; Glatz and Buchanan 2015b).

Parental sense of competence and parent attributions have shown important effects on parenting behaviors generally

(Bugental and Johnston 2000; de Haan et al. 2009; Jones and Prinz 2005). Parents with positive parenting cognitions are more likely to engage in a host of effective parenting practices, such as more supportive parenting and effective discipline and monitoring (Bogenschneider et al. 1997; Lippold et al. 2018; Shumow and Lomax 2002; Slagt et al. 2012; Teti and Gelfand 1991). It is likely that parental perceptions of competence and parent attributions also have important linkages to parent-child communication, although these linkages have not yet been tested. Parents who feel more competent and experience less self-blame, in spite of the challenges they face, may be more likely to engage in parenting behaviors such as soliciting information from youth, and may create warmer and more welcoming environments that are conducive to youth disclosure.

Although prior studies have not specifically examined linkages between parenting cognitions and parent-child communication, parent cognitions have been linked to more supportive, warm, responsive, and involved parenting in general (Bogenschneider et al. 1997; Shumow and Lomax 2002; Teti and Gelfand 1991), which has been linked to improved solicitation and disclosure in other studies (Lippold et al. 2014). Parents who feel more efficacious are also more likely to be knowledgeable about their youths' whereabouts, which may emerge from an effective communication process (Bogenschneider et al. 1997; Shumow and Lomax 2002).

Despite the potential importance of both mindful parenting and parenting cognitions in predicting parent-child communication, little is known about how these factors relate to one another over time. Mindful parenting, parenting cognitions, and parent-child communication may have bidirectional and mediational linkages with each other.

First, parenting cognitions may mediate the linkages between mindful parenting and parent-youth communication. Parents who are more mindful may be more likely to have positive parenting cognitions—that is, greater perceptions of competence about their parenting role and fewer negative parent-centered attributions, or less self-blame, when facing challenges in parenting (Duncan et al. 2009a). Because mindful parenting may create less reactivity in the parenting role, parents may be more likely to make conscious choices in how to respond to children's behavior. Because parents are responding to their children in an intentional, present-centered, and goal-directed manner, parents who are more mindful may feel more proactive rather than reactive; they may feel they have more control over the tone of the interactions; they may feel more competent and confident in their abilities as a parent. Mindful parenting may also support parents in becoming more aware of their own emotions and experiences as well as those of their child. Mindful parenting may produce cognitive appraisals of youth behavior that are clearer and less influenced by the parent's own emotional reactivity. Thus, mindful parenting might produce more accurate cognitive appraisals of youth behavior, allowing parents to be more attuned to their child's needs and to be more aware of the many aspects of life that influence youth behavior. As a result, parents may be less likely to blame themselves unfairly when youth struggle. Mindful parenting includes a focus on compassion and acceptance for both themselves as parents and for their child, which may make parents better able to normalize the struggles that both parents and adolescents face. Thus, mindful parenting may lead parents to feel more competent and experience fewer negative parent-centered attributions and self-blame when problems arise. Mindful parenting may be especially important for promoting a sense of competence and less self-blame during developmental transitions such early adolescence, as parents who are more mindful may be better able to recognize their emerging adolescents' needs in the present moment, rather than basing their ideas on past experiences from earlier developmental periods (Duncan et al. 2009a). More positive cognitive attributions, in turn, may lead parents who engage in greater mindful parenting to more effectively communicate with their children.

Prior studies have not tested whether mindful parenting predicts parenting cognitions, and subsequently parent-child communication, but they do provide some preliminary evidence. For example, parents who are more mindful perceive less effort in their parenting role (Bluth and Wahler 2011) and thus may be less likely to find parenting burdensome and more likely to feel competent in their role. Mindfulness also predicted perceptions of general coping efficacy (Luberto et al. 2014). Further, mindful parenting has been associated with fewer negative emotions in parents (Bögels et al. 2014; Turpyn and Chaplin 2016) and parental negative emotions such as depression have been linked to more negative parenting cognitions and lower feelings of efficacy in general (Teti et al. 1996). Thus, parents who are more mindful in their parenting may be less likely to experience negative emotions and less negative parenting cognitions, which subsequently likely improves parent-child communication.

Second, and alternatively, mindful parenting may mediate the linkages between parent-cognitions and parent-youth communication. Parents who feel more competent and have fewer negative parent-centered attributions may be more likely to be mindful parents, reflecting a more present-centered and compassionate approach to parenting. Parents who feel competent and exhibit less self-blame may also exhibit improved emotional regulation and may be less reactive to their child's behavior (Bandura 1989, 2002)—a central aspect of mindful parenting. Although no prior studies have examined the associations between parenting cognitions and mindful parenting, there is some evidence that global efficacy beliefs may be positively associated with mindfulness. For one, parents who feel more efficacious may be more mindful (Rostami et al. 2015). Prior studies also have found evidence of bidirectional linkages between parenting cognitions and other aspects

of parenting behavior (Glatz and Buchanan 2015a), especially during early adolescence. Theories of efficacy (Bandura 1989) explicate possible linkages between affective states and efficacy, positing that parents who have low reactivity or calm emotions around parenting may be more likely to feel efficacious. Taken together, it follows that mindful parenting may also mediate the linkages between parenting cognitions and communication. That is, positive parenting cognitions may be associated with more mindfulness in parenting and subsequently, improved parent-child communication.

In the present study, we investigated the linkages between mindful parenting, parenting cognitions, and parent-child communication using three waves of secondary data across two school years in families of sixth and seventh graders. The aims of our study were threefold. First, we tested whether there were bidirectional linkages between mindful parenting and parenting cognitions over time. We expected that mothers who were more mindful would have more positive cognitions (i.e., feel more competent, have fewer negative parent-centered attributions). We also expected that mothers who had more positive cognitions would be more mindful in their parenting. We then tested two potential mediational processes that may link parenting cognitions and mindful parenting to parent-youth communication (solicitation, disclosure). Second, we tested whether parenting cognitions mediated the linkages between mindful parenting and parent-child communication. We expected that mothers who were more mindful would experience more positive cognitions about their parenting, which would subsequently lead to better parent-child communication (i.e., increases in parental solicitation and youth disclosure). Third, we tested whether mindful parenting mediated the linkages between parenting cognitions and parent-child communication. We expected that mothers with more positive cognitions would exhibit more mindful parenting, and subsequently, improved parent-child communication.

Method

Participants

Four hundred and thirty-two mothers and their adolescents participated in this study. Forty-six percent of adolescents were identified as male; youth age at baseline ranged from 10.91 to 14.22 years (mean = 12.14 years; *SD* = .67 years). All adolescents were in sixth, seventh, or eighth grades during this study. Nearly 73% of mothers were identified as White, 10% identified as Black/African American, 4% identified as Asian, 1% identified as multi-racial, and 1% identified as native America/American Indian or Other. Nearly 22% of mothers reported high school completion or less, 27% reported completing some amount of college, 26% reported the attainment of a college degree, and 15% reported some level of graduate training. Sixty-six percent of families included two parents. Median annual family income was $49,000.

Procedures

During four consecutive academic years, families of sixth and seventh grade students in four school districts in rural and suburban areas of central Pennsylvania were invited to participate in a randomized controlled trial of the *Mindfulness-enhanced Strengthening Families Program: For Parents and Youth 10–14* (MSFP 10–14; Coatsworth et al. 2015). Families were randomized to one of three study conditions: (1) the standard *Strengthening Families Program: For Parents and Youth 10–14* (SFP 10–14; Molgaard et al. 2001), (2) MSFP 10–14, or (3) a home study control condition. The universal prevention programs were offered to all families in selected schools. Families were not selected on the basis of youth demonstrating elevated risk for behavior or mental-health problems (Coatsworth et al. 2015).

Assessments were conducted at three waves: baseline, prior to the beginning of the intervention; approximately 8 weeks later, after the conclusion of the intervention; and approximately 1 year later. Assessments included paper and pencil measures that were mailed to both mothers and youths and an in-home assessment that included an additional computer-assisted survey. Families received incentives of $75, $100, and $125 to complete baseline, post-intervention, and 1-year follow-up assessments, respectively. The current study is a secondary data analysis of data from all three assessments (Waves 1–3), using full information maximum likelihood (FIML) to handle missing data with an analytical sample of $n = 421$ families, controlling for intervention condition.

Measures

Mindful Parenting Mindful parenting, measured from the mother's perspective, was a composite scale of five hypothesized subscales each reflecting one of five aspects of mindful parenting (Duncan 2007; Duncan 2018): (a) listening with full attention, (b) emotional awareness of self and child, (c) self-regulation in the parenting relationship, (d) nonjudgmental acceptance of self and child, and (e) compassion for self and child. Subscale items asked mothers to indicate how frequently they exhibited aspects of mindful parenting, with response options ranging from 0 ("never true") to 4 ("always true"). All items were coded such that higher values indicated higher levels of mindful parenting. Overall mindful parenting mean scores were used from both Time 1 ($\alpha = .84$) and Time 2 ($\alpha = .83$).

Parent-Centered Attributions Parent-centered attributions, our first measure of parenting cognitions, was a five-item scale that asked mothers to indicate how frequently they possessed

cognitions that signaled the belief that they are responsible for their child's behavior (Slep and O'Leary 1998). Mothers were asked how often they believed that there were particular reasons for child behavior. Items included the following, "I'm not structured enough with my child," "I handle my child in a non-confident way," "I'm not patient," "I'm not able to be clear," and "I don't do the right thing." Response options ranged from 0 ("never true") to 4 ("always true"), and all items were coded such that higher values indicated higher levels of negative parent-centered attributions. Parent-centered attributions measures were used from both Time 1 ($\alpha = .70$) and Time 2 ($\alpha = .71$).

Parenting Sense of Competence Parenting competence assessed the extent to which mothers felt a sense of self-efficacy in the parenting role (Gibaud-Wallston and Wandersman 1978). The eight-item scale included items such as, "Being a parent is manageable and any problems are easily solved," "If anyone can find the answer to what is troubling my child, I am the one," and "I honestly believe that I have all the skills necessary to be a good [parent] to my child." Response options ranged from 0 ("strongly disagree") to 4 ("strongly agree"). A higher score indicated higher levels of perceived competence. Parenting competence scores were used from both Time 1 ($\alpha = .77$) and Time 2 ($\alpha = .78$).

Parent Solicitation Parent solicitation assessed the extent to which mothers solicited information about day-to-day activities from their child, the child's peers, or the parents of the child's friends (Stattin and Kerr 2000). Mothers responded to five items ($\alpha = .78$) regarding how frequently they "Talk with the parents of this child's friends," "Ask this child's friends what they like to do or what they think about different things," "Started a conversation with this child about what they do on their free time," "Ask this child about things that happened during school," and "Ask this child to talk about his/her friends and what they do together." Response options ranged from 0 ("almost never") to 4 ("almost always"). A higher score indicated higher levels of parent solicitation. We used the parent solicitation score at Time 3.

Youth Disclosure Maternal report of youth disclosure assessed the extent to which youth freely disclosed information to mothers about various day-to-day activities and experiences (Stattin and Kerr 2000). Mothers reported on eight items ($\alpha = .84$), including "How often does this child tell you how he/she is doing in school without you asking?" "How often does this child tell you, without you asking, what he/she does when hanging out with friends?" and "How often does this child tell you if he/she is worried about something?" Response options ranged from 0 ("almost never") to 4 ("almost always"). A higher score indicated higher levels of youth disclosure. We used the youth disclosure score at Time 3.

Covariates Several socio-demographic variables were included in the analytical models as covariates, including youth sex (1 = male, 0 = female), youth age (continuous measure in years), mothers' racial-ethnic identity (dummy coded to include three racial/ethnic categories: White, Black/African American, and Other), and mothers' education at Time 1 (dummy coded to include four categories: high school completion or less, some college, college degree, and graduate training). Because the data came from an intervention study, we also controlled for the intervention condition to which families belonged (dummy coded to include three categories: MSFP 10–14, SFP 10–14, and home study control group).

Data Analysis

We used autoregressive, cross-lagged path modeling to assess associations between mindful parenting, parenting cognitions (i.e., parenting competence, parent-centered attributions) and communication outcomes (i.e., youth disclosure and parent solicitation). We examined two models. The first model incorporated perceived parenting competence as the focal parent cognition. The second model incorporated parent-centered attributions as the focal parent cognition. In both models, mindful parenting and parent-cognition variables were included from Time 1 and Time 2 (and Time 2 variables were regressed on Time 1 variables); communication outcomes were included at Time 3 and regressed on Time 2 variables. Indirect effects—paths from Time 1 variables to Time 3 outcomes via Time 2 variables—were estimated using RMediation, which produces standard errors and confidence intervals for mediated effects using the distributions-of-the-product method (Tofighi and MacKinnon 2011). Time 1 measures of communication outcomes (disclosure and solicitation) were included as model covariates, thus all models assess changes in communication from Time 1 to Time 3. Given the autoregressive specification of our models, significant associations between variables across time-points indicated that variables from previous time-points were associated with significant *levels of change* in variables at subsequent time-points. Because observed variables were not burdened by skewed distributions, maximum likelihood (ML) estimation was used (Kline 2011). For reference, Table 1 displays descriptive information and correlations among all substantive measures.

The following criteria were selected as being indicative of acceptable model fit: comparative fit index (CFI) and Tucker-Lewis index (TLI) values of .90 or higher, and a root mean square error of approximation (RMSEA) value of .08 or lower (Chen et al. 2008; Curran et al. 2003; West et al. 2012). Missing data were handled using full information maximum likelihood procedures (Enders 2010). Multivariate analyses were conducted in Mplus 8.0, whereas preliminary data management were conducted using Stata 15.1.

Table 1 Descriptive statistics and correlations

		Mean	SD	Min.	Max	1	2	3	4	5	6	7
1	Mindful parenting (Time 1)	2.51	0.40	1.43	3.92							
2	Mindful parenting (Time 2)	2.61	0.38	1.67	3.82	0.74*						
3	Parent-centered attributions (Time 1)	1.35	0.58	0.00	3.20	− 0.62*	− 0.50*					
4	Parent-centered attributions (Time 2)	1.19	0.58	0.00	3.00	− 0.49*	− 0.53*	0.63*				
5	Parenting competence (Time 1)	2.36	0.62	0.88	3.88	0.52*	0.48*	− 0.56*	− 0.39*			
6	Parenting competence (Time 2)	2.51	0.60	0.63	4.00	0.46*	0.57*	− 0.42*	− 0.46*	0.66*		
7	Parent solicitation (Time 3)	2.75	0.61	1.20	4.00	0.35*	0.34*	− 0.31*	− 0.21*	0.22*	0.28*	
8	Youth disclosure (Time 3)	2.67	0.70	0.00	4.00	0.35*	0.32*	− 0.19*	− 0.16*	0.26*	0.31*	0.40*

Note: *$p < .05$

Results

Figure 1 displays results from the model in which parent-centered attributions was the focal parent cognition. Model fit indices were as follows: $\chi^2(62) = 107.30$, $p < .001$; CFI = .94; TLI = .95; and RMSEA = .042 (upper 90% CI .055). Bidirectional linkages were noted between mindful parenting and parent-centered attributions. Mindful parenting at Time 1 was negatively associated with a change in parent-centered attributions at Time 2 ($b = -.22$, $p < .01$), and parent-centered attributions at Time 1 were negatively associated with a change in mindful parenting at Time 2 ($b = -.07$, $p < .05$). Regarding mediation, parent-centered attributions at Time 2 was not significantly associated with either change in youth disclosure or parent solicitation at Time 3. Mindful parenting at Time 2 was positively associated with a change in both youth disclosure ($b = .25$, $p < .05$) and parent solicitation ($b = .25$, $p < .05$) at Time 3. However, only the indirect effect between attributions and solicitation was significant. The indirect association between parent-centered attributions at Time 1 and parent solicitation at Time 3, via mindful parenting at Time 2, was significant ($b = -.017$, $SE = .011$, $p < .05$). The indirect association between parent-centered attributions at Time 1 and youth disclosure at Time 3, via mindful parenting at Time 2, was not significant ($b = -.017$ $SE = .012$, $p > .05$). See Fig. 1 for additional model details.

We also investigated whether the cross-lagged model paths differed between participants in the intervention and control groups. That is, we assessed whether the intervention condition moderated the strength, direction, or significance of substantive model parameters. Wald chi-square tests were used to assess whether parameters differed significantly across intervention and control groups (Chou and Huh 2012). In addition, relative CFI values were examined between (a) a model in which the parameters were estimated freely across intervention and control groups, and (b) a model in which the

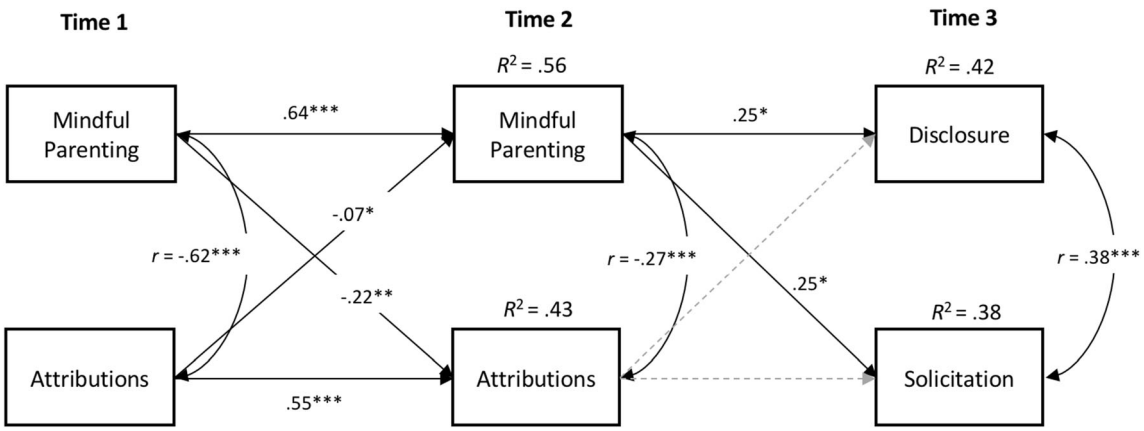

Fig. 1 Autoregressive cross-lagged model with parent-centered attributions. *Note:* Model fit indices were as follows: $\chi^2(62) = 107.30$, $p < .001$; CFI = .94; TLI = .95; RMSEA = .042 (90% CI .028, .055). Maximum likelihood estimator was used. Model parameters are unstandardized except for correlations (i.e., *r* values). The indirect association between parent-centered attributions at Time 1 and parent solicitation at Time 3, via mindful parenting at Time 2, was significant at the $p < .05$ level ($b = -.017$, $SE = .011$). The indirect association between parent-centered attributions at Time 1 and youth disclosure at Time 3, via mindful parenting at Time 2, was not significant at the $p < .05$ level. Covariates included youth sex, youth age, mother's racial/ethnic identity, mother's education, intervention condition, youth disclosure at Time 1, and parent solicitation at Time 1

parameters were constrained to equality. A difference in CFI of less than .01 was indicative of a non-significant change in model fit between specifications (Cheung and Rensvold 2002). Results indicated that the four substantive model parameters did not differ significantly across intervention and control groups (Wald test: $\chi^2[4] = 2.67$, $p = .61$; $\Delta CFI < .01$).

Figure 2 displays the results from the model in which parenting competence was the focal parent cognition. Model fit indices were good with indices as follows: $\chi^2(62) = 106.44$, $p < .001$; CFI = .95; TLI = .95; and RMSEA = .041 (upper 90% CI .054). Results from this model indicated bidirectional relationships between mindful parenting and parenting competence. Mindful parenting at Time 1 was positively associated with a change in parenting competence at Time 2 ($b = .23$, $p < .01$), and parenting competence at Time 1 was associated with changes in mindful parenting at Time 2 ($b = .08$, $p < .01$). However, parenting competence at Time 2 was not significantly associated with a change in either youth disclosure or parent solicitation at Time 3. Mindful parenting at Time 2 was positively associated with a change in parent solicitation at Time 3 ($b = .20$, $p < .05$). The indirect association between parenting competence at Time 1 and parent solicitation at Time 3, via mindful parenting at Time 2, was significant ($b = .015$, $SE = .009$). See Fig. 2 for additional model details.

Similar to the previous model, we also investigated whether the cross-lagged model paths differed between participants in the intervention and control groups (i.e., moderation by intervention condition). Results indicated that the four substantive model parameters did not differ significantly across intervention and control groups [Wald test: $\chi^2(4) = 6.60$, $p = .16$; $\Delta CFI < .01$].

Discussion

Effective parent-child communication is essential in early adolescence. Youth who experience effective parent-child communication are less likely to engage in a host of risky behaviors (Racz and McMahon 2011), and improving mindful parenting may be one avenue to improve communication during this time period (Lippold et al. 2015). Our goal here was to examine processes that predict effective child communication, as assessed by maternal reports of parental solicitation and youth disclosure. Given the importance of mindful parenting and parenting cognitions in influencing parenting behavior (Bandura 1989), we were particularly interested in understanding the bidirectional and mediational processes that link mindful parenting and parenting cognitions to effective parent-child communication during early adolescence.

Our findings suggest that the linkages between mindful parenting and parenting cognitions are dynamic and bidirectional (Loulis and Kuczynski 1997). As we hypothesized, parents who were more mindful were more likely to feel competent in their parental role and to experience less self-blame with respect to youth behavior (Duncan et al. 2009a). In addition, parents who felt more competent and had fewer negative parent-centered attributions about their parenting were more likely to be mindful in their parenting. Parents who practice mindfulness in parenting may be more likely to pause before responding to child behavior and to have compassion for themselves and their child—both of which may help them feel more competent in their role. More present-centered awareness may enable parents to have more realistic and fair attributions about the effects of their parenting and to experience less self-blame. Further, by increasing their ability to mindfully pause rather than automatically or impulsively react

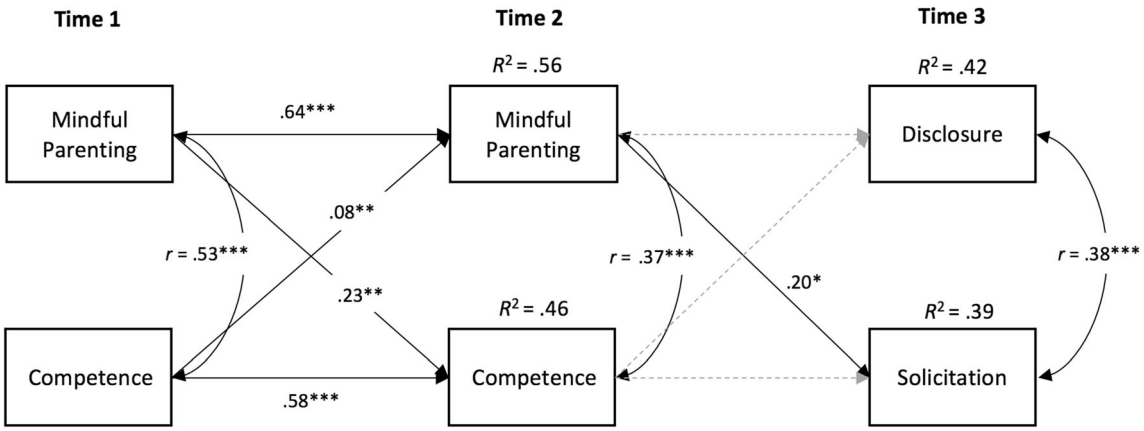

Fig. 2 Autoregressive cross-lagged model with parenting sense of competence. *Note:* Model fit indices were as follows: $\chi^2(62) = 106.44$, $p < .001$; CFI = .95; TLI = .95; RMSEA = .041 (90% CI .027, .054). Maximum likelihood estimator was used. Model parameters are unstandardized except for correlations (i.e., *r* values). The indirect association between parenting competence at Time 1 and parent solicitation at Time 3, via mindful parenting at Time 2, was significant at the $p < .05$ level ($b = .015$, $SE = .009$). Covariates included youth sex, youth age, mother's racial/ethnic identity, mother's education, intervention condition, youth disclosure at Time 1, and parent solicitation at Time 1

to youth behavior, parents may feel more capable and in control of their parenting behavior. Interestingly, parents who feel competent may be more likely to act mindfully in their parenting behavior, suggesting that parent cognitions may play an important role in parents' ability to be present, nonjudgmental, and compassionate with their children. Thus, feeling competent and having fewer negative parent-centered attributions may also help parents to have more compassion for themselves and their child, be less reactive, and be more present with their child (Duncan et al. 2009a). These findings are in line with a transactional model of development (Lansford et al. 2018; Loulis and Kuczynski 1997) that suggests that parenting cognitions and behavior may bidirectionally influence one another over time (Glatz and Buchanan 2015a).

Counter to our hypothesis, the effects of mindful parenting on parent-child communication were not mediated by changes in parenting cognitions. Similar to other studies, we found evidence that mindful parenting is associated with improved parent-child communication (Lippold et al. 2015). Mothers who are more mindful were more likely to engage in parental solicitation and in one of our models, to create environments conducive to child disclosure. However, processes other than parent cognitions explain these associations. Based on prior work, relationship-oriented factors (Lippold et al. 2015) may be more important than parenting cognitions in explaining how mindful parenting exerts its influence on parent-child communication. For example, prior studies have found that mindful parents are less likely to react when youth disclose information, and are more likely to have a quality parent-child relationship, both of which subsequently improved parent solicitation and disclosure. Mindful parenting was also less likely to make youth feel over-controlled, which promoted more communication. Thus, mindful parenting may be more likely to affect parent-communication through changes in parents' behavior towards their children that improve relationship quality rather than by changing parents' own cognitions of their parenting behavior.

However, consistent with our hypotheses, the effects of parenting cognitions on parent-child communication were indirect and occurred through and were mediated by mindful parenting. Parents who perceived themselves to be more competent and who had fewer negative parent-centered attributions were more likely to be more mindful in their parenting and their mindful parenting subsequently increased parental solicitation. These findings suggest that parents' cognitions can affect parental solicitation, but only if they lead to changes in mindful parenting. Said another way, mindful parenting is an important intermediate mechanism through which parent cognitions can affect parent-child communication. It is interesting that these mediational processes were limited to parental solicitation and did not include youth disclosure. This may be due to the fact that parental solicitation is reflective primarily of parents' own behaviors, whereas youth disclosure may be influenced by factors outside of the parent, such as child perceptions and experiences. According to social cognitive theory, having perceptions of competence and fewer negative parent-centered attributions may help parents stay engaged and motivated to persist when facing obstacles in their parenting role (Bugental and Johnston 2000; Bandura 1989). It is possible that during early adolescence, when parent-child communication typically declines, parents who have positive parenting cognitions are more likely to persist in initiating communication or attempt multiple different strategies in communication, even when youth do not initiate disclosure. Thus, parent cognitions may aid more in parent-driven rather than child-driven communication. Nonetheless, mindful parenting may be an important mechanism by which parenting cognitions affect the amount of parent-child communication occurring in families during early adolescence.

Limitations, Strengths, and Future Research Directions

Our study has important limitations to consider. First, our study focused on mothers; different processes may occur with fathers. Fathers play a key role in adolescent development and there is some evidence that the effects of parent cognitions on parenting may differ for mothers and fathers (Lippold et al. 2018; Slagt et al. 2012). Although findings have been mixed, some studies have found that mothers' parenting behaviors are more strongly affected by cognitions than fathers (Bogenschneider et al. 1997), perhaps because of greater involvement in parenting and a greater sense of responsibility for child behaviors (Forehand and Nousiainen 1993; Renk et al. 2003). However, studies have also found that the effects of mindful parenting interventions on parenting behaviors may differ between mothers and fathers and in some cases may be stronger for fathers than mothers (Coatsworth et al. 2015). More research on these processes among fathers is clearly needed. Second, our study relied on parent perceptions of study constructs. We decided to focus on parent reports given that mindful parenting and parent cognitions tap many internal states within parents; however, it is possible that common-method variance may have influenced our results. Future studies also should assess these constructs from the perspective of youth. Third, our study examined a broad measure of mindful parenting and did not investigate which subcomponents of mindful parenting may be driving our results. Studies that examine specific aspects of mindful parenting may provide further information about its linkages with parenting cognitions and parent-youth communication. Lastly, our study did not examine how these processes are linked to youth outcomes, such as internalizing and externalizing problems. This may be especially critical given that parents of children with externalizing problems tend to have greater child-centered and less parent-centered attributions (Miller 1995; Dix and Lochman 1990). Future studies that

examine how these processes unfold to affect youth outcomes may shed further light on how to design effective interventions. Our study also focused on domain-specific parenting cognitions; global or general feelings of efficacy may have different associations with mindful parenting in general (Lippold et al. 2018).

In sum, this study extends research that suggests that mindful parenting may have important implications for parent-youth communication during early adolescence (e.g., Lippold et al. 2015). Mindful parenting and parenting cognitions are related; parents who are more mindful are more likely to feel competent and experience less self-blame in the parenting role. Parents who feel more competent and have fewer negative parent-centered attributions may become more mindful in the parenting role. Parent cognitions may affect parental solicitation via increases in mindful parenting.

Author Contributions ML designed and executed the study, assisted with the data analyses, and wrote the manuscript. TJ conducted the data analyses and aided in the interpretation of study findings and the writing of the manuscript. LD aided in the design and conceptualization of the study, the interpretation of findings, and the writing of the manuscript. RN, JDC, and MG were involved in the conceptualization of the study and collaborated in the writing and editing of the final manuscript.

Funding Work on this article was supported by the National Institutes of Health through research grants from the National Institute on Drug Abuse (1 R01 DA026217), Eunice Kennedy Shriver National Institute of Child Health and Human Development (R03 HD087611), and a career award to Larissa Duncan from the National Center for Complementary and Alternative Medicine (1 K01 AT005270). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. All protocols were approved by the Institutional Review Board at The Pennsylvania State University.

Informed Consent Informed consent was obtained from all individual participants included in the study.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

References

Ballenski, C. B., & Cook, A. S. (1982). Mothers' perceptions of their competence in managing selected parenting tasks. *Family Relations: An Interdisciplinary Journal of Applied Family Studies, 31*(4), 489–494. https://doi.org/10.2307/583923.

Bandura, A. (1989). Social cognitive theory. In R. Vasta (Ed.), *Six theories of child development: annals of child development* (Vol. 6, pp. 1–60). Greenwich: JAI.

Bandura, A. (1997). *Self-efficacy: the exercise of control*. New York: Freeman.

Bandura, A. (2002). Social cognitive theory in cultural context. *Applied Psychology, 51*, 269–290. https://doi.org/10.1111/1464-0597.00092.

Belsky, J. (1984). The determinants of parenting: a process model. *Child Development, 55*, 83–96. https://doi.org/10.2307/1129836.

Bluth, K., & Wahler, R. G. (2011). Does effort matter in mindful parenting? *Mindfulness, 2*(3), 175–178. https://doi.org/10.1007/s12671-011-0056-3.

Bögels, S. M., Hoogstad, B., van Dun, L., de Schutter, S., & Restifo, K. (2008). Mindfulness training for adolescents with externalizing disorders and their parents. *Behavioural and Cognitive Psychotherapy, 36*, 193–209. https://doi.org/10.1017/S1352465808004190.

Bögels, S., Hellemans, J., van Deursen, S., Romer, M., & van der Meulen, R. (2014). Mindful parenting in mental health: effects on parental and child psychopathology, parental stress, parenting, coparenting, and marital functioning. *Mindfulness, 5*(1), 536–551. https://doi.org/10.1007/s12671-013-0209-7.

Bogenschneider, K., Small, S. A., & Tsay, J. C. (1997). Child, parent, and contextual influences on perceived parenting competence among parents of adolescents. *Journal of Marriage and Family, 59*(2), 345–362. https://doi.org/10.2307/353475.

Brown, K. W., Ryan, R. M., & Creswell, J. D. (2007). Mindfulness: theoretical foundations and evidence for its salutary effects. *Psychological Inquiry, 18*, 211–237.

Buchanan, C. M., & Hughes, J. L. (2009). Construction of social reality during early adolescence: can expecting storm and stress increase real or perceived storm and stress? *Journal of Research on Adolescence, 19*, 261–285. https://doi.org/10.1111/j.1532-7795.2009.00596.

Bugental, D. B., & Johnston, C. (2000). Parental and child cognitions in the context of the family. *Annual Review of Psychology, 51*, 315–344.

Chen, F., Curran, P. J., Bollen, K. A., Kirby, J., & Paxton, P. (2008). An empirical evaluation of the use of fixed cutoff points in RMSEA test statistic in structural equation models. *Sociological Methods & Research, 36*(4), 462–494.

Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling, 9*(2), 233–255.

Chou, C., & Huh, J. (2012). Model modification in structural equation modeling. In R. H. Hoyle (Ed.), *Handbook of structural equation modeling* (pp. 232–246). New York: Guilford Press.

Coatsworth, J. D., Duncan, L. G., Greenberg, M. T., & Nix, R. L. (2010). Changing parent's mindfulness, child management skills and relationship quality with their youth: results from a randomized pilot intervention trial. *Journal of Child and Family Studies, 19*(2), 203–217.

Coatsworth, J. D., Duncan, L. G., Nix, R. L., Greenberg, M. T., Gayles, J. G., Bamberger, K. T., & Demi, M. A. (2015). Integrating mindfulness with parent training: effects of the mindfulness-enhanced strengthening families program. *Developmental Psychology, 51*(1), 26–35. https://doi.org/10.1037/a0038212.

Coleman, P. K., & Karraker, K. H. (1998). Self-efficacy and parenting quality: findings and future applications. *Developmental Review, 18*, 47–85.

Curran, P. J., Bollen, K. A., Chen, F., Paxton, P., & Kirby, J. B. (2003). Finite sampling properties of the point estimates and confidence intervals of the RMSEA. *Sociological Methods & Research, 32*(2), 208–252.

de Haan, A. D., Prinzie, P., & Deković, M. (2009). Mothers' and fathers' personality and parenting: the mediating role of sense of competence. *Developmental Psychology, 45*(6), 1695–1707.

Dix, T., & Grusec, J. (1985). Parent attribution processes in the socialization of children. In I. E. Sigel (Ed.), *Parental belief systems* (pp. 201–233). Hillsdale: Erlbaum.

Dix, T., & Lochman, J. E. (1990). Social cognitions and negative reactions to children: a comparison of mothers of aggressive and nonaggressive boys. *Journal of Social and Clinical Psychology, 9*(4), 418–438. https://doi.org/10.1521/jscp.1990.9.4.418.

Duncan, L. G. (2007). *Assessment of mindful parenting among parents of early adolescents: development and validation of the interpersonal mindfulness in parenting scale*. (Unpublished doctoral dissertation). Pennsylvania State University the Graduate School College of Health and Human Development, State College, PA.

Duncan, L. G. (2018; in press). The interpersonal mindfulness in parenting (IM-P) scale. In Singh, N., Medvedev, O. N., Krägeloh, C. U., & Siegert, R. J. (Eds.). *Handbook of assessment in mindfulness*. Springer.

Duncan, L. G., Coatsworth, J. D., & Greenberg, M. T. (2009a). A model of mindful parenting: implications for parent–child relationships and prevention research. *Clinical Child and Family Psychology Review, 12*(3), 255–270.

Duncan, L. G., Coatsworth, J. D., & Greenberg, M. T. (2009b). Pilot study to gauge acceptability of a mindfulness-based, family-focused preventive intervention. *The Journal of Primary Prevention, 30*(5), 605–618.

Enders, C. K. (2010). *Applied missing data analysis*. New York: Guildford Press.

Forehand, R., & Nousiainen, S. (1993). Maternal and paternal parenting: critical dimensions in adolescent functioning. *Journal of Family Psychology, 7*, 213–221. https://doi.org/10.1037/0893-3200.7.2.213.

Gibaud-Wallston, J., & Wandersman, L. P. (1978). Development and utility of the parenting sense of competence scale. In *Paper presented at the meeting of the American Psychological Association*. Toronto, Canada.

Glatz, T., & Buchanan, C. M. (2015a). Over-time associations among parental self-efficacy, promotive parenting behaviors, and adolescents' externalizing behaviors. *Journal of Family Psychology, 29*, 427–437. https://doi.org/10.1037/fam0000076.

Glatz, T., & Buchanan, C. M. (2015b). Change and predictors of change in parental self-efficacy from early to middle adolescence. *Developmental Psychology, 51*, 1367–1379. https://doi.org/10.1037/dev0000035.

Goldstein, J. (2002). *One Dharma: the emerging Western Buddhism*. San Francisco: Harper San Francisco.

Jones, T. L., & Prinz, R. J. (2005). Potential roles of parental self-efficacy in parent and child adjustment: a review. *Clinical Psychological Review, 25*, 341–363. https://doi.org/10.1016/j.cpr.2004.12.004.

Kabat-Zinn, M., & Kabat-Zinn, J. (1997). *Everyday blessings: the inner work of mindful parenting*. New York: Hyperion.

Keijsers, L., & Poulin, F. (2013). Developmental changes in parent–child communication throughout adolescence. *Developmental Psychology, 49*(12), 2301–2308.

Kerr, M., Stattin, H., & Burk, W. J. (2010). A reinterpretation of parental monitoring in longitudinal perspective. *Journal of Research on Adolescence, 20*, 39–64. https://doi.org/10.1111/j.1532-7795.2009.00623.x.

Kline, R. (2011). *Principles and practice of structural equation modeling* (3rd ed.). New York: Guilford.

Laird, R. D., Marrero, M. D., & Sentse, M. (2010). Revisiting parental monitoring: evidence that parental solicitation can be effective when needed most. *Journal of Youth & Adolescence, 39*, 1431–1441. https://doi.org/10.1007/s10964-009-9453-5.

Lam, C. B., McHale, S. M., & Crouter, A. C. (2012). Parent–child shared time from middle childhood to late adolescence: developmental course and adjustment correlates. *Child Development, 83*(6), 2089–2103.

Lansford, J. E., Rothenberg, W. A., Jensen, T. M., Lippold, M. A., Bacchini, D., Bornstein, M. H., … Malone, P. S. (2018). Bidirectional relations between parenting and behavior problems from age 8 to 13 in nine countries. *Journal of Research on Adolescence*, *28*(3), 571–590.

Lippold, M. A., & Duncan, L. G. (2018). Mindful parenting. In R. Levesque (Ed.), *Encyclopedia of adolescence*. New York: Springer.

Lippold, M. A., Coffman, D. L., & Greenberg, M. T. (2013a). Investigating the potential causal relationship between parental knowledge and youth risky behavior: a propensity score analysis. *Prevention Science, 15*, 869–878.

Lippold, M. A., Greenberg, M. T., & Collins, L. M. (2013b). Parental knowledge and youth risky behavior: a person oriented approach. *Journal of Youth and Adolescence, 42*(11), 1732–1744.

Lippold, M. A., Greenberg, M. T., Graham, J., & Feinberg, M. E. (2014). Unpacking the effect of parental monitoring on early adolescent problem behavior: mediation by parental knowledge and moderation by parent-youth warmth. *The Journal of Family Issues, 35*, 1800–1823.

Lippold, M. A., Duncan, L. G., Coatsworth, J. D., Nix, R. L., & Greenberg, M. G. (2015). Understanding how mindful parenting may promote mother-youth communication. *The Journal of Youth and Adolescence, 44*, 1663–1673.

Lippold, M. A., Glatz, T., Fosco, G. M., & Feinberg, M. E. (2018). Parental perceived control and social support: linkages to change in parenting behaviors during early adolescence. *Family Process, 57*(2), 432–447. https://doi.org/10.1111/famp.12283.

Loulis, S., & Kuczynski, L. (1997). Beyond one hand clapping: seeing bidirectionality in parent–child relations. *Journal of Social and Personal Relationships, 14*, 441–461. https://doi.org/10.1177/02365407597144002.

Luberto, C. M., Cotton, S., McLeish, A. C., Mingione, E. M., & O'Bryan, E. M. (2014). Mindfulness skills and emotional regulation: the mediating role of coping self-efficacy. *Mindfulness, 5*(4), 373–380. https://doi.org/10.1007/s12671-012-0190-6.

Miller, S. (1995). Parents' attributions for their children's behavior. *Child Development, 66*(6), 1557–1584. https://doi.org/10.2307/1131897.

Molgaard, V. K., Kumpfer, K. L., & Fleming, E. (2001). *The strengthening families program: for parents and youth 10–14; a video-based curriculum*. Ames: Iowa State University Extension.

Racz, S. J., & McMahon, R. J. (2011). The relationship between parental knowledge and monitoring and child and adolescent conduct problems: a 10-year update. *Clinical Child and Family Psychology Review, 14*(4), 377–398. https://doi.org/10.1007/s10567-011-0099-y.

Renk, K., Roberts, R., Roddenberry, A., Luick, M., Hillhouse, S., Meehan, C., … Phares, V. (2003). Mothers, fathers, gender role, and time parents spend with their children. *Sex Roles*, *48*, 305–315. https://doi.org/10.1023/A:1022934412910.

Rostami, A., Shariatnia, K., & Khajehvand Khoshli, A. (2015). The relationship between self-efficacy and mind fullness with rumination among students of Islamic Azad University, Shahrood Branch. *Medical Science, 24*(4), 254–250.

Shumow, L., & Lomax, R. (2002). Parental efficacy: predictor of parent behavior and adolescent outcomes. *Parenting: Science and Practice, 2*, 127–150. https://doi.org/10.1207/S15327922PAR020203.

Slagt, M., Deković, M., de Haan, A. D., van den Akker, A. L., & Prinzie, P. (2012). Longitudinal associations between mothers' and fathers' sense of competence and children's externalizing problems: the mediating role of parenting. *Developmental Psychology, 48*, 1554–1562.

Slep, A. M. S., & O'Leary, S. G. (1998). The effects of maternal attributions on parenting: an experimental analysis. *Journal of Family Psychology, 12*, 234–243.

Stattin, H., & Kerr, M. (2000). Parental monitoring: a reinterpretation. *Child Development, 71*, 1072–1085. https://doi.org/10.1111/1467-8624.00210.

Teti, D. M., & Gelfand, D. M. (1991). Behavioral competence among mothers of infants in the first year: the mediational role of maternal self-efficacy. *Child Development, 62*, 918–929. https://doi.org/10.2307/1131143.

Teti, D. M., O'Connell, M. A., & Reiner, C. D. (1996). Parenting sensitivity, parental depression and child health: the mediational role of parental self-efficacy. *Early Development & Parenting, 5*(4), 237–250. https://doi.org/10.1002/(SICI)1099-0917(199612)5:4<237::AID-EDP136>3.0.CO;2-5.

Tofighi, D., & MacKinnon, D. P. (2011). RMediation: an R package for mediation analysis confidence intervals. *Behavior Research Methods, 43*, 692–700. https://doi.org/10.3758/s13428-011-0076-x.

Turpyn, C. C., & Chaplin, T. M. (2016). Mindful parenting and parents' emotion expression: effects on adolescent risk behaviors. *Mindfulness, 7*(1), 246–254. https://doi.org/10.1007/s12671-015-0440-5.

West, S. G., Taylor, A. B., & Wu, W. (2012). Model fit and model selection in structural equation modeling. In R. H. Hoyle (Ed.), *Handbook of structural equation modeling* (pp. 209–231). New York: Guilford.

Wray-Lake, L., Crouter, A. C., & McHale, S. M. (2010). Developmental patterns in decision-making autonomy across middle childhood and adolescence: European American parents' perspectives. *Child Development, 81*(2), 636–651.