



The Longitudinal Influence of Caregiver Dispositional Mindful Attention on Mindful Parenting, Parenting Practices, and Youth Psychopathology

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Abstract

Objectives Although much research examining youth psychopathology from an ecological family systems theoretical framework has highlighted negative or pathological parental characteristics, it is important to identify and explore beneficial parent characteristics, such as mindful attention and awareness, that may be related to youth mental health. Dispositional mindfulness has been related, in cross-sectional research, to higher levels of mindful parenting, which impacts positive and negative parenting and, in turn, offspring internalizing and externalizing symptoms. The current study expands this work by examining associations among caregiver dispositional mindful attention, mindful parenting, parenting behaviors, and youth psychopathology in a short-term longitudinal model and by testing potential moderators.

Methods A sample of 564 parents (60% mothers) of children between the ages of 3 and 17 reported on their dispositional mindful attention, mindful parenting, positive and negative parenting practices, and their youth's internalizing and externalizing symptoms at 4 time points over a 12-month period.

Results The structural equation model indicated that higher levels of baseline caregiver dispositional mindful attention were related to higher levels of mindful parenting at 4 months. Higher levels of mindful parenting were associated with higher levels of positive parenting and lower levels of negative parenting practices at 8 months. Finally, lower levels of negative parenting practices were related to lower levels of internalizing and externalizing symptoms at 12 months. Moderator analyses suggested that all prospective associations in the model were equivalent for mothers and fathers, boys and girls, and children and adolescents.

Conclusions Findings shed light on the importance of considering caregiver dispositional mindful attention as it relates to parenting behaviors and youth mental health.

Keywords Mindfulness · Mindful parenting · Parenting · Youth internalizing · Youth externalizing

The emergence of an ecological family systems approach to the study of developmental psychopathology (Cummings and Davies 2002) has placed emphasis on the role of parental characteristics in the development of youth psychopathology. A family systems theoretical perspective (Cox and Paley

1997; Minuchin 1985) conceptualizes the family as a “complex, integrated whole” (Minuchin 1988, p. 8); individuals within the system are viewed to be fundamentally dependent on one another. By extension, family systems theory highlights how parent characteristics and psychopathology influence parent-child interactions and, in turn, youth psychosocial development. The majority of research on youth psychopathology that takes an ecological family systems approach has focused on unhelpful parental characteristics, behaviors, or symptoms. For example, research has clearly delineated the widespread impact of parental depression on children's psychological, behavioral, and social functioning (see Goodman et al. 2011; Goodman and Tully 2006, for reviews) via disruptions in parent-child interactions and inconsistent or reactive parenting techniques (Goodman and Gotlib 1999).

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Alternatively, the positive psychology movement has focused attention on beneficial characteristics, traits, and states, yielding a growing body of work identifying those variables associated with lower levels of pathology and increased well-being (Seligman and Csikszentmihalyi 2000). This body of research has primarily examined intrapersonal, rather than interpersonal, processes (see Fincham and Beach 2010, for a discussion of the disconnect between relationship science and positive psychology). However, there is merit in pursuing parent characteristics that may be related to parenting behaviors and, in turn, youth mental health. Doing so provides additional targets for intervention and prevention efforts. One parental characteristic worthy of further study is parental mindful attention and awareness, integral facets of mindfulness.

Mindfulness is defined as “the awareness that emerges through paying attention on purpose, in the present moment, and non-judgmentally to the unfolding of experience moment by moment” (Kabat-Zinn 2003, p. 145). In particular, trait, or dispositional mindfulness, refers to a stable personal characteristic to non-judgmentally and intentionally pay attention to different stimuli (Brown et al. 2007). Substantial empirical research on individuals, including several meta-analyses, has demonstrated that higher levels of trait mindfulness are associated with greater self-efficacy, coping, emotion regulation, motivation, and more adaptive cognitive processes (i.e., less rumination; Tomlinson et al. 2018) (e.g., Brown and Ryan 2003; Keng et al. 2011). Furthermore, interventions designed to increase mindfulness have demonstrated significant improvements in physical and psychological health, including reductions in depression (Alexander 2018), fatigue and chronic pain (e.g., Khoury et al. 2013), as well as parental stress (e.g., Chaplin et al. 2021). The practice of mindfulness fosters the cognitive distinction between perception and situational affective responses, enhancing intentional action rather than emotional reaction. Increased awareness of cognitive, affective, and behavioral differences has been hypothesized to increase cognitive complexity and emotional awareness over time (e.g., Bishop et al. 2004).

Although mindfulness research to date has focused primarily on individual-level outcomes, theoretical and emerging empirical work suggests the importance of considering relational issues as well (Kabat-Zinn 1991). Dumas (2005) theorized that parents who are mindful might be better able to regard their own and their child’s behaviors non-judgmentally, effectively distance themselves from negative emotions, and, in turn, enjoy an improved capacity to provide calm and consistent parenting. This construct is called mindful parenting, defined as providing intentional, non-judgmental, and present-centered attention to parent-child interactions (Bögels et al. 2010). Based on multiple theoretical conceptualizations (Bögels and Restifo 2014; Dumas 2005; Duncan et al. 2009; Kabat-Zinn and Kabat-Zinn 1997), caregivers maintaining or increasing mindful attention during parent-child interactions may facilitate improved

family health through the reduction of habitual or automatic maladaptive reaction patterns. However, because parent-child interactions can be a significant contextual stressor, some parents may instead be prone to lapses in mindful attention during parent-child interactions and then be more likely to rely on automatic hostile, coercive, and ineffective parenting behaviors. Thus, caregivers must maintain or even enhance their typical intrapersonal mindful attention during stressful interpersonal parent-child interactions to facilitate intentional parenting practices (e.g., non-reactivity, consistent limit setting), which subsequently may lead to improved youth well-being. Although experimental data are required to determine whether changes in caregiver dispositional mindful attention impact mindful parenting, parenting practices, and, in turn, youth well-being, the current paper is designed to offer a preliminary test of this thesis using prospective longitudinal data.

Research has begun to demonstrate how dispositional caregiver mindfulness is related to parenting practices in a favorable and powerful way. Recent cross-sectional work has shown that higher levels of caregiver dispositional mindfulness appear to be indirectly related to lower levels of youth internalizing and externalizing problems (e.g., Geurtzen et al. 2015; Parent et al. 2010; Parent et al. 2016a, b; Han et al. 2021). Potential mechanisms explaining this link, examined cross-sectionally, are parents’ emotional functioning within the parent-child relationship (Turpyn and Chaplin 2016), maternal and youth physiological stress response (Laurent et al. 2017), changes in brain regions responsible for empathy and emotion processing (May et al. 2016), positive (Han et al. 2021) and negative parenting practices (e.g., Duncan et al. 2015; Parent et al. 2010; Parent et al., 2016; Siu et al. 2016), coparenting relationship quality (Parent et al. 2014, 2016b), and attachment (Medeiros et al. 2016; Siu et al. 2016).

Although these findings are promising, the use of cross-sectional designs significantly constrains our ability to fully understand the factors through which caregiver dispositional mindful attention influences family health and youth psychosocial well-being. In particular, cross-sectional designs cannot test mediational pathways nor make inferences about the direction of effects. However, several intervention studies suggest that training in mindful parenting reduces parental stress, improves parent-adolescent relationship quality, and decreases youth psychopathology symptoms (e.g., Bögels et al. 2013; Coatsworth et al. 2010; Coatsworth et al. 2015; Meppelink et al. 2016); nevertheless, these investigations have largely focused on main effects and are only beginning to examine intervention or prevention program mechanisms (i.e., Lippold et al. 2015; Coatsworth et al. 2018). Research using prospective longitudinal designs is required to test the sequence of effects and clarify the public health implications of mindfulness practice for family and youth development. Despite this need, there have only been two studies to employ a prospective longitudinal design and neither specifically

examined parental mindfulness. The first longitudinal study (Tak et al. 2015) examined the link between mindful parenting and adolescent depressive symptoms over time, finding limited support. This null finding is not surprising given cross-sectional results showing that mindful parenting may be indirectly, but not directly, associated with youth internalizing problems through adaptive parenting practices (e.g., warmth, support, behavioral control) (Parent et al. 2010; Parent et al. 2016a). The second study (McKee et al. 2018) found that higher levels of mindful parenting prospectively predicted increases in supportive emotion socialization practices but did not examine broadband parenting practices (e.g., warm, hostility, limit setting) nor youth outcomes.

The primary aim of the current study was to test a prospective longitudinal model examining the processes through which caregiver dispositional mindful attention relates to youth psychopathology, specifically testing mediational influences of mindful parenting and parenting practices on youth outcomes. This primary aim was designed to attempt to replicate past cross-sectional models (e.g., Parent et al. 2016a) using a more rigorous longitudinal panel design capable of making more robust inferences about mediational pathways. A secondary aim of the current study was to examine moderators of associations in the conceptual model to investigate for whom relationships in the model are strongest or for which support is lacking using a prospective longitudinal design. As such, the current study sought to determine whether youth gender, parent gender, and youth developmental stage moderated relationships in the conceptual model. It was hypothesized, based on prior literature (Coatsworth et al. 2015; McKee et al. 2018; Parent et al. 2016a), that prospective associations in the conceptual model would be consistent across youth developmental stages and that associations between mindful parenting and parenting practices would be larger for fathers than mothers. Given no prior research examining youth gender as a moderator of these relations, these analyses were considered exploratory.

Method

Participants

Data from 564 parents of children between the ages of 3 and 17 were included in the current study. Overall, parents were on average 36.35 years old ($SD = 8.13$) and approximately 40% were fathers. Participants were predominately White (79.0%), with an additional 9.8% who identified as Black, 5.7% as Latino/a, 4.5% as Asian, and 1.0% as American Indian, Alaska Native, or other Pacific Islander. Parents' education level ranged from not completing high school or the H.S. equivalent (0.4%), obtaining a H.S. degree or GED (12.8%), attending some college (30.5%), earning a college

degree (40.6%), and attending at least some graduate school (15.9%). Most parents were employed full-time (61.7%) with 19.5% reporting employment at a part-time level, and 18.8% reporting unemployment. Reported family income was 21.7% for less than \$30,000 per year, 28.7% between \$30,000 and \$50,000, 19.5% between \$50,000 and \$70,000, 16.8% between \$70,000 and \$100,000, and 13.3% at least \$100,000. Parent marital status was organized into three categories with 17.1% reporting being single, 64.6% being married, and 18.3% being in a cohabiting relationship. Approximately half of youth were boys (54.4%) with 38.5% being an only child. Retention rates for parents were 80.7%, 67.7%, 60.6%, and 66.1% at 2-week, 4-month, 8-month, and 12-month time points, respectively. Overall retention, as defined by completing an assessment at any wave after the 2-week follow-up, was 74.6%.

Procedure

All study procedures were approved by a university Institutional Review Board (IRB). Parents consented online before beginning the survey following the approved IRB procedures. Parents were recruited online through Amazon's Mechanical Turk (MTurk) as part of a larger study on the assessment of parenting. MTurk is currently the dominant crowdsourcing application in the social sciences (Paolacci and Chandler 2014), and prior research has demonstrated that data obtained via crowdsourcing methods are as reliable as those obtained via more traditional data collection methods for adult populations (e.g., Buhrmester et al. 2011; Casler et al. 2013; Paolacci and Chandler 2014; Shapiro et al. 2013) as well as specifically for youth psychopathology research (Parent et al. 2017; Schleider and Weisz 2015). Three different studies were listed on MTurk (one for each youth age range) describing a year-long study involving the completion of five surveys over the course of 12 months. Participants were compensated \$4.00, \$2.00, \$4.00, \$4.00, and \$8.00 for participating in the baseline, two-week, 4-month, 8-month, and 12-month surveys, respectively. For follow-up surveys, participants were contacted using an MTurk ID to complete surveys. One email was sent the day before the survey was available, one email was sent the day the survey became available, and two to three emails were sent subsequently if the follow-up survey had not been completed. For families with multiple children in the target age range, one child was randomly selected by a computer algorithm and measures were asked about parenting specific to this child and her/his behavior. The baseline, 4-, 8-, and 12-month follow-up time points were utilized in the current study.

Ten attention check items were placed throughout the online survey. These questions asked participants to enter a specific response such as "Please select the Almost Never response option" that changed throughout the survey appearing

in random order within other survey items. Participants ($n = 2$) were not included in the study (i.e., their data removed from the dataset) if they had more than one incorrect response to these ten check items. Using this correction ensured that responses were not random or automated. The follow-up surveys allowed for demographic characteristics to be measured again when participants were re-contacted and for inconsistent responders to be excluded from analyses. Thus, the current study excluded inconsistent responders from analysis based on not reporting the same youth demographic characteristics across the assessed waves. We allowed for one-time potential mistakes, such as inconsistent gender or entering the date-of-birth wrong at a single time-point but excluded participants who made such mistakes at more than one wave ($n = 51$). Although this represents a strict criterion for inclusion, it was deemed necessary, given that in-person laboratory visits were not possible.

Measures

Demographic Information Parents responded to demographic questions about themselves (e.g., parental age, education), their families (e.g., household income), and the target child's demographic information (e.g., gender, age).

Caregiver Dispositional Mindful Attention Parents completed the 15-item Mindfulness Attention and Awareness Scale (MAAS; Brown and Ryan 2003). The MAAS is a scale that reflects a respondent's global experience of mindful awareness and attention in addition to specific daily experiences that include "...awareness of and attention to actions, interpersonal communication, thoughts, emotions, and physical states" (Brown and Ryan 2003, p. 825). Participants indicated how frequently they had the experience described in each statement (e.g., "I find it difficult to stay focused on what's happening in the present"). Statements were scored on a Likert scale ranging from 1 (almost always) to 6 (almost never). Higher scores reflect higher levels of mindful awareness. Mean levels of the MAAS in the current sample were comparable to community samples without prior mindfulness training (e.g., Mackillop and Anderson 2007) and higher than those obtained in a sample of parents with a history of depression (Parent et al. 2010). The MAAS has demonstrated good internal consistency ($\alpha = 0.80\text{--}0.90$) as well as convergent and discriminant validity (Brown and Ryan 2003). The alpha coefficient for the current study was 0.91.

Mindful Parenting The Interpersonal Mindfulness in Parenting Scale (IMPS; Duncan 2007) consisted of 8 items reflecting parents' ability to maintain: (1) awareness and present-centered attention during parenting interactions (e.g., reverse-coded: "I rush through activities with my child without being really attentive to him/her."); (2) non-judgmental

receptivity to their child's articulation of thoughts and displays of emotion (e.g., "I listen carefully to my child's ideas, even when I disagree with them."); and (3) the ability to regulate their reactivity to their children's behavior (e.g., "When I'm upset with my child, I notice how I am feeling before I take action."). Parents responded to each item on a 5-point Likert rating scale with higher scores reflecting higher levels of mindful parenting. Previous studies have demonstrated the concurrent and discriminant validity of the IMPS (e.g., de Bruin et al. 2014; Coatsworth et al. 2010). Mean levels of the IMPS in the current sample were comparable to the community sample from the original validation sample (Duncan 2007). Reliability for this scale in the current study was 0.80 and 0.81 for baseline and the 4-month follow-up, respectively.

Positive and Negative Parenting The Multidimensional Assessment of Parenting Scale (MAPS; Parent and Forehand 2017) was used for the current study to assess positive and negative parenting practices. The MAPS was developed from established measures of parenting practices to select optimal parenting items constituting both positive and negative dimensions of warmth/hostility and behavioral control appropriate for parents of children across the developmental span from young childhood through adolescence. The MAPS has demonstrated excellent internal and test-retest reliability as well as initial longitudinal support for the validity of MAPS subscale scores (Parent and Forehand 2017; Parent et al. 2017). Additionally, measurement invariance across youth developmental stages from young childhood to adolescent has been established for the MAPS subscales (Parent and Forehand 2017).

The Broadband Positive Parenting subscale of the MAPS includes four narrowband subscales: Proactive Parenting which measures child-centered appropriate responding to anticipated difficulties; Positive Reinforcement which measures contingent responses to positive child behavior with praise, rewards, or displays of approval; Warmth which measures displays of affection; and Supportiveness which measures displayed interest in the child, encouragement of positive communication, and openness to a child's ideas and opinions. The Broadband Negative Parenting factor includes three narrowband subscales: hostility which includes items representing intrusive parenting that is overcontrolling and parent-centered as well as harshness which includes coercive processes such as arguing, threats, and yelling, ineffective discipline, and irritability; physical control which includes items representing physical discipline both generally and specifically out of anger and frustration; and lax control which includes items representing permissiveness or the absence of control, easily coerced control in which the parent backs down from control attempts based on the child's behavior, and inconsistency which is the failure to follow through with control or inconsistent applying consequences. Reliability for the MAPS subscales in the current study was excellent, ranging from 0.81 to 0.91 for the baseline and 8-month follow-up.

Youth Internalizing and Externalizing Problems For the current study, indicators of youth internalizing and externalizing problems latent constructs were drawn from the Brief Problem Checklist (BPC; Chorpita et al. 2010), the Revised Child Anxiety and Depression Scale 25–parent version (RCADS-25; Chorpita and Ebesutani 2014), the Eyberg Child Behavior Inventory (ECBI; Eyberg and Pincus 1999), and the Emotion Regulation Checklist (ERC; Shields and Cicchetti 1997).

The BPC was developed by applying item response theory and factor analysis to the Youth Self-Report and the Child Behavior Checklist (Achenbach and Rescorla 2001). Chorpita et al. (2010) found that the internal consistency and test-retest reliability of the BPC were excellent, and factor analyses yielded one internalizing and one externalizing factor. Furthermore, validity tests showed large correlations with corresponding scales of the CBCL and YSR as well as with diagnoses obtained from a structured diagnostic interview (Chorpita et al. 2010). Mean levels of internalizing and externalizing problems in the current study were lower than those previously reported for the BPC in a sample of children diagnosed with anxiety, depressive, or disruptive behavior disorder (Chorpita et al. 2010).

The RCADS parent report short version was recently developed by Ebesutani et al. (2012) who shortened the RCADS from 47 items to 25 items using a large school-based sample and a clinic-referred sample of youth. Findings supported the use of the 25-item RCADS for a more efficient assessment of the general problem areas of anxiety and depression. Their results revealed that all anxiety items reflected a single broad anxiety dimension, which informed the development of a 15-item total scale. The resultant Anxiety Total scale demonstrated significant correspondence with anxiety diagnostic groups based on structured clinical interviews. The scores from the 10-item Depression Total scale (retained from the original version) were also associated with good reliability in the clinic-referred and school-based samples. For the parent report version, parents are asked to indicate how often each item applies to their child on a 4-point Likert scale (0 = never, 1 = sometimes, 2 = often, 3 = always).

The ECBI is a 36-item rating scale used to assess disruptive behaviors in children ages 2 to 16. Each behavior is rated on its intensity (1 = never to 7 = always) as well as whether or not the behavior is perceived to be a problem for the parents (yes or no). The ECBI has strong reliability and validity data (see Eyberg and Pincus 1999). Traditionally, the ECBI has been considered to be a unidimensional measure of disruptive behaviors (Eyberg 1992); however, it has also been viewed as a multidimensional measure of disruptive behaviors (Burns and Patterson 1991, 2000). Multiple studies have shown through exploratory and confirmatory factor analysis that the ECBI has three meaningful factors and that this three-factor model provides significantly better fit than the original one-factor

model (Axberg et al. 2008; Burns and Patterson 2000). The three factors are Oppositional Defiant Behavior Toward Adults (ODB: 10 items), Inattentive Behavior (IB; 4 items), and Conduct Problem Behavior (CPB: 8 items). Only the ODB subscale was used in the current study because it applies to all three developmental stages and, in previous research, has demonstrated high internal consistency (e.g., Axberg et al. 2008; Burns and Patterson 2000). Furthermore, the intensity, but not the problem, subscale was used.

The parent report version of the ERC contains 24 items rated on a 4-point Likert scale (1 = Never; 2 = Sometimes; 3 = Often; 4 = Almost always) including questions regarding intensity, lability, flexibility, and appropriateness of the child's positive and negative emotions. The current study used the Negativity/Lability subscale of the ERC which assesses angry reactivity, inflexibility, dysregulation of negative affect, and mood lability (Shields and Cicchetti 1997). Internal consistency of the Negativity/Lability subscale scores has been shown to be excellent (Shields and Cicchetti 1997).

Overall, the BPC internalizing problems subscale and the RCADS-25 anxiety and depression subscales served as indicators for the latent youth internalizing problems construct. The BPM externalizing problems, the ECBI ODB, and the ERC negativity/lability subscales served as indicators of latent youth externalizing problems construct. Internal consistency for all subscales at baseline and the 12-month follow-up assessments ranged from 0.80 to 0.95.

Data Analyses

Evaluation of the Primary Model Longitudinal structural equation modeling was used to test the hypothesized model and was conducted with Mplus 7.0 software (Muthen and Muthen 2010). To account for non-normal data that is typical of psychopathology outcomes, maximum likelihood estimation with robust standard errors (MLR) was used. The following fit statistics were employed to evaluate model fit: chi-square, χ^2 : $p > 0.05$ excellent, comparative fit index (CFI); > 0.90 acceptable, > 0.95 excellent), root mean square error of approximation (RMSEA; < 0.08 acceptable, < 0.05 excellent), and the standardized root mean square residual (SRMR; < 0.08 acceptable, < 0.05 excellent) (Hu & Bentler, 1999). The mechanism of missingness was treated as missing at random, and full information maximum likelihood estimation techniques were used for inclusion of all available data.

Prior to estimation of the full structural model, the longitudinal measurement model with latent mindful parenting, positive parenting, negative parenting, youth internalizing, and youth externalizing was estimated to ensure good fit. For the longitudinal CFA model, correlated uniqueness between the same indicators of the latent variables across time (e.g., MAPS Proactive Parenting at baseline with Proactive Parenting at 8-months), could co-vary. Further, the first indicator of each

latent variable was set to 1.0 to establish the metric. Next, multiple-group CFA models were employed to examine and test whether measurement invariance across parent gender, youth gender, and youth developmental stages were supported for all latent variables. Three different forms of measurement invariance were tested: configural (i.e., identical factor structure for each stage), metric (factor loadings are held equal across groups), and scalar (factor loadings and intercepts/thresholds are held equal across groups). The structural model was estimated following measurement models. Each variable in the model after baseline was regressed on that variable's value at the first wave.

Sensitivity Analyses Although not included in the proposed conceptual model, the effects of parent education and family income on the model were examined by running a multiple-indicator/multiple-cause (MIMIC; Muthen 1989) model in which all major constructs of the final structural model were regressed on the covariates separately. These demographic variables were chosen based on prior research indicating the importance of taking family income and parent education into account when examining parenting behaviors and youth psychopathology (Akee et al. 2010; Davis-Kean 2005). If paths in the structural model remained significant with the inclusion of these covariates, it was concluded that the control variables did not influence the relationships among variables in the model.

Moderators Following initial model building and sensitivity analyses, three sets of moderator analyses were performed for parent gender, youth gender, and youth age. Building on measurement invariance tests, multiple-group structural models were employed to examine and test whether differences in the structural parameters between mothers and fathers, boys and girls, and children (ages 3 to 10) and adolescents (ages 11 to 17) were statistically significant. This youth age split was chosen to reflect the developmental shift that occurs after elementary school and to ensure sufficient sample size in each group. Testing for cross-group invariance involved comparing a model with paths constrained to be invariant across groups to one where paths were freely estimated for each group. The use of the MLR estimator required the use of a scaled chi-square difference test (Satorra, 2000) for making comparisons among nested models.

Results

Primary Analyses

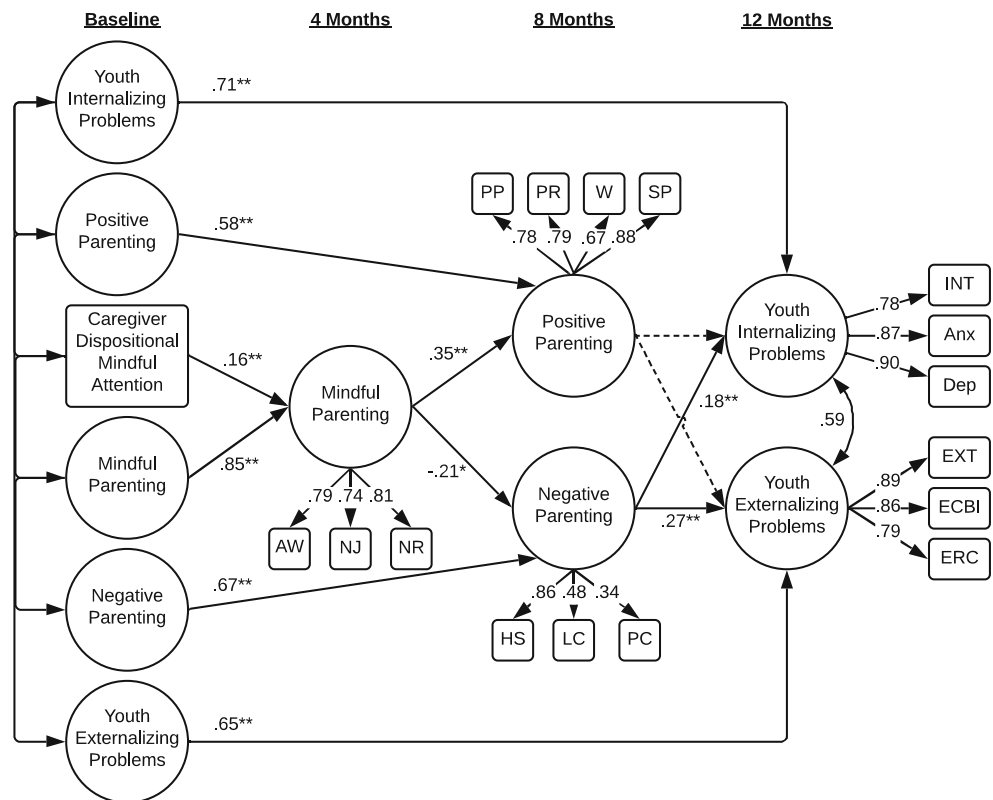
Measurement Model The longitudinal CFA model for all latent variables combined demonstrated good model fit, $\chi^2(401, N = 564) = 873.38$, RMSEA = 0.046, 95% CI 0.042–

0.050, CFI = 0.94, SRMR = 0.056. All factor loadings were significant and ranged from 0.71 to 0.82 for mindful parenting, 0.67 to 0.88 for positive parenting, 0.31 to 0.86 for negative parenting, 0.76 to 0.88 for youth internalizing problems, and 0.79 to 0.89 for youth externalizing problems.

Measurement Invariance Measurement invariance was tested for all latent variables simultaneously for each for parent gender, youth gender, and youth developmental stage (children ages 3 to 10 and adolescents ages 11 to 17). Regarding parent gender, the chi-square difference test was nonsignificant between the configural and metric models ($p = 0.07$) but significant between the metric and scalar models ($p < 0.05$), supporting weak measurement invariance of all latent variables across parent genders. Similarly, the chi-square difference test was nonsignificant between the configural and metric models for youth gender ($p = 0.06$) and youth developmental stage ($p = 0.10$) but significant between the metric and scalar models ($ps < 0.05$), supporting weak measurement invariance of latent variables across youth gender and developmental stage. In practice, researchers regularly fail to find full or strong measurement invariance (Vandenberg & Lance, 2000). However, though comparison of score means across groups is not warranted based on these results, weak measurement invariance is sufficient for group comparisons of significance and directionality of longitudinal associations in the primary model (Byrne et al., 1989). Therefore, these results suggest that, overall, measurement of mindful parenting, positive and negative parenting practices, and youth psychopathology was largely equivalent across parent and youth genders as well as youth developmental stages.

Conceptual Model The proposed model demonstrated good fit, $\chi^2(449, N = 564) = 998.83$, RMSEA = 0.047, 95% CI 0.043–0.050, CFI = 0.93, SRMR = 0.061) and is displayed in Fig. 1. The standardized estimates and bias-corrected bootstrap confidence intervals for the measurement model are presented in Table 1 and for the structural model in Table 2. As predicted, higher levels of caregiver dispositional mindful attention at baseline were associated with higher levels of mindful parenting 4 months later. Next, consistent with hypotheses, higher levels of mindful parenting at 4 months were related to higher levels of positive and lower levels of negative parenting practices at 8 months. In addition, higher levels of negative parenting practices at 8 months predicted higher levels of youth internalizing and externalizing problems at 12 months. Contrary to hypotheses, positive parenting practices at 8 months were unrelated to youth psychopathology at 12 months. Further supporting the conceptual model, the addition of direct paths from (1) caregiver dispositional mindful attention to positive and negative parenting, scaled $\Delta\chi^2 = 4.45(2), p = 0.11$, (2) caregiver dispositional mindful attention to youth internalizing and externalizing, $\Delta\chi^2 = 0.21(2), p =$

Fig. 1 Final structural model with significant standardized estimates displayed. Note. PP, proactive parenting; PR, positive reinforcement; W, warmth; SP, supportiveness; HS, hostility; LC, lax control; PC, physical control; AW, awareness and parent-centered attention; NJ, non-judgmental receptivity; NR, non-reactivity; ECBI, Eyberg Child Behavior Inventory; ERC, Emotion Regulation Checklist; INT, brief problem checklist internalizing problems; EXT, brief problem checklist externalizing problems; Anx, anxiety subscale; Dep, depression subscale



0.90, or (3) mindful parenting to youth internalizing and externalizing, $\Delta\chi^2 = 0.755$ (2), $p = 0.69$, did not significantly improve model fit.

Sensitivity Analyses MIMIC models tested the demographic effects of parent education level and family income on the associations in the model. All the major constructs of the model were regressed on the control variables separately. The direct paths from mindful parenting to negative parenting were reduced to marginal significance due to increased standard errors in both MIMIC models but had standardized estimates close to original values. All other paths were unaffected by the inclusion of these covariates. Thus, it was concluded that the control variables did not significantly influence the original relationships among variables in the model.

Moderator Analyses

Having shown that all latent variables met the assumption of metric measurement invariance across all three moderators (i.e., same factor structure and factor loadings), we were free to test whether differences in the structural parameters between groups were statistically significant. Seven nested model comparisons for each moderator were examined; one for each predictive pathway in the model (i.e., caregiver dispositional mindful attention to mindful parenting, mindful parenting to positive and negative parenting, and both parenting

variables to each youth psychopathology outcome). Contrary to hypotheses, all models that fixed paths to be equal across mothers and fathers resulted in equivalent model fit to a freely estimated across groups model, $\Delta\chi^2$ (1) = 0.08 to 1.9, $ps > 0.10$. Similarly, though consistent with hypotheses, all models that fixed pathways to be equal across parents of children (ages 3 to 10) and adolescents (ages 11 to 17) resulted in equivalent model fit, $\Delta\chi^2$ (1) = 0.03 to 0.45, $ps > 0.10$. Lastly, all models that fixed pathways to be equal across girls and boys resulted in equivalent model fit, $\Delta\chi^2$ (1) = 0.04 to 1.7, $ps > 0.10$. Overall, all prospective associations in Fig. 1 were equivalent for mothers and fathers as well as parents of boys or girls and children or adolescents. Thus, no support for moderation was found.

Discussion

The purpose of the current study was to examine the process by which one beneficial parent characteristic, caregiver dispositional mindful attention, influences youth well-being through testing a prospective longitudinal model of key theoretical mechanisms of change. The proposed model posited that higher levels of caregiver dispositional mindful attention would facilitate adaptive youth psychosocial development through the reduction in habitual or automatic maladaptive reaction patterns in parent-child interactions. These

Table 1 Measurement model

	Standardized estimate	95% CI
Internalizing—baseline		
BPC broadband internalizing	0.75	0.69 to 0.81
RCADS anxiety	0.85	0.80 to 0.90
RCADS depression	0.89	0.84 to 0.93
Externalizing—baseline		
BPC broadband externalizing	0.87	0.83 to 0.91
ECBI oppositional	0.88	0.84 to 0.92
ERC negativity	0.79	0.75 to 0.84
Mindful parenting—baseline		
IMPS awareness	0.70	0.64 to 0.76
IMPS non-judgment	0.74	0.68 to 0.79
IMPS non-reactive	0.74	0.67 to 0.81
Negative parenting—baseline		
MAPS hostility	0.85	0.77 to 0.92
MAPS lax control	0.45	0.37 to 0.54
MAPS physical control	0.30	0.20 to 0.39
Positive parenting—baseline		
MAPS proactive parenting	0.72	0.66 to 0.79
MAPS positive reinforcement	0.77	0.71 to 0.82
MAPS warmth	0.56	0.49 to 0.63
MAPS supportiveness	0.83	0.79 to 0.87
Mindful parenting—4 months		
IMPS awareness	0.79	0.72 to 0.86
IMPS non-judgment	0.72	0.65 to 0.79
IMPS non-reactive	0.81	0.75 to 0.87
Negative parenting—8 months		
MAPS hostility	0.86	0.78 to 0.95
MAPS lax control	0.48	0.37 to 0.58
MAPS physical control	0.34	0.25 to 0.44
Positive parenting—8 months		
MAPS proactive parenting	0.78	0.72 to 0.84
MAPS positive reinforcement	0.79	0.72 to 0.85
MAPS warmth	0.67	0.60 to 0.75
MAPS supportiveness	0.88	0.84 to 0.92
Internalizing—12 months		
BPC broadband internalizing	0.78	0.71 to 0.86
RCADS anxiety	0.87	0.82 to 0.92
RCADS depression	0.90	0.85 to 0.94
Externalizing—12 months		
BPC broadband externalizing	0.89	0.85 to 0.93
ECBI oppositional	0.86	0.80 to 0.91
ERC negativity	0.78	0.74 to 0.84

Note: BPC, Brief Problems Checklist; RCADS, Revised Child Anxiety and Depression Scale 25–parent version; ECBI, Eyberg Child Behavior Inventory; ERC, Emotion Regulation Checklist; IMPS, Interpersonal Mindfulness in Parenting Scale; MAPS, Multidimensional Assessment of Parenting Scale

interactions, in turn, were hypothesized to be associated with reduced reliance on hostile, coercive, and ineffective parenting behaviors and increase constructive patterns, such as warmth and clear communication, which subsequently may lead to improved youth well-being. A burgeoning area of research has begun to provide empirical support for this model, but investigations have relied on cross-sectional data. As such, the current study tested these associations using a short-term longitudinal model with the primary aim of broadening our understanding of how caregiver dispositional mindful attention is associated with favorable outcomes in families and children.

Results from the current study largely replicated a previous cross-sectional model by Parent et al. (2016a). Findings indicate that higher levels of caregiver dispositional mindful attention at baseline were associated with lower levels of youth psychopathology a year later through higher levels of mindful awareness during parenting interactions (i.e., mindful parenting) at 4-months and, in turn, lower levels of maladaptive parenting behaviors at the 8-month follow-up. Like previous cross-sectional findings (Parent et al. 2016a), the positive cascading effect of caregiver dispositional mindful attention on youth well-being functioned primarily through reductions in negative parenting behaviors, including lower levels of hostility (e.g., yelling, intrusiveness), lax control (e.g., permissiveness, inconsistency), and physical discipline. Although mindful parenting was related to positive parenting practices including warmth and positive reinforcement, there was no support for the link between positive parenting and youth mental health, which is surprising given support in prior cross-sectional studies for observed positive parenting (Parent et al. 2010; Turpyn and Chaplin 2016) as a fundamental mechanism linking parent mindfulness to youth problem behavior. Future longitudinal studies should utilize multiple methods of assessment, including observations of parenting, and multiple reporters, as well as explore indicators of youth well-being, such as prosocial behavior, as outcomes to understand the role of positive parenting better.

A secondary aim of the current study was to examine parent gender, youth developmental stage, and youth gender as moderators of associations in the conceptual model to determine whether links in the model differed by important demographic factors. Regarding parent gender, all associations in the model were equivalent in strength for mothers and fathers. This finding is inconsistent with previous intervention research (Coatsworth et al. 2015), as well as with a recent study examining the link between mindful parenting and emotion socialization (McKee et al. 2018). Using a subsample of the current study, McKee et al. (2018) found that the association between mindful parenting and nonsupportive emotion socialization practices was marginally stronger for fathers than mothers. This discrepancy in findings regarding parent gender may be due to the parenting practices examined as the current study did not include parenting practices specifically in

Table 2 Structural model

	Standardized estimate	95% CI
Longitudinal paths		
Baseline mindful parenting—4-month mindful parenting	0.85	0.76 to 0.94
Baseline caregiver mindfulness—4-month mindful parenting	0.16	0.06 to 0.27
Baseline negative parenting—8-month negative parenting	0.67	0.48 to 0.85
Baseline positive parenting—8-month positive parenting	0.56	0.38 to 0.74
Baseline negative parenting—12-month externalizing	0.27	0.12 to 0.41
Baseline positive parenting—12-month externalizing	−0.01	0.13 to 0.10
Baseline externalizing—12-month externalizing	0.65	0.52 to 0.77
Baseline internalizing—12-month internalizing	0.71	0.59 to 0.83
4-month mindful parenting—8-month negative parenting	−0.21	0.41 to 0.00
4-month mindful parenting—8-month positive parenting	0.35	0.18 to 0.51
8-month negative parenting—12-month internalizing	0.18	0.06 to 0.30
8-month positive parenting—12-month internalizing	−0.01	0.15 to 0.13
Concurrent paths		
Baseline internalizing with baseline externalizing	0.63	0.55 to 0.71
Baseline internalizing with baseline mindful parenting	−0.26	0.36 to −0.15
Baseline internalizing with baseline parental mindfulness	−0.48	0.54 to −0.42
Baseline internalizing with baseline negative parenting	0.57	0.46 to 0.67
Baseline internalizing with baseline positive parenting	−0.31	0.40 to −0.21
Baseline mindful parenting with baseline parental mindfulness	0.43	0.33 to 0.53
Baseline mindful parenting with baseline negative parenting	−0.58	0.70 to −0.46
Baseline mindful parenting with baseline positive parenting	0.80	0.73 to 0.86
Baseline mindful parenting with baseline externalizing	−0.39	0.49 to −0.29
Baseline parental mindfulness with baseline negative parenting	−0.61	0.69 to −0.52
Baseline parental mindfulness with baseline positive parenting	0.32	0.24 to 0.40
Baseline parental mindfulness with baseline externalizing	−0.44	0.52 to −0.36
Baseline negative parenting with baseline positive parenting	−0.39	0.51 to −0.28
Baseline negative parenting with baseline externalizing	0.69	0.60 to 0.79
Baseline positive parenting with baseline externalizing	−0.28	0.38 to −0.19
Baseline internalizing with 12-month internalizing	0.41	0.27 to 0.55
Baseline externalizing with 12-month externalizing	0.40	0.24 to 0.56
8-month positive parenting with 8-month negative parenting	−0.16	0.38 to 0.06
12-month internalizing with 12-month externalizing	0.59	0.42 to 0.75

response to children's negative emotions. Future research should further explore the hypothesis that father's mindfulness is especially influential on limiting negative responses to children's emotions but is equivalent to mothers on influencing broadband parenting practices such as warmth and behavioral control. Additionally, future research on this topic will benefit from examining potential mechanisms for parent gender differences. For example, does mindful parenting facilitate interruption of automatic or habitual gendered patterns of punitive or avoidant responses in emotionally-charged parenting situations (Fuchs & Thelen, 1988; Kang, Gruber & Gray, 2013; MacDonald & Hastings, 2010)?

In regard to youth developmental stage, findings from the current study replicate and mirror previous cross-sectional

results (Parent et al. 2016a, b) such that associations in the model were consistent across youth developmental stages from early childhood through adolescence. These results support the notion that the relationship between caregiver dispositional mindful attention, mindful parenting, and family health and youth psychosocial well-being is equivalent for families with young children or adolescents; namely, mindful parenting is related to positive and negative parenting practices, which, in turn, are associated with youth symptoms for toddlers to teenagers. However, these correlational data are limited; experimental data from mindfulness-based intervention or prevention programs are required to determine whether mindful parenting has an equivalent impact across youth developmental stages. Future research utilizing such designs

should examine the links in the current model to determine whether (1) increasing caregiver dispositional mindfulness is more or less likely to facilitate bringing a present-centered awareness that is non-judgmental and non-reactive to interactions with their children, (2) whether those mindful parenting behaviors impact other parenting approaches, and (3) whether youth symptoms are affected, based on the developmental stage of the youth. Lastly, the current study examined whether youth gender moderated relationships in the conceptual model; no support for differential associations was found. Results from the current study are encouraging and support consistent positive effects of parental mindful awareness on girls' and boys' internalizing and externalizing problem behavior. However, given that the current study is the first to test for youth gender differences, replication of this pattern is necessary to confirm results.

Limitations and Future Research

The current study had several strengths. First and foremost, the current study used a prospective longitudinal design to examine mechanisms. Second, it utilizes a relatively large sample which powers it to test for moderators of associations. Third, it adds to the research on youth psychopathology that takes an ecological family systems approach by examining a positive parent characteristic—caregiver dispositional mindful attention. This focus on a potentially beneficial factor in an interpersonal context is relatively unique in several literatures (e.g., Fincham and Beach 2010). However, results should be interpreted with caution in the context of a few notable limitations. First, one parent in the family provided self-report for all variables, which introduces issues around potential shared-method variance, and is not necessarily representative of the youth's lived experience or the perspective of other caregivers in the family. Second, the sample consisted of predominately White parents with at least some college education, which limits the generalizability of the current findings. It is important that future studies include multiple methods of assessment (e.g., observations of parenting, youth report) and a more diverse sample of families to increase confidence in and generalizability of results. Third, although the use of a prospective longitudinal design extends the current, primarily cross-sectional literature, experimental evidence is necessary in order to make strong claims of the causal influence of caregiver mindful attention on parent and child psychopathology. Finally, we examined caregiver mindful attention and awareness via the MAAS, one integral component of dispositional mindfulness. As such, findings are relevant only to mindful awareness and attention; future study could incorporate additional components such as non-judgmental acceptance of the present moment and nonreacting. Further, the MAAS items may describe absence of attentional focus which could instead be assessing general inattention (Van Dam et al. 2010) and

future studies would benefit from use of alternative multidimensional mindfulness measures (e.g., five-factor mindfulness questionnaire; Baer et al. 2006).

These limitations notwithstanding, the research literature on the longitudinal mechanisms linking caregiver mindful attention to youth psychopathology is rapidly growing. Future studies will benefit from using actor-partner interdependence models that explore the family systems impact of caregiver mindfulness thoroughly. For example, when one caregiver embodies interpersonal mindfulness during parent-child interactions, does this result in a positive spillover across other family subsystems, including coparent-child and parent-coparent interactions. Additionally, future studies would benefit from exploring how positive family environments, such as caregiver mindfulness and mindful parenting, are biologically embedded via changes in parent and child physiological systems involved in regulating stress-reactivity. Novel research methods (e.g., epigenetics) are growing our understanding of how early adversity is biologically embedded. Still, it is equally important for future research to explore how malleable positive factors like mindful parenting may help establish a biological foundation that promotes resiliency and prevents the development of psychopathology.

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Compliance with Ethical Standards

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

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

Ethics Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the University of Vermont Institutional Review Board and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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