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The contribution of parenting practices and parent emotion factors in children at risk for disruptive behavior disorders

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The goal of this study was to examine the impact of different parenting characteristics on child disruptive behavior and emotional regulation among a sample of at-risk children. The sample consisted of 373 Australian five- to nine-year-old children who were screened for serious behavior problems. Seven parenting variables based on self-report were evaluated, involving parenting practices, emotion beliefs and behaviors, emotion expressiveness, and mental health. Outcome variables based on parent/teacher report were child disruptive behavior problems and emotion regulatory ability. When entered simultaneously in a multiple regression analysis, inconsistent discipline, negative parental emotional expressiveness, and parent mental health demonstrated the strongest relationship to disruptive behavior problems and problems with emotion regulation. The data presented here elucidate multiple risk pathways to disruptive behavior disorders and can inform the design of prevention and early intervention programs.

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The role that parents play in the development of childhood behavioral disorders is well established. Parent mental health, inconsistent parenting, poor parental monitoring, and socioeconomic disadvantage are all related to the development of serious problem behavior in children (1). In addition to these risk factors, a growing body of literature has suggested a connection between behavior problems and deficits in children's emotional competence, an umbrella construct that can be operationalized as the ability to understand and regulate emotions in interpersonal and

intrapersonal situations (2). Such problems are posited to arise, in part, from the lack of a positive emotional exchange between the parent and child at a critical time of development (2). This study aims to evaluate the relations among parenting factors, child emotional competence, and disruptive behavior problems in an at-risk sample of Australian school-aged children. Other than a few exceptions (3, 4) much of the work in this area has focused on single dimensions of parent behavior in non-clinical preschool populations (e.g., emotion coaching or parents' emotional expressiveness). However, in real life, children are exposed to multiple aspects of parenting at the same time and there is still much to learn about the relative contribution of these factors to children's behavioral functioning. This knowledge will have important implications for prevention and early intervention.

Theoretical Background

Developmental psychopathology and functionalist perspectives on emotion propose that emotional competence is essential for adaptive behavioral functioning (2). Empirically, this is supported by studies that show that children who have difficulties with emotion identification, emotion understanding (of one's own and others' emotions), and emotion regulation are at risk for serious behavior problems (5-8). Particular importance has been placed on the direct and indirect effect of emotion regulation on children's problem behavior. In a longitudinal study, Trentacosta and Shaw (5) found that less use of an emotion self-regulation strategy in a delayed gratification task was directly related to peer rejection in early childhood, which was, in turn, indirectly associated (through impaired social relationships) with parent, teacher, and self ratings of conduct problems in adolescence. Gilliom et al. (6) found that use of emotion regulation strategies during a frustration task were associated with less teacher-rated aggressive and

delinquent behavior and less observed anger in a sample of 6-year-old boys. Eisenberg and colleagues (7) found that child regulatory processes, as measured by a parent- and teacher-reported behavior rating scale and performance on a behavioral task, mediated the effect of parents' positive facial expressivity and warmth (e.g., degree of smiling and laughing) on children's externalizing problems. These studies provide evidence of a link between emotional competence and behavioral functioning across childhood and suggest processes that can mediate the association between parenting and children's behavioral outcomes.

One of the main contributing factors to the development of emotional competence in children is parental socialization of emotion: children learn about emotion through parent emotion-related behavior (2), the nature of which is largely determined by parental beliefs regarding their own and their children's emotions (9). Socialization is thought to occur through modelling of emotional expression and regulation, direct coaching in how to identify and cope with emotion, and/or parental reinforcement of emotional expression (10). For instance, it is through emotion coaching parenting behaviors (e.g., validation, empathy) that children can develop the skills necessary to understand emotions (11, 12) and learn methods for self-regulating negative emotion (9). In contrast, emotion dismissing behaviors (e.g., minimization, criticism) appear to increase children's difficulties in managing their emotions (13). Parent emotional expressiveness and mental health, through their impact on the emotional climate of the family, are other ways in which emotion can be socialized, and have been linked to child emotion understanding and regulation (14, 15). Bouma and colleagues (14), for example, found that parents who display more negative affect have children who have problems in the use of adaptive coping strategies when distressed. The experience, however, of observing parents in appropriate negative-emotion exchanges may teach children how to cope with

emotions such as anger, fear, or sadness, especially when it leads to discourse about feelings and explanations by parents for the negative affect (16). Parent emotion socialization behaviors are also influenced by cultural characteristics (17). For example, research has shown that emotional expressiveness differs between Western and Eastern cultures, with the former tending to express their emotions freely, whilst the latter tends to be more regulated and less expressive (18).

The results of studies that have examined the relations between parent emotion socialization and child outcomes are, however, limited. Although some researchers have demonstrated a link between parent emotion coaching and emotional expressiveness with child externalizing behavior and emotion understanding (4, 19), most data is correlational in nature and pertains to non-clinical samples of preschoolers. In addition, a number of studies are based on relatively small samples (9, 21). For instance, Gottman et al. (9) reported positive associations between an emotion coaching parenting style and a number of positive outcomes in a community sample of preschoolers including adaptive behavior, higher self-esteem, better academic skills, more positive peer relations, and greater social problem-solving skills. However, they used a sample of just over 50 children and Shipman and Zeman (21) based their finding that parental emotion coaching mediated the relationship between child maltreatment and children's emotion regulation on a sample of 25 six- to twelve-year-old children.

Moreover, findings pertaining to the effects of parental emotion socialization on child outcomes have not been consistent. Some researchers have not found any effect of either emotion coaching or parent emotional expressiveness on behavioral disorders (13, 22) or children's understanding and regulation of emotion (23). For example, Garner et al. (23) found that family socialization practices involving the use of emotional language did

not predict low-income preschoolers' understanding of emotional expression. Ramsden and Hubbard (22) found that neither parent emotion coaching nor parent emotional expressiveness were related to child aggression in fourth-graders, however negative parent expressiveness was indirectly related to child aggression through the child's emotion regulation. Lunkenheimer et al. (13) did not find any effect of parent emotion socialization on emotional or behavioral outcomes in a sample of 87 eight- to eleven-year-old children. They did, however, find a trend ($p < .10$) between emotion coaching and child emotion regulation when the total number of emotion words used in parent-child communication was taken into account. The results of these studies highlight the need to operationalize the specific emotion socialization practices that influence the emotional competence and behavioral functioning of children, especially those deemed 'at risk' for disruptive behavior disorders.

Although some of the aforementioned parenting factors (e.g., parent emotion beliefs and behaviors, emotional expressiveness, parent mental health) may in isolation contribute to child problem behavior, it is the clustering together of parenting risk factors that increases susceptibility to risk for disruptive behavior disorders in children (24). Factors within the parent may function together through a number of cumulative pathways. For example, parents with mental health problems (such as depression) are likely to display inconsistent parenting responses and poor monitoring, and generally be less accessible to guide their child in regulating their emotion (3). Identifying the co-occurrence of parenting risk factors and their links to specific aspects of emotional competence and child problem behavior may help inform targeted parenting interventions that focus on children at risk for disruptive behavior disorders.

The present study builds on earlier research in several ways. First, we employed a parent and teacher screen to select an at-risk sample of children in their early elementary school years. The recruitment of children between 5 and 9 years of age who show early-onset behavior problems will further our understanding of the parenting factors that increase susceptibility to risk for disruptive behavior disorders. Second, in contrast to much of the literature on parental socialization of emotion, we used both parent- and teacher-rated outcome measures. This enabled us to differentially examine child behavior across a variety of settings (i.e., home and school). Third, we included a broad examination of parenting risk factors that potentially affect both the family environment and children's emotional and behavioral development, including parent mental health and parent emotion beliefs and behaviors.

Thus, the first goal of the study was to analyze a theoretically and empirically derived model whereby different parent characteristics inhibit (or promote) children's emotional and behavioral functioning. We hypothesized that parenting practices and parent emotion variables (i.e., parent emotion beliefs and behaviors, emotional expressiveness, and mental health) would yield both unique and cumulative effects on measures of child disruptive behavior problems and emotion regulation. Based on theories and findings from previous research (1), we expected to find that negative parenting practices (e.g., poor monitoring, inconsistent discipline, corporal punishment) and poor parent mental health would be directly related to child disruptive behavior and inversely related to child emotion regulation. However, due to mixed findings regarding the role of parent emotion socialization in school-age disruptive behavior and the absence of previous research that has studied its effects in relation to more general parenting practices, we did not formulate specific hypotheses regarding parent emotion beliefs/behaviors and parent emotional expressiveness. The second goal

of the study, given the role of emotion regulation in children's behavior (5), was to examine child regulatory ability as a possible mediator in the

relationship between parenting characteristics and disruptive behaviors. We hypothesized that child emotion regulation would help explain the

relationship between parenting characteristics (i.e., general parenting practices, parent emotion beliefs and behaviors, emotional expressiveness, and

mental health) and serious problem behavior.

Method

Participants

The sample consisted of 373 predominantly Caucasian children (94.6%) who were between 5 and 9 years of age (*M* age = 7.02, *SD* = 1.05).

Minorities of Asian, Middle Eastern and Pacific Island cultures were also present (< 5% in total) and boys comprised 74% of the sample. Children

were recruited from a total of 43 metropolitan and rural elementary schools located in lower socio-economic deciles. All children whose parents gave

consent for an early intervention group at the target schools were screened using a specifically developed 7-item behavioral checklist (25). All

teachers agreed to participate in the study. Items were rated by parents and teachers on a 5-point Likert scale. Sample items are "Does (the) child have

trouble keeping attention on play activities?", "How often does (the) child fight with other children and bully them?", and "Does he/she get into

trouble for not following the rules?" This screen was primarily developed to reduce teacher administration time following the refusal by school

principals to ask teachers to complete longer screens on each child in their class. A literature review found that existing behavior screening tools were

either too time-consuming to complete on a large sample or failed to include clinically relevant items such as oppositionality and inattention that have

been shown to help predict risk for conduct disorder (26, 27). Preliminary investigations show that the parent and teacher screens have good internal consistency (Cronbach's alpha = .83 and .87, respectively) and high convergent validity with other well-established, longer measures such as the Strengths and Difficulties Questionnaire and the Eyberg Child Behavior Inventory.

Children scoring above a z score of 1 (representing the top 15 percent) on the parent and/or teacher screen were classified as at-risk. A maximum of eight children from each school group were selected to participate in the study. This represented the maximum number of children that was deemed appropriate by facilitators to participate in an early intervention group. In the case where there were more than eight children identified as at-risk, those with higher z scores were selected. Thus, the children who were included in the study were rated by either parent or teacher report as highest in behavioral problems. Of 4,752 children who were screened, 1,075 (22.6%) met the at-risk criterion, and of those, 35% underwent a comprehensive assessment. The remaining 65% were excluded because the quota per school had been reached (this represented the majority of cases), they had a pre-existing autism spectrum disorder, or they declined involvement. At-risk children who could not be included in this study because the quota had been reached were followed up by the school. In total, the parents of 395 children were approached and invited to participate in the study; 5.6% (n = 22) declined. Of those who agreed to participate, 5.9% of parents (n = 22) and 10.7% of teachers (n = 40) failed to complete the questionnaires. Independent t tests and χ^2 analyses indicated that there were no differences on socio-demographic measures between those who completed parent/teacher questionnaires and those who did not: the two groups were similar with regards to child gender, parental occupational/educational status, annual family income, marital status, ethnicity, child age and full-scale IQ.

Of those participating, the mean Eyberg Child Behavior Inventory Intensity score was 142.17 *(SD* = 40.61), which is more than one standard deviation above the normative data obtained by Burns and Patterson (28). Family income ranged from less than $AUD40,000 (40%), $AUD40-60,000 (20%), $AUD60-100,000 (27%) to over $AUD100,000 (13%)[4]. Of the data obtained, maternal education ranged from less than 10 years of schooling (9%) through to high school completion (55%), and university educated (19%). Paternal education ranged from less than 10 years of schooling (9%) through to high school completion (36%), and university educated (15%). Of the mothers, 49% were not working, 34% were in clerical/sales/service positions, and 12% were in professional/associate professional positions. Of the fathers, 14% were not working, 24% were employed in tradework, 15% were in clerical/sales/service positions, and 14% were in professional/associate professional positions. The average number of siblings was 1.65 with 84% of children having two or fewer siblings. The majority of children lived with two parents (67%), and 28% lived with one parent in the home. This is not representative of the general population in Australia, where almost 80% of 6-7 year-old children reside with two biological parents and 17% live in single-parent households (29); it is, however, consistent with the at-risk nature of the sample.

Procedure

Prior to commencement of the study, approval was obtained from the Human Research Ethics Committee of Bendigo and Austin Health, as well as the Department of Education and Early Childhood Development and the Catholic Education Office. A plain language description of the study, along with consent documents for the parent and principal, parent and teacher screens, and teacher questionnaires were delivered to participating

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[4] According to the Australian Bureau of Statistics, the median household income in Victoria at the time data collection commenced (2007-2008) was $AUD66,820.

elementary schools. The principal of the school oversaw the distribution of these materials to teachers at his/her school and to the children's parents, who were mailed the forms. Information about the study was communicated to teachers at a staff meeting conducted by the chief investigators, whose contact details were provided if further questions should arise from teachers or parents. Teacher participation was voluntary. The principal reminded teachers to return screening tools and other questionnaires via email and staff meetings. Once selection occurred via the screening procedure, trained clinicians interviewed parents. Parents were requested to complete pen-and-paper questionnaires about their child's emotional and behavioral functioning as well as their own mental health, parent emotion beliefs and behaviors, level of emotional expressiveness, and parenting practices. Questionnaires were completed by the child's primary caregiver, who in the majority of families (92%) was the mother. Teacher questionnaires were used to provide a teacher-rated measure of children's emotion regulation and behavioral functioning.

Measures

   Family background data tool. The family background data tool asked parents for demographic information including annual family income, and educational and occupational status. These variables were assessed categorically.

   Parenting practices. The Alabama Parenting Questionnaire (APQ; 30) consists of 42 items and asks respondents to rate the frequency of specific interactions involving their child, emphasizing behavioral management style. It has a 5-point Likert scale: 1 *(never)*, 2 *(almost never)*, 3 *(sometimes)*, 4 *(often)*, and 5 *(always)*, and is scored on five subscales: Parental Monitoring and Supervision (e.g., "Your child goes out without a set time to be home"), Inconsistent Discipline (e.g., "The punishment you give your child depends on your mood"), Corporal Punishment (e.g., "You spank your

child with your hand"), Positive Parenting (e.g., "You praise your child when she does something well"), and Involvement (e.g., "You drive your child to special activities"). The APQ has been evaluated with a large community sample of 4- to 9-year-old Australian children. The results showed internal consistency alpha values ranging from .55 for Corporal Punishment to .77 for Positive Parenting (31). In the current study, each of the APQ subscales displayed moderate to high internal consistency ranging from **.**72 for Parental Monitoring to .82 for Positive Parenting. Inconsistent Discipline (Guttman's lambda = .76) and Corporal Punishment (Guttman's lambda = .73) were deemed to be the most appropriate dimensions of parenting for an early school-age population at risk for disruptive behavior problems and were used in testing our predictions.

Parent emotion beliefs and behaviors. The Maternal Emotional Styles Questionnaire (MESQ; 32) is a 14-item two-factor scale with high internal consistency (alpha values of .80 and .78 for the Emotion Dismissing and Emotion Coaching factors, respectively) and strong construct validity, as reported in the initial validation study (32). It measures parent emotion beliefs and behaviors including emotion coaching and dismissive parenting approaches around feelings of anger, sadness, and happiness in children. An additional 7 items on fear were included in the current study, with the permission of the scale author, which probed parents regarding the way they coped when their children were scared. This enabled the measurement of parental reactions to a broad range of children's emotions. Overall, the measure contains 11 items that reflect emotion coaching beliefs and behaviors (e.g., "When my child is scared, it's an opportunity for getting close") and 10 items that contain emotion dismissing beliefs and behaviors (e.g., "Sadness is something that one has to get over"). Each item is rated on a 5-point Likert scale 1 *(strongly disagree)*, 2 *(disagree)*, 3 *(neutral)*, 4

(agree), and 5 *(strongly agree)*. In the current study, the internal consistency of items using Guttman's lambda was .85 for emotion coaching (or .72 when the additional items on fear were excluded) and .83 for emotion dismissing (or .71 when the items on fear were excluded).

Parent emotional expressiveness. The Self-Expressiveness in the Family Questionnaire short form (SEFQ; 33) is a 24-item two-subscale measure that was used to examine the frequency of emotional expressiveness of an individual within the family context. Twelve of the items describe negative emotional displays (e.g., "How often do you quarrel with another family member?") and twelve items express positive scenarios (e.g., "How often do you express praise for someone in your family?"). Each item was rated from 1 *(not at all frequently)* to 9 *(very frequently)*. Good internal consistency was reported in the original study (34; alphas of .88 and .86 for the positive and negative subscales, respectively). The lambdas obtained in the current study were .91 for the positive scale and .85 for the negative scale.

Parent mental health. The Depression Anxiety and Stress Scales short form (DASS-21; 34) is a 21-item measure with three subscales (Depression, Anxiety, and Stress). Participants rate the frequency and severity of experiencing negative emotions over the previous week on a 4-point Likert scale (e.g., "I found it hard to wind down" and "I felt like I had nothing to look forward to"), ranging from 0 *(did not apply to me at all)* to 3 *(applied to me most of the time)*. A recent psychometric analysis revealed good internal consistency (alphas of .82, .77, and .88 for the depression, anxiety, and stress subscales, respectively) and convergent and divergent validity (35). In this study, the depression, anxiety, and stress subscales correlated highly with each other (> .7), therefore a composite variable from the three subscales was formed, representing the sum of the subscale scores. The lambda for the Composite Index of Negative Emotion was .96.

Children's disruptive behavior problems. The Eyberg Child Behavior Inventory (ECBI; 36) is a 36-item parent-report scale of disruptive behavior problems that has two components: the Intensity score, which examines the frequency of behaviors on a 7-point Likert scale ranging from 1 *(never)* to 7 *(always)*, and the Problem score, giving a continuous intensity scale along with an indication of whether (or not) the behavior is a problem. The ECBI has been used extensively in research and there are numerous studies of its internal consistency, construct validity, and convergent validity (e.g., 37). Internal consistency lambda values of .97 and .93 for the Intensity and Problem scores, respectively, were found in the current study.

The Conduct Problems subscale from the Strengths and Difficulties Questionnaire (SDQ; 38) was used as a teacher-rated measure of child disruptive behavior problems. The conduct problems subscale includes five items covering bullying, deceitfulness, and stealing. It is rated on a 3-point Likert scale: 0 *(not true)*, 1 *(somewhat true)*, 2 *(certainly true)*. Goodman (39) examined the psychometric properties of the teacher report SDQ and found moderate to strong reliability for all subscales (ranging from alphas of .70 for Peer Problems. .74 for Conduct Problems, and .88 for Hyperactivity). The Guttman's lambda for the teacher-rated conduct problems subscale was .76.

Children's emotion regulation. The Emotion Regulation Checklist (ERC; 40) is a 24-item measure of children's typical methods of managing emotional experiences. It obtains parental perceptions of their child's emotion regulation abilities and general emotional negativity. The checklist has two subscales: Emotion Regulation, which measures appropriate emotional expression, empathy, and emotional self-awareness (e.g., "Can modulate excitement in emotionally arousing situations") and Lability/Negativity that assesses inflexibility, lability, and dysregulated negative affect (e.g.,

"Exhibits wide mood swings"). It has a 4-point Likert scale ranging from 1 *(rarely/never)* to 4 *(almost always)*. Higher scores on the Emotion

Regulation subscale indicates more adaptive regulatory processes whereas higher scores on the Lability/Negativity subscale indicates greater emotion

dysregulation. Psychometrics of the ERC from the original study revealed good reliability (alphas of .96 for Lability/Negativity and .83 for Emotion

Regulation) and validity (41). In this study, Guttman lambda values for the Emotion Regulation and Lability/Negativity subscales were .71 and .84,

respectively.

The Social Competence Scale - Teacher Version (SCST; 41) was used as a teacher-report of children's emotional regulation. It is a 25-item

scale completed by the child's teacher that assesses a child's prosocial behaviors, emotional self-regulation, and academic skills. This scale was

created for the Fast Track Project and has demonstrated good internal consistency values ranging from .88 for the Emotional Self-Regulation subscale

and .93 for the Prosocial Behavior subscale (42). Responses are coded on a 5-point Likert scale: 0 *(not at all)*, 1 *(a little)*, 2 *(moderately well)*, 3

(well), and 4 *(very well)*. For the purposes of the current study only the individual score for the Emotional Self-Regulation subscale was used; the

internal consistency measure was very high (lambda =.94).

<div align="center">Results</div>

Analytic Strategy

Analyses for this study proceeded in several stages. First, assumptions of normality, linearity, multicollinearity, and homoscedasticity were

examined, and summary data for demographic, predictor, and dependent variables were assembled. Missing data were replaced with subscale means

if at least 80% of the subscale data was available. Person-mean imputation was used to replace missing data with subscale means if at least 80% of

the subscale data was available (42). Bivariate correlations were used to examine the relations between the demographic, predictor, and dependent

variables. Four multiple regression analyses were conducted to determine the pattern of relations among the sets of predictors and dependent

variables. Overall, we evaluated seven predictors that may impact child disruptive behavior problems. These included parenting practices (i.e.,

inconsistent discipline and corporal punishment), parent emotion beliefs and behaviors (i.e., emotion dismissing and emotion coaching), emotional

expressiveness (i.e., positive and negative), and problems with mental health. We evaluated four dependent variables using parent and/or teacher

report of symptoms. One dependent variable was used to measure parent-rated disruptive behavior problems: the Eyberg Child Behavior Inventory

Intensity score. One dependent variable was used to measure teacher-rated problem behavior: the Conduct Problems subscale from the Strengths and

Difficulties Questionnaire. The parent-rated Lability/Negativity subscale from the Emotion Regulation Checklist and the teacher-rated Emotional

Self-Regulation subscale from the Social Competence Scale-Teacher were used to measure children's emotion regulation. To control for type 1 error

(i.e. detecting spurious statistically significant differences as a result of conducting tests on multiple dependent variables), a conservative p-value of

0.01 was set by using Bonferroni's adjustment at the $p = .05$ level, with 4 tests, and an average correlation of 0.20 between dependent variables

(http://www.quantitativeskills.com/sisa/calculations/bonfer). The Bonferroni adjustment has been shown to be appropriate when conducting multiple

tests of regression on the same sample of data (43). Our final set of analyses examined the role of child emotion regulation in mediating the

relationship between parenting variables and behavioral functioning.

Preliminary Analyses

Table 1 incorporates raw score means, standard deviations, and bivariate correlations for all predictors and dependent variables. Pearson correlation coefficients were also used to examine the relations between family demographics (i.e., income and maternal education/occupation) and child age with the predictor and dependent variables. Those who came from higher-income families displayed fewer problems with monitoring and better mental health ($p < .001$). Higher-income parents also reported better emotion regulation in their children ($p < .01$). Mothers who were more educated (specifically, who completed at least twelve years of schooling) displayed fewer problems with monitoring and reported fewer mental health problems ($p < .001$). In addition, children with higher-educated mothers displayed less (parent-rated) problem behavior ($p < .05$). Mothers who worked in positions of higher occupational status (such as professional or associate professional positions) were more positive in their expressiveness and reported better emotion regulation in their children ($p < .001$). There was no effect of child age on emotion regulation or problem behavior.

Regression Analyses

Evaluation of the contribution of parenting to children's disruptive behavior problems and emotion regulation. We examined parenting predictors of child disruptive behavior and emotion regulation with four multiple regression analyses. Demographic variables that correlated with the outcome measures of interest were included as covariates at Step 1.

The role of parenting characteristics in children's disruptive behavior problems. Multiple regression was used to assess the ability of the parenting variables to predict child disruptive behavior problems, after controlling for relevant family demographic variables. Table 2 displays the

additive contributions of the parenting variables to child disruptive behavior as measured by the parent-rated ECBI Intensity score and the teacher-rated SDQ Conduct Problems subscale score. When the Intensity score was used as the dependent variable, maternal education was entered at Step 1 and explained 1.3% of the variance in disruptive behavior, $F(1, 341) = 4.61$, $p = .032$. Parenting variables entered at Step 2 explained an additional 30.9% of the variance in parent-rated disruptive behavior, F change $= 21.73$, $p < .001$. The total variance explained by the model as a whole was 32.3%, $F(8, 334) = 19.84$, $p < .001$. Three parenting variables were statistically significant: inconsistent parenting ($\beta = .29$, $p < .001$), negative emotional expressiveness ($\beta = .25$, $p < .001$), and parent mental health, ($\beta = .14$, $p = .009$). Parent emotion coaching was not found to be a significant predictor of child disruptive behavior ($p = .233$), although there was a trend for emotion dismissiveness to detrimentally affect child behavior ($p = .065$). When the teacher-rated SDQ Conduct Problems subscale was used as the dependent variable, the overall model was not significant, $F(7, 305) = 1.59$, $p = .137$, $R^2 = .035$.

The role of parenting characteristics in children's emotion regulation. In answering our first research question, we were also interested in determining if parenting characteristics predicted children's problems with emotion regulation. Two multiple regression analyses were conducted, regressing parenting practices and parent emotion variables on children's skills in parent- and teacher-rated emotion regulation (see Table 3).

Parenting variables explained 20.8% of the variance in children's problems with emotion regulation, as measured by the parent-rated ERC Lability/Negativity subscale, $F(7, 337) = 12.62$, $p < .001$. Similar to the findings for child disruptive behaviors, negative emotional expressiveness, $\beta = .22$, $p < .001$, inconsistent discipline, $\beta = .21$, $p < .001$, and parent mental health, $\beta = .15$, $p = .009$ were identified by parents as predictors of child

emotion dysregulation. Parent emotion beliefs and behaviors were not found to predict child regulatory processes. The model combining parenting practices and parent emotion variables was not significantly associated with teacher ratings of child emotion regulation, $R^2 = .038$, $F (7, 305) = 1.72$, $p = .104$. None of the predictors contributed with independent variance to explain teacher-rated child emotion regulation.

Mediational Analyses

After determining those parenting variables that exerted a unique effect on children's disruptive behaviors and emotion regulation, the next step was to examine child emotion regulation as a potential mediator in the relationship between parenting characteristics and child disruptive problems. In accordance with recommendations provided by Preacher and Hayes (44), specific indirect effects were calculated by bootstrapping (with 1000 re-samples). The interpretation of the mediation analysis focused on the 95% confidence interval of the bias-corrected and accelerated indirect effect, which adjusts for bias and skewness in the bootstrap distribution, rather than the statistical significance of the *a* (independent variable to mediator) and *b* (mediator to dependent variable) paths. If zero was not in the interval, then the indirect effect was deemed to be statistically significant. The bootstrap estimated indirect effects and 95% confidence intervals are presented in Table 3.

Does child emotion regulation mediate the relationship between parenting practices and child disruptive behavior problems? The independent variables were parenting practices (i.e., inconsistent discipline and corporal punishment), the dependent variable was child disruptive behavior problems, as measured by the ECBI Intensity score, and the posited mediator was child emotion regulation, as measured by the ERC Emotion Regulation subscale. Examination of the 95 percent bootstrap confidence intervals found that they did not include zero. It was, therefore, concluded

that child emotion regulation mediated the relationship between parenting practices and disruptive behavior problems. The direction of the *a* and *b* paths is consistent with the interpretation that inconsistent discipline and corporal punishment detrimentally affects child regulatory processes, which, in turn, leads to greater problem behavior. The size of the indirect effect was greatest for corporal punishment.

Does child emotion regulation mediate the relationship between parent emotion beliefs/behaviors and child disruptive behavior problems? Here, the independent variable was parent emotion beliefs and behaviors (emotion coaching and emotion dismissing), the dependent variable was the ECBI Intensity score, and the posited mediator was the ERC Emotion Regulation subscale. The bootstrap estimated indirect effect was -.297 when emotion coaching was the independent variable. This represents a significant effect and is consistent with the interpretation that greater emotion coaching leads to greater child emotion regulation, which, in turn, leads to less disruptive behavior; child emotion regulation does mediate the relationship between parent emotion coaching and child disruptive behavior. No specific indirect effect was found when emotion dismissing was the independent variable.

Does child emotion regulation mediate the relationship between parent emotional expressiveness and child disruptive behavior problems? Child emotion regulation was also found to mediate the relationship between positive expressiveness (the independent variable) and child disruptive behavior, with greater positive expressiveness leading to greater emotion regulation, which, in turn, resulted in less disruptive behavior. A specific indirect effect of negative expressiveness on child problem behavior through child emotion regulation was not found. The confidence intervals included zero so the mediation effect could not be fully demonstrated.

Does child emotion regulation mediate the relationship between parent mental health and disruptive behavior problems? Results indicated evidence of mediation and the indirect effect of parent mental health (the independent variable) on disruptive behavior problems through child emotion regulation. In this model, the effect of parent mental health on child emotion regulation may explain why parents who have problems with mental health have children who exhibit higher levels of disruptive behaviors.

Discussion

Our aim was to examine the unique and cumulative contributions of a broad range of parenting factors to school-age children's disruptive behavior problems and emotion regulation. We combined parent demographics, parenting practices, parent emotion beliefs and behaviors, parent emotional expressiveness, and parent mental health into a regression model that highlighted both direct and indirect risk pathways to disruptive behavior disorders.

Parenting Practices

In general, results supported our predictions for parent reports of child behavior and validated a wealth of previous research on this topic showing that parenting practices defined by inconsistent discipline and corporal punishment are associated with the development of serious child problem behavior and emotional dysregulation. Inconsistent parental discipline emerged as a significant factor, over and above the contribution of other parenting variables, in predicting child disruptive behaviors and emotional dysregulation. In addition, our data indicated a strong mediational role for child emotion regulation in the relationship between parenting practices and child disruptive behaviors. This suggests that the effect of

inconsistent discipline and corporal punishment on child emotion regulation may help to explain why these practices lead to serious behavior problems in children.

Parent Emotion Beliefs and Behaviors and Emotional Expressiveness

Consistent with functionalist theory (2) and previous findings (14, 15), parent negative emotion expressiveness was found to be integral to the development of children's problem behavior and emotion dysregulation, as measured by parent report. Findings were not, however, significant for teacher ratings of behavior. Negative emotional expressiveness was amongst the strongest predictors of parent-rated child disruptive behaviors and emotion dysregulation, when the overlapping effects of other parent variables were removed. A direct effect between positive emotional expressiveness and fewer behavioral problems was not found, however an indirect effect was found when child emotion regulation was included as a mediator. This is consistent with the findings of Morris et al. (15) who suggest that one way in which the family's positive emotional expressiveness may affect children's development is through its impact on children's emotion regulation.

Correlational analysis indicated that parent emotion coaching was associated with fewer disruptive behavior problems, as reported by parents. Further evaluation, however, did not implicate it as a predictor of child problem behavior although there was a trend for parent emotion dismissing to predict child disruptive behavior. Additional tests indicated that child emotion regulation mediated the association between emotion coaching and concurrent disruptive behaviors. The overall meditational findings suggest that children whose parents provide positive emotional expression and supportive responses to their emotion are less likely to exhibit disruptive behavior because of their tendency to engage in effective self-regulation.

This, together with the finding that negative parental affect predicts child emotion dysregulation, lends support to the theory that children learn to regulate their emotions through parent emotion expressiveness and responses to their affective displays (20, 2).

We also found that an emotion dismissing parenting style was positively correlated with emotion coaching. This is inconsistent with theory that emotion coaching and emotion dismissing behaviors are negatively related (22), however, is similar to the results of Lunkenheimer et al. (13), who found that over a third of participating parents both coached and dismissed their children's emotions. Our finding may be accounted for by correlates present in the parenting environment; both emotion coaching and emotion dismissing, for example, are associated with parental involvement. Thus, emotion dismissing parents are not less involved than emotion coaching parents; they may simply base their behaviors on an attitude that minimizes the role of feelings in children. Alternatively, the association between emotion coaching and emotion dismissing may be driven by underlying situational or child characteristics. For example, parents may be less willing to accept upset or angry behavior in situations outside of the family home or in children who they perceive as temperamentally labile (2). Furthermore, parents may react positively or negatively to certain emotions depending on the gender of their child (45) and the nature of the emotion (e.g., sadness vs. anger; 2). Thus, rather than simple adherence to a set of beliefs around emotions, parents may choose to help children manage their emotions in ways that are situationally and personally relevant to the child.

Parent Mental Health

Consistent with previous findings (46, 15), parent mental health (e.g., stress) was found to be a significant predictor of parent-rated child disruptive behavior and emotion dysregulation. We also found child emotion regulation to be a significant mediator between parent mental health and child disruptive behavior. It is, however, unclear whether a child's behavior becomes more problematic when faced with high levels of parental stress or whether parental stress occurs because of the child's ongoing behavioral difficulties. Both explanations are plausible. A high level of parent well-being can foster a child's ability to regulate their own behavior, which, in turn, strongly reduces the likelihood of problem behavior. Conversely, children who demonstrate effective strategies for managing emotional arousal can result in a lowering of parental stress, which also reduces the likelihood of child problem behavior.

Strengths and Limitations

The unique strengths of this study include the use of a selected high-risk sample obtained via a multiple rater screen where risk status was determined by the presence of significant disruptive behavior problems. In addition, we used multiple informants (i.e., teachers and parents) to report on behavioral functioning at home and at school. The data presented in this study emphasize the importance of focusing on multiple indicators of risk and elucidate direct and indirect pathways to disruptive behavior disorders.

When applying these findings to prevention programs, it seems likely that efforts would benefit by targeting parent mental health, parenting practices, and emotional expressiveness in addition to children's emotion regulation. Although there are not many studies on this topic, promising new intervention work is currently underway with the development of "Tuning into Kids", a group-based program designed to prevent behavioral

problems by targeting and strengthening emotion-focused aspects of parenting (47). In this study, Havighurst and colleagues found that preschool children of parents who acquired skills in regulating their children's emotions displayed fewer problem behaviors.

The findings from the present study help fill an important gap in the literature, however, there are a number of limitations. The first limitation concerns the absence of significant findings for teacher ratings of behavior. Parenting factors predicted parent-reported, but not teacher-reported, outcomes. One explanation for this finding is the possibility of a distortion effect, i.e., parents who report higher levels of depression and negative affect may be more likely to perceive their children as problematic. Research by Kroes and colleagues (48), however, suggests that this is more likely to be the case for internalizing, not externalizing, behavior problems. Alternatively, it could be that parenting variables do not influence classroom behavior. Children of depressed parents may, for example, only display problem behaviors at home, which are more likely to be reported by parents. This is consistent with the generally low correlation reported in the literature between parent and teacher ratings of behavioral problems (49). Another explanation for the finding that parenting factors only predicted parent-reported behavior problems is that parents who regard their child as having behavior problems may tend to apply discipline inconsistently as they attempt to navigate different ways of managing their child's behavior.

The second major limitation concerns the cross-sectional nature of this study. Whilst the findings are consistent with the direction of effects found in other work (50), the use of measures from the same point in time precludes causal inferences being made regarding the role of parenting characteristics in the development of child disruptive behavior. It also limits conclusions about the temporal ordering of the mediation finding, where results may be interpreted equally as a child effect on parenting as well as a parent effect on child functioning. Impulsive and disruptive child

behavior may, for instance, elicit parenting responses that are negative and dismissing (51). Longitudinal measures of these outcomes will help in determining the direction of effects over time. Finally, the use of a high-risk, low-SES sample may limit the generalizability of the findings to other community populations.

Summary

The study adds to the growing literature by examining the relative contribution of parenting characteristics that detrimentally affect the emotional and behavioral development of school-age children. The results indicate that inconsistent parental discipline, negative parent emotional expressiveness, and problems with parent mental health exert unique and cumulative effects on child disruptive behavior and emotion dysregulation. In addition, child emotion regulation was found to mediate the effects of a number of parenting characteristics (involving general parenting practices and emotion-related factors) on child problem behavior. The findings provide partial support for the work of others emphasizing the importance of parent emotion socialization in children's emotional and behavioral development. Identifying the co-occurrence of parenting factors that contribute to child problem behavior and emotional competence may help inform targeted parenting interventions that focus on at-risk children (for example, by improving parent mental health and emotion socialization practices). The limitations of the study include the absence of significant findings for teacher ratings of behavior and the cross-sectional design. Future research that incorporates a longitudinal framework and that examines the influence of different parenting factors on intervention outcomes may help to enhance our understanding of the processes through which parenting may predispose and maintain childhood risk for disruptive behavior disorders. For example, a parent's depressed mood may reduce their motivation to

implement changes in their parenting approach. This may impede the growth of emotion regulation skills in children, which may, in turn, exacerbate

problem behavior (52). This study enhances our understanding of one of the multiple pathways to the development of disruptive behavior disorders in

children, highlighting the role of parent emotion socialization.

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Table 1. *Means, standard deviations, and correlation matrix for parent and child variables*

	Subscale	*M(SD)*	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1.	APQ-ID	15.6(4.0)	-	-	-	-	-	-	-	-	-	-	-
2.	APQ-CP	5.1(1.7)	.281**	-	-	-	-	-	-	-	-	-	-
3.	SEFQ-P	84.4(14.9)	-.244*	-.228**	-	-	-	-	-	-	-	-	-
4.	SEFQ-N	47.5(14.0)	.389**	.280**	-.177**	-	-	-	-	-	-	-	-
5.	PESQ-EC	43.7(5.7)	-.130†	-.071	.353**	-.086	-	-	-	-	-	-	-
6.	PESQ-ED	38.2(5.5)	.146*	.075	.183**	.157*	.441**	-	-	-	-	-	-
7.	DASS-CI	12.8(11.7)	.372**	.153*	-.233**	.496**	-.065	.072	-	-	-	-	-
8.	ECBI-IN	142.2(40.6)	.447**	.254**	-.200**	.438**	-.154*	-.026	.388**	-	-	-	-
9.	ERC-LN	34.0(6.7)	.342**	.164*	.091	.370**	-.080	.052	.344**	.274**	-	-	-
10.	ERC-ER	22.6(3.9)	-.217**	-.162*	.312**	-.094	.128*	.073	-.250**	-.187**	-.179**	-	-
11.	TSDQ-CP	3.8(2.6)	-.143*	-.062	.070	-.140†	.019	-.071	-.048	-.042	-.021	.024	-
12.	SCST-ER	15.7(8.5)	.166*	.072	-.070	.142†	-.006	.054	.061	.051	.064	.051	-.725**

Note. APQ-ID = Alabama Parenting Questionnaire–Inconsistent Discipline; APQ-CP = APQ–Corporal Punishment; SEFQ-P = Self-Expressiveness in the Family Questionnaire–Positive; SEFQ-N = SEFQ–Negative; PESQ-EC = Parent Emotion Styles Questionnaire–Emotion Coaching; PESQ-ED = PESQ–Emotion Dismissing; DASS-CI = Depression, Anxiety, and Stress Scale–Composite Index of Negative Emotion; ECBI-IN = Eyberg Child Behavior Inventory–Intensity; ERC-LN = Emotion Regulation Checklist–Lability-Negativity; ERC-ER = ERC–Emotion Regulation; TSDQ-TD = Teacher-Rated Strengths and Difficulties Questionnaire-Conduct Problems; SCST-ER = Social Competence Scale Teacher–Emotion Regulation.

† = p < .05; * = p < .01; ** = p < .001

Table 2

Hierarchical multiple regression predicting children's disruptive behavior problems from parenting variables

Parenting variable	ECBI-IN			SDQ-CP		
	B	β	SE B	B	β	SE B
Step 1						
Demographic - maternal education	-4.51	-.12	2.10†			
Step 2						
Demographic - maternal education	-.10	-.00	1.85			
Parent practices - inconsistent discipline	3.01	.29	.55**	-.10	-.09	.04
- corporal punishment	2.13	.09	1.16	.01	.01	.09
Expressiveness - positive	.06	.02	.14	.01	.05	.01
- negative	.72	.25	.16**	-.02	-.12	.01
Emotion beliefs - emotion coaching	-.46	-.06	.38	.01	.02	.03
- emotion dismissing	-.72	-.10	.39	-.03	-.06	.03
Mental health	.48	.14	.18*	.01	.06	.01

Note. ECBI-IN = Parent-rated Eyberg Child Behavior Inventory–Intensity; SDQ-CP = Teacher-rated Strengths and Difficulties Questionnaire-Conduct Problems. R^2 = .01 for Step 1 (p = .032); R^2 change = .322 for Step 2 ($p <$ .001) for ECBI-IN. R^2 = .04 (p = .137) for SDQ-CP.

† = $p < .05$; * = $p < .01$; ** = $p < .001$

Table 3

Multiple regression predicting children's emotion regulation from parenting variables

	ERC-LN			SCST-ER		
Parenting variable	B	β	SE B	B	β	SE B
Parent practices - inconsistent discipline	.36	.21	.10**	.28	.13	.14
- corporal punishment	.13	.03	.20	.05	.01	.30
Expressiveness - positive	.04	.08	.03	-.03	-.05	.04
- negative	.11	.22	.03**	.07	.11	.04
Emotion beliefs - emotion coaching	-.07	-.06	.07	.02	.01	.10
- emotion dismissing	-.01	-.01	.07	.03	.02	.10
Mental health	.08	.15	.03*	-.05	-.07	.05

Note. ERC-LN = Emotion Regulation Checklist-Lability/Negativity subscale; SCST-ER = Social Competence Scale Teacher-Emotional Self-Regulation subscale. $R^2 = .21$ ($p < .001$) for ERC-LN. $R^2 = .04$ ($p = .104$) for SCST-ER.

[†] = p < .05; * = p < .01; ** = p < .001

Table 4

Mediation of the effect of parent variables on disruptive behavior problems

through child emotion regulation

	Point Estimate	*SE*	BCa 95% CI
Parenting practices			
Inconsistent discipline	.535	.168	.264 to .941
Corporal punishment	1.161	.428	.422 to 2.110
Parent emotion beliefs			
Emotion coaching	-.298	.129	-.609 to -.089
Emotion dismissing	-.191	.131	-.479 to .033
Parent emotion expressiveness			
Positive	-.236	.068	-.389 to -.121
Negative	.070	.047	-.014 to.170
Parent mental health	.204	.065	.096 to .357

Note. BCa = bias corrected and accelerated.

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