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Negative Affectivity Moderates Associations between Cumulative Risk and At-Risk Toddlers' Behavior Problems

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Abstract

This study examined cumulative risk, temperament traits, and their interplay as predictors of internalizing, externalizing, and sleep problems in at-risk toddlers. Participants were 104 low-income mother-toddler dyads recruited from Women, Infants, and Children (WIC) sites in a large city. The sample was primarily African American, and mothers were 21 years of age or younger at the child's birth. The dyads were assessed when the toddlers were approximately 18 months old and again at 24 months of age. Though all toddlers were from low-income families with young mothers, the families varied in the degree to which other contextual risk factors were present. A cumulative risk index was calculated based on five contextual factors: maternal education, neighborhood dangerousness, social support, household overcrowding and single parenting. In multiple regressions, cumulative risk predicted sleep and externalizing problems. In addition, negative affectivity predicted all three domains of problem behaviors, effortful control predicted fewer externalizing problems, and surgency predicted fewer internalizing problems. Moreover, low negative affectivity buffered the association between cumulative risk and both internalizing and sleep problems. These findings suggest that it is important to consider children's temperament traits in conjunction with the constellation of family risks when designing prevention programs to reduce the prevalence of behavior problems early in life.

Keywords

temperament; cumulative risk; behavior problems; at-risk families; toddlers

Behavior problems in toddlerhood are relatively common and normative. Although some behavior problems are expected in toddlerhood and are often transient, behaviors problems that persist have longstanding-standing implications (Campbell, 1995; Campbell & Ewing, 1990). Moreover, elevated levels of these early problems predict later maladjustment and negative developmental outcomes (Jansen et al., 2011; Krishnakumar & Black, 2002; Mesman, Bongers, & Koot, 2001). Accordingly, understanding precursors to these problem behaviors can guide efforts at prevention and early intervention during the first years of life.

Broadly speaking, behavior problems in toddlerhood include both internalizing (i.e., fearful, withdrawn) and externalizing (i.e., hitting, biting) problems (Bagner, Rodriguez, Blake,

Linares, & Carter, 2012). These behavior problems are typically assessed through the parent's ratings of the presence or absence of a problem, along with the severity (Achenbach, Edelbrock, & Howell, 1987). Besides the broad categorization of internalizing and externalizing behavior problems, sleep problems are included in many parent-rating scales because they are particularly salient during toddlerhood. Sleep problems can be stable from infancy through childhood, with early sleep problems presenting a risk factor for later sleep problems (Thomas, Monahan, Lukowski & Cauffman, 2015). For example, in a prospective study following children from 6 to 36 months, ten percent of the children were identified to have sleep problems at each time point via parent report, and sleep problems persisted into toddlerhood for 21% of children with sleep problems in infancy (Byars, Yolton, Rausch, Lanphear, & Beebe, 2012).

Sleep problems are also associated with both internalizing and externalizing problems. A recent review summarized the considerable evidence of links between sleep difficulties during childhood and numerous emotional and behavioral problems (Gregory & Sadeh, 2012). Moreover, one recent study found that sleep problems at 18 months, such as frequent night awakenings and short sleep duration, predicted emotional and behavioral problems at five years old (Sivertsen et al., 2015). In another recent study, sleep problems that persisted from preschool to school age were associated with a markedly higher risk of clinically-elevated emotional and behavioral problems (Simola, Liukkonen, Pitkäranta, Pirinen, & Aronen, 2014). Thus, in addition to internalizing and externalizing problems, sleep problems are particularly important to examine during toddlerhood.

There are a number of factors that predict the development and maintenance of internalizing, externalizing, and sleep problems during toddlerhood. Ecological and transactional perspectives support the view that the interaction between contextual factors and child characteristics contribute to development and outcomes (Bronfenbrenner, 1979; Sameroff, 2000). One broad factor is the family context; in particular, living in the presence of multiple family contextual risk factors (e.g., low social support and low maternal education) increases the likelihood that toddlers will develop behavior problems (Cronin, Halligan, & Murray, 2008; Laucht, Esser, & Schmidt, 1997; Shaw, Vondra, Hommerding, Keenan, & Dunn, 1994). In addition to contextual factors, the child's own characteristics, especially temperament traits, also play a central role in the emergence of early behavior problems (Lawson & Ruff, 2004).

Numerous contextual risk factors are associated with and predictive of early behavior problems, including variables like neighborhood risk and low maternal education (Heberle, Thomas, Wagmiller, Briggs-Gowan, & Carter, 2014; Qi & Kaiser, 2003). One study found that African American children, especially those from urban settings, experience a higher number of total risk factors in comparison to African Americans in other settings (i.e., suburban, rural), and in comparison to children from other racial minority groups (Wilson, Hurtt, Shaw, Dishion, & Gardner, 2009). This finding is particularly relevant to the present study because research suggests that the accumulation of multiple risk factors, more than the presence of a single risk factor, predicts later problems (Evans, Li, & Whipple, 2013).

One way of evaluating risk factors is the cumulative risk approach, which involves systematically identifying the presence or absence of multiple dichotomized risk factors to create an overall index of risk (Sameroff, Seifer, & McDonough, 2004). Research using this approach has found cumulative risk to relate to children's difficulties engaging in appropriate social behavior (Aro et al., 2009), internalizing and externalizing problems (Krishnakumar & Black, 2002; Shaw et al., 1994), and referral to clinical settings for problem behaviors (Greenberg, Speltz, DeKlyen, & Jones, 2001). Moreover, a linear relationship between cumulative risk and young children's behavior problems has been found, such that the more risks present, the more internalizing and externalizing behavior problems were found (Gassman-Pines & Yoshikawa, 2006). As another example, families classified as "high adversity/risk" based on the accumulation of risk factors reported more sleep problems among their toddlers (Cronin et al., 2008; Sheridan et al., 2013). Research has also found cumulative socio-demographic risk and cumulative psychosocial risk each uniquely relates to increased socioemotional and behavior problems among young children (Weitzman, Edmonds, Davagnino, & Briggs-Gowan, 2014). Collectively, these findings support the importance of examining the accumulation of risk factors in connection to behavior problems during toddlerhood, especially among children living in impoverished contexts. It is important to note, however, that not all children exposed to multiple risks experience negative outcomes.

In addition to the family's contextual factors, aspects of the child's temperament play a key role in the development of early behavior problems. One well-supported model of temperament focuses on the child's reactivity and self-regulation (Rothbart, 2011). More specifically, negative affectivity (e.g., fear, frustration), surgency (e.g., activity level), and effortful control (e.g., attention, inhibitory control) have been conceptualized as key components of temperament during childhood (Gartstein, Putnam, & Rothbart, 2012; Gartstein & Rothbart, 2003; Putnam, Ellis, & Rothbart, 2001). Higher surgency may put children at greater risk for externalizing problems; in contrast, lower surgency may put children at greater risk for internalizing problems. Moreover, higher negative affectivity and lower effortful control relate to internalizing and externalizing behavior problems (Gartstein et al., 2012). Of these traits, negative affectivity is often considered a particularly robust predictor of later maladjustment and behavior problems (Lawson & Ruff, 2004; Lengua, 2002).

The relationship between temperament traits and early sleep patterns has also been documented in the literature (Ednick et al., 2009). Difficult temperament, a constellation of traits including negative affectivity, predicts sleep problems, although not consistently across studies (Troxel, Trentacosta, Forbes, & Campbell, 2013; Weinraub et al., 2012). One early study of this topic found that infants with traits consistent with a difficult temperament slept less during the day and night than those with easy temperaments (Weissbluth, 1981). In another study, toddlers with chronic or prolonged problems with nighttime waking were described by their mothers as having lower sensory thresholds and being more distractible and demanding (Sadeh, Lavie, & Scher, 1994).

Temperament traits can be conceptualized both as direct contributors to problem behaviors as well as factors that may attenuate or exacerbate the association between accumulated

contextual risk and behavior problems. Young children living in stressful family contexts may be especially likely to develop behavior problems if their temperament traits also place them at risk for these problems. However, Evans and colleagues' (2013) review of the cumulative risk literature documents that temperament traits have rarely been examined as moderators of associations between cumulative risk and behavioral outcomes.

Two studies that examined the temperament traits described above found support for temperament's role as a moderator between cumulative risk and child outcomes. First, Lengua (2002) uncovered that the relationship between multiple risks and school-age children's maladjustment was moderated by multiple aspects of effortful control (i.e. inhibitory control and attention regulation) based on structured observation, such that these aspects of effortful control attenuated the association between risk and maladjustment. However, this moderation hypothesis was not supported for negative affectivity. Also, it was not supported when examining questionnaire measures of temperament. Second, a study by Chang, Shelleby, Cheong, and Shaw (2012), which utilized a mediated moderation model, found in low-income families that male toddlers' negative affectivity, measured via parent report, moderated the relationship between cumulative risk and poor emotion regulation during the preschool period. More specifically, the association between cumulative risk and poor emotion regulation was stronger among children with elevated levels of negative affectivity. Poor emotion regulation then predicted later lower social competence at home and in school. Thus, support exists for temperament traits as important moderators of associations between cumulative risk and problem behaviors, although the findings are not entirely consistent across studies. Furthermore, no studies that we are aware of examined temperament traits as moderators of associations between cumulative risk and sleep problems.

The present study examined the direct and interacting roles of the family context and the toddler's temperamental disposition when predicting behavior problems during toddlerhood. This research question was addressed with longitudinal data from a sample of toddlers at elevated risk for stable behavior problems due to low family income and young maternal age. The sample was unique because all toddlers were from low-income families with young mothers, yet the families varied in the degree to which other contextual risk factors were present. We hypothesized that cumulative contextual risk would predict multiple domains of behavior problems (externalizing, internalizing, and sleep problems) during toddlerhood. We also examined whether child temperament traits (effortful control, negative affectivity, and surgency) functioned as moderators of associations between cumulative contextual risk and toddlers' externalizing, internalizing, and sleep problems. Given the findings of Chang and colleagues (2012) reviewed above, we hypothesized that higher negative affectivity would exacerbate associations between cumulative risk and behavior problems. Based on Lengua's (2002) findings, we also investigated whether higher effortful control attenuated associations between cumulative risk and behavior problems. We did not have a specific hypothesis regarding the potential moderating role of surgency.

Method

Participants

Participants included 104 young adult mother-toddler dyads recruited in a large Midwestern city in the United States from Women, Infants, and Children (WIC) sites, which provide health and nutritional support for low-income women, and infants and young children at nutritional risk. To meet the longitudinal study's requirements, mothers had to have been 21 years or younger when they gave birth to the participating child, and their child needed to be less than 18 months of age when the mothers were contacted at the WIC sites. The selection criteria were used due to the increased risks faced by families of young children with young mothers in their teens and early twenties (Lewin, Mitchell, & Ronzio, 2013; Trentacosta et al., 2010). A total of 1,309 adults were contacted at WIC clinics to determine eligibility for the study. Of these adults, 209 met the eligibility criteria, and 165 provided follow-up contact information to learn more about the study. This study's sample comprised the 104 families who provided informed consent and completed the initial visit at the research laboratory when toddlers were approximately 18 months of age. The mothers' ages at the time of the child's birth ranged from 14.36 years to 21.94 years ($M = 19.39$ years, $SD = 1.57$). Mothers' mean age at the initial visit for this study was 20.4 years ($SD = 1.62$). Ninety-nine mothers identified as African American, one as Caucasian, two as both African American and Caucasian, one as multi-racial, and one as "other." This distribution reflects the racial composition of the population served by the WIC sites.

The toddlers (males = 55, females = 49) were assessed at approximately 18 months ($M = 1.51$ years, $SD = 0.09$) and 24 months ($M = 1.99$ years, $SD = 0.05$). Four families did not complete the 24-month assessment, and the multiple regression analyses presented below include the 100 children with complete data. A university Institutional Review Board approved the study. Mothers provided informed consent for their children and themselves. Assent from the mother and consent from a guardian were obtained for mothers under 18 years old.

Procedure

At 18 months, the mothers and their children were assessed at a research laboratory. During the approximately two-hour visit, mothers completed demographic information, numerous questionnaires including a measure of child temperament traits, and tasks unrelated to the present study. Participants were compensated \$100 for their time. At 24 months, two trained research assistants visited the homes of the mothers and their children. Visits for two families were conducted in the laboratory because the families did not have stable living arrangements. The second visit was also approximately two hours long, and participants were compensated with \$100 for their time. During this visit, mothers provided updated demographic information, completed questionnaires including a measure of child behavior problems, and engaged in tasks that are not the focus of the present study.

Measures

Early Childhood Behavior Questionnaire—The short form of the Early Childhood Behavior Questionnaire (ECBQ; Putnam, Gartstein, & Rothbart, 2006) was used to assess

the child's temperament at 18 months old. The ECBQ is a parent report instrument that measures 18 dimensions of the temperament of children between 18 and 36 months old. Within these 18 dimensions are three broader factors that are the focus of the present study: Surgency/Extraversion, Negative Affectivity, and Effortful Control. A short form of the original ECBQ was administered to the mothers due to time constraints. The short form (ECBQ-S) condensed the original form from 201 items to 107 items, while maintaining the original 18 temperament dimensions and three factors. Items were rated on a scale from 1 (*Never*) to 7 (*Always*), with an additional rating of NA (*Does not apply*) available if the mother did not see the child in the situation in the last two weeks. Surgency/Extraversion includes 27 items, and internal reliability for these items was good in the present study ($\alpha = .75$). A sample Surgency/Extraversion item is "During everyday activities, how often did your child seem full of energy, even in the evening?" Negative Affectivity includes 47 items, and internal reliability for these items was excellent in the present study ($\alpha = .87$). A sample Negative Affectivity item is "In situations when s/he is meeting new people, how often did your child turn away?" Effortful Control includes 32 items, and internal reliability for these items was good in the present study ($\alpha = .77$). A sample Effortful Control item is "When engaged in play with his/her favorite toy, how often did your child play for more than 10 minutes?"

Cumulative Risk—The cumulative risk index was generated from five contextual factors that are often included in cumulative risk research: (1) low maternal education, (2) neighborhood dangerousness, (3) low social support, (4) household overcrowding, and (5) single parenting. To generate the index, the five contextual factors were dichotomized (1 = *risk factor present*; 0 = *risk factor absent*) and then summed. Low maternal education was defined as less than a high school diploma or General Education Development (GED) (1 = *< High School/GED*; 22.1% of families met this criterion in the present study). Neighborhood dangerousness was determined by summing items from the Me and My Neighborhood Questionnaire (MMN; Trentacosta, Hyde, Shaw, & Cheong, 2009) and defining the upper quartile as "risk" (1 = *37pts - 62pts*; 0 = *17pts - 36pts*; 25% of families met this criterion). Low social support was determined by scoring a subset of items from the Inventory of Parent's Experiences (IPE; Crnic, Greenberg, & Slough, 1986) focusing on social support and defining the bottom quartile as "risk" (1 = *9pts - 24pts*; 0 = *25pts - 32pts*; 28.8% of families met this criterion). Household overcrowding was defined as more people in the home than total rooms present with the exception of bathrooms or hallways (1 = *people in home > rooms in home*; 17.3% of families met this criterion). Single parenting was defined as either not being married and/or not living with another adult in the home (1 = *single/ not living with another adult*; 23.1% of families met this criterion). The cumulative risk index was computed as the number of risk factors experienced by each participant, and could range from 0 (*no risk factors present*) to 5 (*all risk factors present*).

Child Behavior Checklist—When the toddlers were approximately 24 months old, mothers completed the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2000) for children 18 months to five years old. This measure consists of 99 items designed to assess behavioral and emotional issues in young children. For the purpose of this study, raw scores from the CBCL were used to evaluate child internalizing, externalizing, and sleep problems.

Items on the scale were rated by mothers on a scale from 0 (*Not True*) to 2 (*Very True or Often True*) based on their children's behavior within the past two months. Internalizing and externalizing are the two broad-band scales. Internalizing contains 36 items ($\alpha = .84$ in the present sample), and externalizing contains 24 items ($\alpha = .90$ in the present sample). Sleep problems is a separate subscale with seven items not contained on the two broad-band scales ($\alpha = .75$ in the present sample). Example items include "Sulks a lot" and "Unhappy, sad, or depressed" for internalizing problems; "Hits others" and "Disobedient" for externalizing problems; and "Has trouble getting to sleep" and "Wakes up often at night" for sleep problems.

Results

Table 1 presents means, standard deviations, ranges, and bivariate correlations for the measures included in the present study. The sample did not include individuals meeting criteria for all five contextual risk factors. However, 1% of the sample met criteria for four risk factors, 6.7% of the sample met criteria for three risk factors, 27.9% of the sample met criteria for two factors, 36.5% of the sample met criteria for one risk factor, and the remaining 27.9% of the sample did not meet criteria for any risk factors. Thus, a large majority of the sample met criteria for at least one risk factor included in the index. Furthermore, and as noted above, all children were from low-income families and had young mothers. The CBCL scores shown in Table 1 are the raw scores that were used in analyses, but for illustrative purposes the T-scores were 50.89 for internalizing ($SD = 11.24$), 51.77 for externalizing ($SD = 10.81$), and 55.46 for sleep problems ($SD = 8.01$). Thus, the mean T-scores fell within the normative range, but 23%, 21%, and 9% of the toddlers had elevated (borderline clinical or clinical) T-scores for internalizing, externalizing, and sleep problems, respectively.

Bivariate correlations indicated that the cumulative risk index was positively correlated with all three domains of behavior problems but not with child temperament. Notably, the three temperament domains were not significantly correlated with each other with the exception of a small, positive correlation between negative affectivity and surgency. On the other hand, the behavior problem domains were rather strongly correlated with each other. Negative affectivity was significantly correlated with all three behavior problem domains, but these correlations were relatively modest in magnitude. Effortful control was negatively correlated with externalizing problems.

Separate multiple regressions examined cumulative risk, child temperament domains, and the interaction of cumulative risk and negative affectivity as predictors of each domain of problem behaviors (see Table 2). Because surgency and effortful control did not moderate associations between cumulative risk and behavior problems in preliminary analyses, these interaction terms were not included in the models shown in Table 2. In the multiple regressions predicting externalizing problems and sleep problems, greater cumulative risk predicted more behavior problems while controlling for child temperament traits. Negative affectivity predicted all three domains of problem behaviors, and effortful control predicted fewer externalizing problems. In addition, surgency predicted fewer internalizing problems in the multiple regression model.

Statistically significant interaction terms indicated that negative affectivity moderated the association between cumulative risk and two of the problem behavior domains. For each multiple regression analysis, graphs of the interactions and tests of simple slopes were conducted following the procedures outlined by Aiken and West (1991) and Holmbeck (2002). The tests of simple slopes indicated that lower negative affectivity attenuated the link between cumulative risk and behavior problems. As shown in Figure 1, tests of simple slopes indicated that cumulative risk was significantly associated with internalizing problems when negative affectivity was 1 *SD* above the mean, $\beta = .40, p < .01$, but not when negative affectivity was 1 *SD* below the mean, $\beta = -.04, p > .05$. As shown in Figure 2, tests of simple slopes indicated that cumulative risk was significantly associated with sleep problems when negative affectivity was 1 *SD* above the mean, $\beta = .55, p < .001$, but not when negative affectivity was 1 *SD* below the mean, $\beta = .02, p > .05$.

Discussion

This study supported multiple hypotheses related to cumulative risk, children's temperament traits, and their interplay as predictors of at-risk toddlers' internalizing, externalizing, and sleep problems. Cumulative risk was correlated with the three problem behavior domains, and it predicted both sleep and externalizing problems when controlling for child temperament traits. This finding provides additional support for considering a family's constellation of risks, particularly when investigating precursors to behavior problems in young children and even among families who are uniformly facing multiple risks (i.e., low-income and young parenthood).

Temperament traits were not associated with cumulative risk but played an important role in predicting behavior problems. Importantly, with the exception of a small correlation between negative affectivity and surgency, the three temperament traits were not significantly correlated with each other. This finding is similar to Putnam and colleagues' (2006) initial factor analytic work on the ECBQ where the correlations between the three factors were small in magnitude. Of the three temperament factors, negative affectivity predicted all three behavior problem domains in the current study. These findings suggest that negative affectivity is a particularly salient influence on children's early behavior problems, even when accounting for their family's level of risk and other temperament traits. Perhaps addressing children's negative affectivity early in life with parent education programs could prevent early behavior problems and reduce negative affectivity's impact on later negative outcomes. One such program provided parents of preschoolers tailored parenting information based on the preschooler's temperament profile and found reduced rates of psychiatric visits across childhood among boys whose parents participated in the program (Cameron, Rice, Sparkman, & Neville, 2013).

Furthermore, low negative affectivity buffered the association between cumulative risk and both internalizing and sleep problems. Sleep and internalizing behavior problems appear to become exacerbated by high negative affectivity when the child faces an especially risky context. In contrast, low negative affectivity appears to be a protective factor for children facing multiple risks. Similarly to Chang et al. (2012), negative affect was supported as a moderator; however, the present study's outcomes and age of the children differ from Chang

et al.'s focus on emotion regulation and social competence during the preschool period and across the transition to school. Thus, the present study extends the findings of Chang et al. (2012) by supporting the interplay of contextual risk and temperament on behavior problems in younger children. The current findings also suggest that the accumulation of risk is an important consideration, but when evaluating a child's risk for behavior problems, especially sleep and internalizing problems, the contextual risk factors should be considered in conjunction with the child's level of trait negative affect. It is also noteworthy that cumulative risk was not correlated with negative affectivity, further supporting the assertion that these non-overlapping constructs work together synergistically to increase risk for problem behaviors. This finding could be especially salient for clinical populations and when designing prevention programs to reduce behavior problems among at-risk children.

Other temperament traits, including effortful control and surgency, did not function as moderators of associations between cumulative risk and behavior problems. This is in contrast to Lengua's (2002) findings where effortful control moderated the relationship between multiple risk and child maladjustment. Though effortful control and surgency did not function as moderators in the current study, these traits did predict behavior problems. Specifically, effortful control predicted fewer externalizing problems, and surgency predicted fewer internalizing problems in the multiple regression model. These findings are consistent with a prior longitudinal study that also supported these associations (Gartstein et al., 2012), but that prior study uncovered other links between the temperament traits and behavior problem outcomes that were not supported in the current study. More specifically, Gartstein et al. found links between low effortful control and internalizing problems as well as between high surgency and externalizing problems. The high level of poverty in the current sample may contribute to differences between our findings and the prior studies conducted by Lengua and Gartstein and colleagues. More specifically, it is possible that poverty-related stressors faced by young mothers and their toddlers play a more prominent role in the emergence of early behavior problems and dampen the associations between some of the temperament traits (besides negative affectivity) and behavior problems in this population.

Overall, the present study suggests that effortful control and surgency also play important roles in early behavior problems among at-risk toddlers of young mothers, albeit more modest roles than negative affectivity. Moreover, effortful control and surgency were not associated with sleep problems, which have received comparatively less attention in the literature on early behavior problems associated with temperament. Given the pattern of findings, it is perhaps appropriate that the literature on sleep has focused primarily on negative affect when temperament is examined as a factor associated with early sleep difficulties (Weinraub et al., 2012).

This study has multiple limitations. One limitation is the relatively homogenous sample. The sample in this study consisted of toddlers of young mothers, primarily from a single ethnic minority group, and recruited from a single urban setting. Although there was less variability among this high-risk sample, it is nonetheless a unique and important group to investigate because these children face increased risk for developing serious behavior problems due to being raised by young mothers living in poverty. However, it is also important to note that in

this study most toddlers' behavior problems were not clinically elevated. Another limitation is that the findings were based on parent report. Although parent report offers an essential and valuable perspective on children's wellbeing, especially in a population where many families are socially isolated and few children attend childcare, future studies could include behavioral observations of temperament and perspectives from other informants (e.g., grandparents or father figures). A third limitation is the potential overlap between the assessed constructs, especially temperament and behavior problems. For example, negative emotionality and sleep problems both fall in the dysregulation domain on the Infant-Toddler Social and Emotional Assessment (ITSEA). The dysregulation domain was strongly associated with internalizing and externalizing scores on the CBCL in a prior study of the ITSEA (Carter, Briggs-Gowan, Jones & Little, 2003). Though the present study also found significant associations between temperament traits (especially negative affectivity) and scores on the CBCL, the associations were quite modest in magnitude, suggesting that the temperament and behavior problem constructs were distinct.

In addition to addressing these limitations in future research, the present study offers several other interesting possibilities for future studies. For example, research could examine the longer-term implications of the interplay of temperament and cumulative risk on the longitudinal trajectory of behavior problems. Children who are high in negative affectivity and also face multiple contextual risk factors may be especially likely to follow a trajectory of stable, persistent behavior problems across childhood and into adolescence. Moreover, understanding the role temperament plays in relation to contextual risk and child behavior problems could inform policy and interventions aimed at ameliorating early-emerging problems. The present study's findings suggest that policy makers and interventionists need to consider children's temperament traits, especially negative affectivity, in conjunction with the constellation of family risks when designing prevention programs to reduce the prevalence of behavior problems early in life.

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Figure 1.
Interaction Between Cumulative Risk and Negative Affect Predicting Internalizing Problems.

Figure 2.
Interaction Between Cumulative Risk and Negative Affect Predicting Sleep Problems.

Table 1

Means, Standard Deviations, Ranges, and Bivariate Correlations

Bivariate Correlations										
		<i>N</i>	<i>M (SD)</i>	<i>Range</i>	1	2	3	4	5	6
1	Cumulative Risk	104	1.16 (.95)	0 to 4						
2	Negative Affectivity	104	3.78 (.77)	1.95 to 5.62	.11					
3	Effortful Control	104	4.73 (.59)	3.37 to 6.33	-.00	-.16				
4	Surgency/Extraversion	104	5.15 (.73)	2.76 to 6.58	-.15	.20*	.10			
5	Internalizing Problems	100	9.43 (7.40)	0 to 45	.24*	.25*	-.08	-.19		
6	Externalizing Problems	100	14.44 (8.40)	0 to 39	.25*	.33**	-.33**	.03	.68**	
7	Sleep Problems	100	3.27 (2.82)	0 to 12	.30**	.22*	-.11	-.03	.69**	.58**

* $p < .05$;

** $p < .01$.

Table 2

Cumulative Risk and Child Temperament as Predictors of Behavior Problems

Predictor	Internalizing Problems			Externalizing Problems			Sleep Problems		
	B	SEB	β	B	SEB	β	B	SEB	β
Cumulative Risk	1.45	.77	.18	2.15	.84	.24*	.88	.29	.29**
Negative Affectivity (NA)	3.42	1.01	.36**	3.05	1.11	.28**	1.00	.39	.28*
Effortful Control	−0.02	1.20	−.00	−4.06	1.32	−.29**	−.35	.46	−.07
Surgency/Extraversion	−2.06	1.00	−.20*	.69	1.10	.06	.04	.38	.01
Cumulative Risk × NA	2.24	1.10	.21*	1.14	1.21	.09	1.05	.42	.25*

Coefficients from the model including the interaction term are presented.

* $p < .05$;

** $p < .01$;