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Parenting Behaviors and Anxiety in Young Adults

Effortful Control as a Protective Factor

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Abstract. Parenting behaviors – specifically behaviors characterized by high control, intrusiveness, rejection, and overprotection – and effortful control have each been implicated in the development of anxiety pathology. However, little research has examined the protective role of effortful control in the relation between parenting and anxiety symptoms, specifically among adults. Thus, we sought to explore the unique and interactive effects of parenting and effortful control on anxiety among adults ($N = 162$). Results suggest that effortful control uniquely contributes to anxiety symptoms above and beyond that of any parenting behavior. Furthermore, effortful control acted as a moderator of the relationship between parental overprotection and anxiety, such that overprotection is associated with anxiety only in individuals with lower levels of effortful control. Implications for potential prevention and intervention efforts which specifically target effortful control are discussed. These findings underscore the importance of considering individual differences in self-regulatory abilities when examining associations between putative early-life risk factors, such as parenting, and anxiety symptoms.

Keywords: effortful control, anxiety, parenting, temperament

Anxiety disorders represent the most prevalent mental health problems, with approximately 18% of the United States population meeting criteria for an anxiety disorder during any year (Kessler, Chiu, Demler, & Walters, 2005). Given that anxiety disorders typically emerge during late childhood or early adolescence (Kessler et al., 2005), it is imperative to consider how early-life factors may make individuals more or less susceptible to anxiety symptoms in early adulthood. A general framework for the pathogenesis of anxiety suggests that multiple developmental influences contribute to anxiety and operate in a dynamic and interactive fashion with one another (e.g., Cicchetti & Cohen, 1995; Vasey & Dadds, 2001), and include factors related to neurobiology, temperament, emotion regulation, cognitive biases, parenting, and the environment (Vasey & Dadds, 2001). Parenting factors, in particular, have received much attention for their influence on individuals' socio-emotional adjustment. In particular, behaviors specifically related to overprotection, intrusiveness, rejection, or high control have been implicated in the development of worry and anxiety in youth (Brown & Whiteside, 2008; McLeod, Wood, & Avny, 2011; Rapee, 1997) and adults alike (Enns, Cox, & Clara, 2002; Zlomke & Young, 2009), and are also associated with poorer long-term treatment outcomes among those with anxiety disorders (Chambers, Powers, & Durham, 2004).

Extant literature provides information on how specific parenting behaviors may affect individuals' propensity for

later anxiety disorders. Recalled parental overcontrol – characterized by excessively regulated environments by intrusive and over-vigilant parents – is associated with both rumination and worry in adulthood (Spasojević & Alloy, 2002; Zlomke & Young, 2009), each of which is implicated in the onset and maintenance of anxiety (e.g., Watkins, 2008). When individuals are exposed to higher levels of parental overcontrol and intrusiveness, they may have fewer opportunities to develop adaptive coping strategies (Nolen-Hoeksema, 1991), and may also be more likely to perceive their environments as being dangerous, and, at the same time are less likely to challenge this belief (Rapee, 1997). However, some evidence exists suggesting a reciprocal relationship in which parents of anxious children may use greater control in an attempt to alleviate their child's anxiety (Dumas, LaFreniere, & Serketich, 1995). However, excessive attempts to guard or protect children from feared or threatening stimuli may actually reinforce children's fear and anxiety (Degnan & Fox, 2007), which can ultimately lead to increased risk for future anxiety. Parental rejection – characterized by hostility, punishment, and derogation – is also associated with internalizing symptoms (e.g., Lengua, 2006), as children are more apt to withdraw in the face of a harsh or punitive home environment.

Given Vasey and Dadds' (2001) framework for anxiety development, additional research is needed to better understand the dynamics of individual difference factors and how these factors interact with each other to predispose

individuals to anxiety. It is especially important to explore the influences of specific parenting behaviors on anxiety in early adulthood when individuals have transitioned to more independent environments. One such factor to consider is effortful control (EC), another early-life factor that is purported to be associated with a long-term risk for anxiety (van Oort, Greaves-Lord, Ormel, Verhulst, & Huizink, 2011). EC has been shown to be inversely related to anxiety symptoms in youth (Muris, van der Pennen, Sigmond, & Mayer, 2008; Nigg, 2006), and acts as a protective factor for anxiety symptoms in adults (Clements & Bailey, 2010), including symptoms of general distress (De Panfilis, Meehan, Cain, & Clarkin, 2013; Dinovo & Vasey, 2011).

EC is defined as the ability to regulate internal experiences and external behaviors by inhibiting more automatic, or bottom-up, dominant response tendencies (e.g., fight or flight response, emotion-related urges; Muris, Mayer, van Lint, & Hofman, 2008; Rothbart & Bates, 2006). As described by Muris, Mayer, et al. (2008), one of the most important aspects of effortful control is the skilled control of higher-order executive attention in regulating emotional responding and associated behaviors. EC may function as a protective factor in the development of anxiety by enabling individuals to intentionally disengage attention from anxiety-provoking stimuli, thereby attenuating distress and allowing the individual to remain in and learn from their environment rather than feeling the need to escape from an environment where the anxiety-provoking stimuli remains salient. Therefore, those with relatively higher EC may be more likely to regulate their emotions and pursue goal-directed behavior (Sportel, Nauta, de Hullu, de Jong, & Hartman, 2011). Consistent with this rationale, a number of studies have shown that individuals with relatively higher levels of anxiety symptomatology have greater difficulty disengaging their attention from threat- and fear-relevant stimuli (Bardeen & Orcutt, 2011; Derryberry & Reed, 2002; Salemink, van den Hout, & Kindt, 2007).

The way in which one regulates emotion is thought to follow a developmental trajectory. Initially, caregivers directly regulate a child's emotional experience, and over time, children and adolescents learn to independently regulate their own emotional experience (Eisenberg & Morris, 2002; Kopp, 1989). Thus, the development of EC enables individuals to regulate emotions and behaviors in the absence of caregiver regulation. This is pertinent for children who may be exposed to relatively poorer parenting behaviors, as well as adults, who have transitioned to more independent environments in which parental regulation is minimized (e.g., college). As such, EC may act as a protective factor against the negative effects of early contextual risk factors for anxiety, such as parenting behaviors, by allowing individuals to reduce prolonged attentional engagement with stress-inducing stimuli, thereby modulating subsequent emotional and behavioral responses to stress (see Lengua, Bush, Long, Kovacs, & Trancik, 2008).

Despite research which has demonstrated the associations between specific parenting behaviors and anxiety (e.g., Enns et al., 2002; Zlomke & Young, 2009), there has been limited research with regard to the unique and interactive effects of parenting and EC on the development

of anxiety symptoms in young adults. Not only is the extent research scarce, but the limited research that has been published primarily has been with youth samples and has yielded disparate findings. For example, in one study, researchers found that children low in EC, compared to those high in EC, reported greater symptoms of anxiety and depression when they were exposed to negative or poor-fitting parenting (Kiff, Lengua, & Bush, 2011). Similarly, in a study with Chinese youth, findings suggested a significant interaction between EC and authoritarian parenting (i.e., high control and punishment) in predicting internalizing problems, such that youth with lower levels of EC were more susceptible to the influences of authoritarian parenting (Muhtadie, Zhou, Eisenberg, & Wang, 2013). In contrast, other studies have found that parenting behaviors and EC do not interact in predicting internalizing problems in youth (e.g., Lengua, 2008; Morris et al., 2002).

While the aforementioned studies provide important information on the role of regulatory abilities in the relationship between parenting and internalizing symptoms in children, they do not provide information regarding these associations in adulthood. The use of a young adult sample may be particularly informative, as the extant literature suggests that executive regulatory abilities become increasingly stable as one progresses toward young adulthood (Happaney, Zelazo, & Stuss, 2004). Thus, the present study sought to examine relations among recalled parenting behaviors and EC, as well as their unique and interactive effects on concurrent anxiety symptoms in a sample of young adults. Consistent with previous findings, we predicted that parenting behaviors specifically related to overprotection and rejection would be positively associated with anxiety symptoms. Additionally, we predicted that EC would be negatively associated with anxiety symptoms. We further predicted that parenting behaviors and EC would each account for unique variance in anxiety symptoms. Finally, we predicted that EC would moderate the relations between both parental overprotection and rejection and anxiety symptoms. Specifically, we expected that higher levels of EC would act as a protective factor for the effects of these parenting behaviors on anxiety, such that a significant positive relation between negative parenting behaviors and anxiety would be found, but only among those with relatively lower EC abilities.

Method

Participants and Procedure

Undergraduate students ($N = 225$) were recruited from an introductory psychology participant pool at a mid-sized university for this institutional review board-approved study. Students were required to be over the age of 18 to participate. Data for the present study were collected as part of a larger study examining relations among parenting behaviors, cognitive abilities, emotion-related constructs, and self-perception. Participants attended two laboratory

sessions (2–10 days apart), during which they provided informed consent and completed a battery of computer-administered self-report measures. The first session took approximately 30 min and the second took approximately 2 hr to complete. One hundred sixty-nine participants completed both study sessions. Attrition analyses revealed that there were no differences in participant demographics for those who completed both study sessions in comparison to those who only completed the first session. Students were given partial course credit for their participation. The data from participants who were not fluent in English ($n = 5$), or for whom multivariate outlier analysis revealed extreme scores ($n = 2$), were removed from reported analyses. The final sample ($n = 162$; 52% women), had an average age of 19.7 years, ($SD = 2.06$; $range = 18–31$), and 59% self-identified as White, 20% as Black/African American, 12% as Hispanic/Latino(a), 6% as Asian, 2% as biracial, and 1% identified as belonging to another racial/ethnic category.

Measures

Parenting Behaviors

Parenting behaviors were assessed using an English version of the Egena Minnen Beträffande Uppfostran (EMBU; Arrindell, Emmelkamp, Brilman, & Monsma, 1983) – “my memories of upbringing” – a 64-item self-report measure that asks participants to rate the extent to which each item describes how they were raised by their parents (i.e., “The following are statements about how parents raise their children. Please indicate the extent to which each statement describes how your parents raised you”). The EMBU assesses four dimensions of parenting behavior, two of which are typically conceptualized as more positive parenting behaviors (i.e., Emotional Warmth and Favoring Subject), and two of which are typically conceptualized as more negative parenting behaviors (i.e., Rejection and Overprotection). The Emotional Warmth dimension contains items that assess the presence of parental affection and praise, and the Favoring Subject dimension contains items that assess the extent to which individuals were favored over their siblings. The items that comprise the Rejection dimension assess punitive and abusive parental behavior, and the items that comprise the Overprotection dimension assess intrusive and highly regulative parenting. Each item is scored on a 4-point scale ranging from 1 (= *never*) to 4 (= *always*). The individual items are averaged to create each subscale score ($range = 1–4$), with higher scores representing greater use of each parenting behavior. The EMBU has demonstrated good psychometric properties (Arrindell et al., 1992; subscale α ranged from .70 to .93 in the current study).

Effortful Control

EC was assessed using the Effortful Control (EC) scale of the Adult Temperament Questionnaire, short form (ATQ;

Evans & Rothbart, 2007). The EC scale contains 19 items, each of which is scored on a 7-point scale ranging from 1 (= *extremely untrue of you*) to 7 (= *extremely true of you*). The EC scale includes items which assess individuals' ability to focus and shift attention, suppress inappropriate behavior, and perform actions when there is a strong tendency to avoid them. EC is calculated by averaging the 19 items; thus, scale scores range from 1 to 7, with higher scores representing better EC abilities ($\alpha = .70$ in the current study).

Anxiety Symptoms

Current anxiety symptoms were assessed using the Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988), a 21-item self-report measure that assesses typical features of anxiety that have occurred within the past week. Each item is scored on a 4-point severity scale ranging from 0 (= *not at all*) to 3 (= *severely, I could barely stand it*). Sample items include “fear of the worst happening,” “terrified,” and “hands trembling.” The scores on the BAI range from 0 to 63, with higher scores indicating greater anxiety severity ($\alpha = .91$ in the current study).

Results

Preliminary Analyses

Initial data screening was conducted to examine the assumptions of univariate and multivariate normality. Univariate outliers (i.e., > 3.3 SDs from the mean) were recoded to the next highest or lowest value (Tabachnick & Fidell, 2007). In addition, two cases were identified as having undue influence on the primary analytic model (i.e., multivariate outliers with relatively extreme Mahalanobis distances; Tabachnick & Fidell, 2007), and thus, were removed from the sample. Means, standard deviations, and bivariate correlations were calculated for study variables (see Table 1). As predicted, anxiety was significantly negatively correlated with EC ($p < .001$), and positively correlated with both parental rejection and overprotection ($p = .006$ and $.043$, respectively). The associations between anxiety and parental warmth or favoring were not significant. EC was significantly positively correlated with parental warmth, and significantly negatively correlated with parental rejection and favoring; EC was not significantly associated with overprotection.

Regression Models

Four hierarchical regressions were conducted to examine the additive and interactive effects of EC and each individual parenting behavior on anxiety symptoms, respectively (see Table 2). An examination of scatterplots indicated that the regression assumptions were met for all four models

Table 1. Descriptive statistics and correlations for study variables

Variable	1	2	3	4	5	6
1. Parental rejection	–					
2. Parental emotional warmth	–.72***	–				
3. Parental overprotection	.58***	–.36***	–			
4. Parental favoring subject	.32***	–.25***	.17*	–		
5. Effortful control	–.21**	.21**	–.10	–.19*	–	
6. Anxiety symptoms	.22**	–.04	.16*	.05	–.32***	–
<i>M</i>	1.58	3.13	2.41	1.73	4.18	8.62
<i>SD</i>	0.46	0.61	0.52	0.58	0.69	8.54

Notes. *N* = 162. **p* < .05. ***p* < .01. ****p* < .001 (two-tailed).

Table 2. Four hierarchical regression analyses examining the interaction between perceived parenting and effortful control predicting anxiety symptoms

Variable	Independent Variable (IV)							
	Rejection		Emotional warmth		Overprotection		Favoring subject	
	B (SE)	β	B (SE)	β	B (SE)	β	B (SE)	β
Step 1								
IV	2.97 (1.42)	.16*	0.46 (1.08)	.03	2.09 (1.22)	.13 [^]	–0.14 (1.12)	–.01
Effortful control	–3.46 (0.94)	–.28***	–3.95 (0.95)	–.32***	–3.70 (0.93)	–.30***	–3.89 (0.94)	–.32***
<i>R</i> ²	.12***		.10***		.12***		.10***	
<i>F</i>	11.12***		8.79***		10.30***		8.70***	
Step 2								
IV	2.37 (1.45)	.13	0.52 (1.10)	.04	1.85 (1.22)	.11	–0.11 (1.13)	–.01
Effortful control	–3.90 (0.96)	–.32***	–4.06 (0.99)	–.33***	–3.94 (0.92)	–.32***	–3.84 (0.96)	–.31***
IV × Effortful control	–4.22 (2.44)	–.13 [^]	0.70 (1.80)	.03	–3.69 (1.78)	–.16*	0.65 (1.67)	.03
ΔR^2	.02 [^]		.00		.02*		.00	
<i>F</i>	8.50***		5.88***		8.45***		5.82***	

Notes. *N* = 162. [^]*p* < .10. **p* < .05. ***p* < .01. ****p* < .001 (two-tailed).

(see Cohen, Cohen, West, & Aiken, 2003). While the four parenting behaviors were interrelated, we did not covary for the alternative parenting behaviors in each regression model to avoid removing important and meaningful variance from our constructs of interest (e.g., Miller & Chapman, 2001). Each of the parenting behaviors and EC were mean centered (Aiken & West, 1991) and entered into the first step of the regression model, which allowed us to explore whether parenting behaviors and EC accounted for unique variance in anxiety symptoms above and beyond the variance accounted for by the other predictor variables. The interaction term (each Parenting behavior × EC) was entered into the second step of each model. All models were significant (*ps* < .001). In the first step of all models, the main effect of EC was significant (*ps* < .001), such that greater EC was associated with relatively lower anxiety symptoms even after accounting for parenting behaviors. Similarly, for the parenting behaviors, there was a main effect of parental rejection (*p* < .05) and a marginally significant trend for parental overprotection (*p* = .09), such that greater rejection and overprotection were associated with greater anxiety symptoms even after accounting for EC. In the second step of the models, a significant

interaction effect emerged between parental overprotection and EC in predicting anxiety symptoms (*p* < .05). Albeit not significant, there was also a similar trend between parental rejection and EC in predicting anxiety symptoms (*p* = .09).

The significant interaction between parental overprotection and EC was probed using simple slopes analysis (Aiken & West, 1991). Consistent with study hypotheses, results of the simple slopes analysis revealed a significant positive association between parental overprotection and anxiety symptoms for individuals who had relatively lower levels of EC (β = .27, *p* < .01). That is, among those with lower levels of EC, higher parental overprotection predicted greater anxiety symptoms. There was not a significant association between parental overprotection and anxiety symptoms for participants with relatively higher levels of EC (β = –.04, *ns*; see Figure 1). The trend observed between parental rejection and EC evidenced the same pattern, such that there was a significant positive association between parental rejection and anxiety symptoms for those with relatively lower levels of EC (β = .28, *p* < .01), but not for those with relatively higher levels of EC (β = –.03, *ns*).

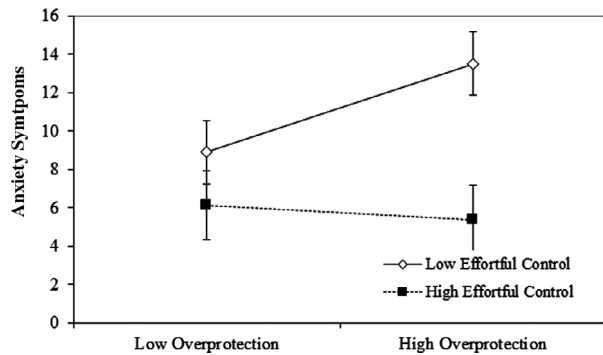


Figure 1. The moderating effect of effortful control in the relationship between parental overprotection and anxiety symptoms.

Discussion

The present results contribute to our understanding of the unique and interactive effects of recalled parenting behavior and individual differences in EC on anxiety. To our knowledge, this is the first study to examine such associations in young adults. The zero-order correlations between EC, anxiety symptoms, and parental rejection and overprotection were largely consistent with previous findings. However, the more typically-constructed positive parenting variables of warmth and favoring were not associated with anxiety at all. In fact, favoring was positively associated with both rejection and overprotection (two behaviors typically construed as more negative), and negatively associated with warmth, thus suggesting that favoring may be more related to parenting behaviors that are generally viewed more negatively. As such, a more fine-grained examination of parental behavior related to favoring is a potential direction for future areas of research. Whereas study findings suggest that the parenting behaviors of overprotection, rejection, and favoring were identified as possible risk factors for anxiety, no parenting behaviors were identified as potential protective factors for anxiety.

While the zero-order correlations point to relationships between anxiety and parental overprotection and rejection, when these factors were considered in the context of a larger model emphasizing the unique effects of both parenting and EC, EC was a much more robust predictor of anxiety than any of the parenting behaviors. This effect emerged across all models, and was such that individuals with lower EC reported higher levels of anxiety symptoms, even after accounting for parenting. In fact, after accounting for EC, the only parenting behavior which emerged as a significant predictor of anxiety was parental rejection. In other words, our results indicate that, for young adults, EC seems to account for a greater amount of variance in anxiety than any specific parenting behavior. When considering multiple developmental influences that are associated with anxiety, our results suggest that regulative abilities may be more pertinent to anxiety symptoms than parenting.

Small to moderate associations were observed between parenting behaviors and EC, suggesting that these

constructs are, to some extent, related. While the nature of our cross-sectional study design precludes causal inferences, theory suggests that parenting behaviors may have a bidirectional relationship with EC, such that a child's level of EC may influence parenting behaviors, and parenting behaviors may help to shape regulatory skills (i.e., EC; Kiff, Lengua, & Zalewski, 2011). Therefore, although biological factors such as temperamental reactivity may account in part for a child's ability to develop regulatory skills such as EC, brain maturation and environmental factors such as parenting may also influence the maintenance and development of EC (Kochanska, Murray, & Harlan, 2000; Posner & Rothbart, 2000). A potential direction for future research would be to utilize longitudinal designs and moderated-mediation models to further delineate the relations among regulatory skills, parenting behaviors, and anxiety pathology.

The significant interaction effect suggests a buffering effect of EC on anxiety among individuals exposed to higher levels of parental overprotection. In other words, exposure to high levels of overprotective parenting behaviors is associated with anxiety symptoms, but only for individuals who lack a requisite level of EC. This is not surprising when one considers the role of parental overprotection on anxiety. Specifically, parental overprotection involves excessive attempts to guard children from feared or threatening stimuli. While this parenting practice seems sensitive in nature, it may actually potentiate anxiety and fearful responding in children (Degnan & Fox, 2007). However, individuals with relatively higher levels of EC may be better able to effectively regulate and attenuate the negative emotions that are often associated with these early childhood experiences, while those with lower levels may not be.

Our findings are not only of theoretical interest, but also have potential implications for clinical interventions. Specifically, our results suggest the possibility that interventions designed to target EC may help anxious individuals improve their ability to modulate or regulate their emotions. Because EC is thought to reflect activation in brain systems associated with executive attentional processes (Rothbart & Bates, 2006), and the skilled control of higher-order executive attention has been suggested as one of the most important aspects of EC (Muris, Mayer, et al., 2008), interventions that seek to enhance executive attention may help avert deleterious psychological outcomes. Consistent with this rationale, computerized interventions designed to modify attention have been shown to be effective in reducing anxiety in both children and adults (for a review, see MacLeod & Mathews, 2012). Thus, future research examining the utility of these interventions for individuals with anxiety symptoms, and specifically for those with a history of exposure to negative parenting, may be warranted.

The following study limitations are of note. Our sample consisted of undergraduate students; thus, caution is warranted in generalizing these findings to the general population, as well as to a clinical population. Our cross-sectional study design precludes inferences regarding causation, particularly with respect to negative parenting and poorer regulative abilities as causal factors for future anxiety

symptoms. Although EC was treated as the moderator in the current study, it is equally possible that parenting moderates the effects of temperament on adjustment. Furthermore, as mentioned above, these factors simultaneously interact with and influence each other as suggested by bidirectional effects (e.g., Kiff, Lengua, & Zalewski, 2011). In the future, longitudinal and experimental designs may help to clarify the temporal relations between parenting behaviors, EC, and anxiety. EC was assessed via self-report in the present study; thus, it will be important to replicate the present results using behavioral measures of effortful control. Early parenting behaviors were measured via retrospective report and they were assessed at the same time as anxiety, and as such, may be subject to recall bias. However, research on the long-term stability of parenting measures suggests that measurement of retrospectively-recalled parenting is a reliable indicator of actual parenting behavior during the age range of interest (e.g., Murphy, Wickramaratne, & Weissman, 2010).

Despite these limitations, the present study contributes to our understanding of the role of EC in the relation between parenting behaviors and anxiety symptoms. This is especially important because the few studies which have examined these relations in youth have provided equivocal findings with respect to the role of EC in the parenting behavior-anxiety relation. Our findings bolster evidence for the importance of individual differences in regulatory mechanisms when examining relations among early-life risk factors and subsequent psychopathology. Our results suggest that the relations between parenting behaviors, EC, and anxiety operate similarly in young adults as they may in youth (i.e., Kiff, Lengua, & Bush, 2011; Muhtadie et al., 2013). In other words, parenting behaviors and EC interact to predict anxiety symptoms in both childhood as well as in early adulthood. This finding underscores the importance of regulative temperament, and specifically EC, not only for children and adolescents, but for adults as well.

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