The Impact of Parental Attachment on Stress Elevation and Synchrony in Pediatric Autism Patient-Caregiver Dyads

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Abstract

This study examined the impact of attachment style on stress Autism Spectrum Disorder (ASD) pediatric patients and their caregivers. ASD introduces a chronic stressor to families with an ASD child, presenting increased risk for the development of chronic disease. Parents completed a battery of measure to assess attachment style, general stress, parenting stress, and stress observed in their child with ASD. Although no significant correlations were observed, trends in the data suggested that attachment anxiety impacts parental stress as well as child stress in the context of ASD. This study expands the limited research on this topic by introducing the concept of dyads to autism and stress research as well as considering stress synchrony, utilizing a Family Systems Theory framework.
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Given the inherently stressful nature of autism spectrum disorder (ASD) on families, identification of factors that moderate stress is important (Eisenhower, Baker, & Blacher, 2005). In accordance with Family Systems Theory (Ackerman, 1959; Bowen 1978; Jackson, 1965; Minuchin, 1974), a stressor such as autism likely impacts the entire family, not just the person with ASD (Hayes & Watson, 2013). One variable known to influence stress responses in various disordered and healthy populations is attachment style, defined by the mental representations people have of themselves and others in interpersonal relationships (Diamond & Fagundes, 2010; Fraley et al., 2011). Attachment styles develop in infancy and tend to persist throughout the lifetime. To test the theory that attachment and stress are related, as predicted by Family Systems Theory, this study will examine the impact of parental attachment style on stress reactivity and synchrony in pediatric ASD and ASD-symptom occupational therapy patients and their parental caregivers. For the purposes of this study, synchrony is defined as the extent to which measures reflect analogous stress levels in the patient as the caregiver.

While stress may be seen as inevitable for families dealing with ASD, the chronic and persistent nature of familial stress associated with ASD warrants concern and attention (Hayes & Watson, 2013; Zaidman-Zait et al., 2014). Chronic stress is associated with reduced immune responses to vaccines, increased production of proinflammatory cytokines, increased risk of infection, and increased telomere shortening; all physiological processes associated with premature aging and chronic disease (Sapolsky, 2009). A meta-analysis concluded that families of children with ASD experience more stress than families that do not have a child with ASD (Cohen’s d = 1.58, large effect). Furthermore, families with an ASD-diagnosed child were found
to experience the most stress in comparison to families with children who had other disabilities (Cohen’s d = 1.58, large effect; Hayes & Watson, 2013). In another study, over 70% of parents of children with ASD (N = 115) reported above-clinical stress levels (Derguy, M’Bailaral, Michel, Roux, & Bouvard, 2016). The stress associated with ASD is of particular concern given that parenting stress and general distress in parents of children with ASD appear to remain constant for at least four years following ASD diagnosis (Zaidman-Zait et al., 2014), implying that stress in the context of ASD tends to be chronic and long term. Given the aforementioned strong association between stress and chronic disease development, this population is likely at particular risk for chronic disease and premature aging.

The relationship between stress and health particularly in families that have a child with ASD was examined by Reed, Sejunaite, and Osborne (2016), who found that increased stress was associated with poorer health-related quality of life (assessed by the degree to which health stressors are perceived to impact quality of life) and with immune-related physical health problems (i.e., common cold, influenza, and skin infections) in mothers of children with ASD. The current state of the field is best described by Hayes and Watson (2013), who said: “‘…the question remaining…is no longer ‘are families with ASD more stressed than families without ASD?’ but ‘why are families under more stress and what are the specific moderators of stress…?’” (p. 639).

Researchers have attempted to discern moderators of parental stress in parents of children with ASD. For example, in one study, lower perceived social support and lower perceived ability to set limits predicted stress in parents of children with ASD (Falk, Norris, & Quinn, 2014). Another study took an ecological systems approach to determining predictors of parental stress of children with ASD, meaning they considered environmental, familial, and individual factors
that influenced parental stress (Derguy et al., 2016). When considering these factors, the researchers found that poor interactions with extended family, high levels of expressed emotion, and absence of children’s schooling were significant and positive predictors of increased parental stress. The authors concluded that environmental variables, particularly those related to family relations and communications, should be further explored in the context of predicting parental stress in parents of children with ASD.

Attachment is related to both family relations and communication (Seskin, Feliciano, Tippy, Yedloutschnig, Sossin, & Yasik, 2010), as well as to the perception and and overall experience of stress (Diamond & Fagundes, 2010). Attachment theory posits that individuals whose physical and emotional needs are consistently met in infancy and childhood develop a secure working model of relationships and the world, and thus a “secure” attachment style (i.e., characterized by low anxiety and low avoidance in interpersonal relationships). In contrast infants and children whose needs are never met or are inconsistently met, and/or individuals who experience manipulative or abusive family relationships develop an insecure working model of relationships and the world, hence an “insecure” attachment style (Bowlby, 1958). Insecure attachment styles, as opposed to secure styles, are related to abnormal Hypothalamic Pituitary Adrenal (HPA) axis and autonomic nervous system (ANS) reactivity (Diamond & Fagundes, 2010), indicating an abnormal stress response. Specifically, people with insecure attachments perceive stressors as more distressing than their securely attached counterparts, regardless of whether the stressor is acute or chronic (Feletti et al., 1998). Given that attachment is not only related to stress, but also to familial environmental factors, studying the impact of attachment on stress in families navigating having a child with an ASD diagnosis is warranted.
To further utilize the ecological framework proposed by Derguy and colleagues (2016) in families with a child with ASD, this study will also examine the multi-faceted directionality of stress moderators within the family to understand how variables that influence stress in a parent of a child with ASD also influence stress in the child with ASD. As stated above, variables that influence stress in an individual also likely impact stress experienced by other family members (Ackerman, 1959; Bowen 1978; Jackson, 1965; Minuchin, 1974). Family systems theory posits that individuals must be understood in the context of their family and that people’s psychosocial and physical well-being are not independent from familial influence. In other words, a child’s stress likely impacts parent stress just as parent stress likely impacts child stress. As such, stress can likely be conceptualized as a “contagion” within parent-child dyads.

This study aims to extend the current research on ASD and stress in two primary ways: (1) it considers the dyadic nature of stress between parents of children with ASD (or subclinical ASD symptoms) and the children themselves, and (2) it aims to evaluate how the parent’s attachment influences stress in the parent and the child. Given its two novel dimensions, this study is pilot in nature and aims to establish feasibility to conduct a larger, follow-up study utilizing multiple pediatric health populations. To achieve 80% power using Pearson’s $r$ correlations for statistical analyses, 29 dyads would be needed if the effect size was medium and 129 dyads if the effect size is small. Given the number of dyads needed for appropriately powered correlational analyses, which is beyond the capability of this study, analyses were undertaken to detect trends.

It is hypothesized ($H1$) that higher levels of attachment anxiety and avoidance (reflective of insecure attachment) in the caregiver will be related to increased caregiver parenting stress, overall caregiver stress, and child stress. It is also hypothesized ($H2$) that caregiver stress and
child stress will correlate positively, such that higher levels of caregiver stress will also be
associated with higher stress levels in the child.

**Method**

**Participants**

Ten caregiver and pediatric patient dyads were recruited from a small occupational
therapy clinic housed in a master’s level occupational therapy department in the Pacific
Northwest. Participants under the age of 4 or those who could not cognitively understand what
was being asked of them were excluded. As this sample was part of a project also examining
cortisol levels, the study included participants who presented to the clinic between the hours of 2
-5 PM, who had no history of glucocorticoid use; and who had not consumed caffeine within
three hours, engaged in vigorous exercise that day, consumed alcohol that day, or consumed food
within two hours of their study participation. All the pediatric patients recruited for the study
either had ASD or symptoms characteristic of ASD, such as sensory processing difficulties, poor
social skills, and repetitive behaviors (i.e., self-stimulatory behaviors). The specific diagnoses of
the pediatric patients included: Sensory Processing Disorder ($N=9$), Attention Deficit
Hyperactive Disorder ($N=4$), Dyspraxia ($N=1$), ASD ($N=1$), Spastic Hemiplegic Cerebral
Palsy ($N=1$), Spastic Quadriplegic Cerebral Palsy ($N=1$), Seizure Disorder ($N=1$), and Non-
Autistic Motor Stereotypes ($N=1$). Of note, each patient had two or more diagnoses noted in
their chart. Patients in the child-caregiver dyads were between the ages of four and 11, whereas
caregivers were between the age of 33 and 49. On average, caregivers had been in a romantic
relationship for 11.35 years ($SD=4.97$) and were experiencing 1.20 ($SD=.92$) other sufficient
stressor (i.e., financial difficulties, difficulties with work, relationship challenges) in addition to
their child’s diagnosis.
Materials

**Demographic Information.** Caregivers completed a demographic questionnaire that asked questions about the caregiver pertaining to age, race, gender, whether or not they are biologically related to the child, history of glucocorticoid use, current medications, food consumption, tobacco consumption, alcohol consumption, and caffeine consumption. Patient age and diagnosis were obtained from patient charts.

**Experiences in Close Relationships-Revised (ECR-R).** The ECR-R (Fraley et al., 2011) measures the attachment style of an individual on dimensions of anxiety and avoidance. High anxiety, high avoidance, or both high anxiety and avoidance scores combined are indicative of insecure attachments whereas the combination of low anxiety and low avoidance scores reflect a secure attachment. Items assessing anxiety (i.e., “I worry about being alone”) and avoidance (i.e., I get uncomfortable when a romantic partner wants to be very close) subscales are strongly inter-correlated; Cronbach’s alpha were .91 and .94, respectfully. This measure has 36 items, each of which are assessed using a 7-point Likert scale, from 1 (Disagree strongly) to 7 (Agree strongly), and was only given to caregivers, in paper/pencil format.

**Perceived Stress Scale (PSS).** The PSS (Cohen & Williamson, 1988) assesses the degree to which situations in an individual’s life are perceived as stressful (Cronbach’s alpha = .84-.86). This measure is comprised of ten items, used a 5-point Likert scale from 0 (Never) to 4 (Very often), was in paper/pencil format, and was only given to caregivers.

**Autism Parenting Stress Index (APS).** The APS (Silva & Schaoock, 2012) measures parenting stress specific to ASD and comorbid symptoms (Cronbach’s alpha = .83). The measure was also validated in developmentally delayed populations; however, the mean scores suggest that parents who have children with ASD tend to experience more stress than parents of children.
who have other developmental delays. Parenting stress associated with children experiencing sensory processing difficulties is likely also captured by this measure, as items included tantrums, sleep problems, diet, and concern for their child’s future. The measure included 13 items and used a 5-point Likert scale from 0 (Not stressful) to (So stressful sometimes we feel we cannot cope). The measure was only given to caregivers and was given in paper/pencil format. The measure provided aspects of children’s health (i.e., child’s social development) and asked parents to rate how stressful that aspect of the child’s health was to the entire family.


Procedure

Potential pediatric participants (i.e., the children in the dyads) were identified as either having Autism Spectrum Disorder (ASD) or symptoms characteristic of ASD, such as sensory processing difficulties, poor social skills, and repetitive behaviors (i.e., self-stimulation). Potential pediatric patients and their caregivers were approached by directors of the occupational therapy clinic, who discussed the study with caregivers and patients. Caregivers provided consent and patients were required to give verbal assent. The caregiver then completed the ECR-R, PSS, RSQ, and CASE. Participants were compensated with a $5 gift card.

Results

In order to examine the relationship between attachment dimensions of anxiety and avoidance and caregiver parenting stress, Pearson’s Product Moment correlations were run
between the APS and the anxiety and avoidance subscales of the ECR-R. Results showed that neither attachment anxiety ($r = .336, \ ns$) nor avoidance ($r = -.170, p = ns$) were significantly correlated with parenting stress. Similarly, Pearson’s Product Moment correlations revealed that caregiving general stress, as measured by the PSS, did not significantly correlate either attachment anxiety ($r = .414, p = ns$) nor avoidance ($r = .068, ns$).

In regards to the hypothesized relationship between attachment anxiety and avoidance and patient stress, Pearson’s Product Moment correlations revealed no significant correlations between the anxiety subscale of the ECR-R and the CASE negative events subscale ($r = -.165, \ ns$), positive events subscale ($r = -.289, ns$), negative events impact subscale ($r = -.100, ns$), nor positive events impact subscale ($r = -.297, ns$). Further, Pearson’s Product Moment correlations revealed no significant correlations between the avoidant subscale of the ECR-R and: the CASE negative events subscale ($r = -.316, ns$), positive events subscale ($r = -.235, ns$), negative events impact subscale ($r = -.199, ns$), nor positive events impact subscale ($r = -.245, ns$).

To examine the relationship between patient stress (CASE) and parent stress (PSS), Pearson’s Product Moment correlations were run between the PSS and the four subscales of the CASE: negative events subscale, positive events subscale, negative events impact subscale, and positive events impact subscale. The CASE negative events subscale ($r = -.049, ns$), positive events subscale ($r = .374, ns$), negative events impact subscale ($r = .278, ns$), and positive events impact subscale ($r = .314, ns$) did not significantly correlate with parent stress.

Scatter plots indicate a strong, positive relationship between attachment anxiety and negative impact of life events and a strong, positive relationship between attachment anxiety and perceived stress. See Figures 1 and 2.
Discussion

This study aimed to address two gaps in research about ASD and stress by considering the dyadic nature of stress between parents of children with ASD (or subclinical ASD symptoms) and children themselves and evaluating how the parents attachment style influenced stress both in the parent and child. There is a well-documented body of literature regarding the impact of attachment style on stress (Diamond & Fagundes, 2010). However, no literature to date has examined the relationship in the context of ASD.

Results failed to identify significant relationships in regards to hypotheses: (H1) Higher levels of attachment anxiety and avoidance (reflective of insecure attachment) in the caregiver will be related to increased caregiver parenting stress, overall caregiver stress, and child stress and (H2) Caregiver stress and child stress will positively correlate, such that higher levels of caregiver stress will also be associated with higher stress levels in the child. Nonetheless, this study, by conceptualizing stress as a contagion, contributes to a limited literature of examining dyadic stress. Given the small sample size, lack of significance is not an indication that hypotheses are incorrect. Rather, patterns and trends observed in these data are important indicators of guiding future research and refining hypotheses.

Scatter plots indicated a strong, positive relationship between attachment anxiety and the negative impact of life events on children with ASD and ASD symptoms and caregiver general stress. These observed relationships are consistent with findings that parental attachment anxiety is associated with stress (Diamond & Fagundes, 2010) that “carries over” and impacts the child (Papp, Pendry, & Adam, 2009). If such a relationship exists, ASD treatment professionals might consider screening families for parental attachment style, particularly because attachment
anxiety may influence how a parent perceives stress and how a child with ASD responds to negative life events.

A moderate and negative, yet non-significant, relationship was observed between the avoidant subscale of the ECR-R and the CASE negative events subscale, suggesting that the higher the parental attachment avoidance score is, the less of an impact negative events have on caregivers. Although prior research counters this result (Diamond & Fagundes, 2010), theoretically this finding can be conceptualized by considering that detachment associated with avoidance might decrease the impact of stressors on caregivers.

This study introduced two layers of novelty and expanded on prior research by considering the dyadic, bi-directionality of stress and by considering the relationship between attachment style and stress. Family systems theory suggests that stress must be considered as a contagion that operates within parent-child dyads: if affecting one family member of the system, it likely affects another (Ackerman, 1959; Bowen 1978; Jackson, 1965; Minuchin, 1974). As the study incorporated two novel dimensions, the study was also pilot in nature and aimed to establish feasibility in order to conduct a larger, follow-up study examining multiple pediatric health populations as a point of comparison between disease models. Future research should consider dividing the sample into attachment styles using cut-off scores for each individual from the ECR-R norms (Fraley et al., 2011), as this study used the two dimensions of attachment, anxiety and avoidance, as ratio level data given the small sample size.
References


Figure 1. The scatter plot suggests there is a moderate, positive linear relationship between attachment anxiety in caregivers and perceived stress in caregivers.
Figure 2. The scatter plot indicates a strong, positive relationship between caregiver attachment anxiety and the negative impact of life events on the child.