

BRIEF REPORT

Relationship Between Parent Mood and Resilience and Child Health Outcomes in Pediatric Asthma

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Introduction: Asthma is the most common pediatric chronic disease and disproportionately affects urban, minority, and disadvantaged youth. This study explored the relationship between parent and child psychosocial functioning and asthma-related health outcomes in a sample of at-risk children with asthma. We hypothesized that greater parent resilience would be associated with better parent mood, more symptom-free days (SFDs), better child mood, and less child anxiety. Further, we hypothesized that parent resilience would moderate the relationship between parent mood and SFDs.

Method: We performed a secondary analysis of baseline cross-sectional enrollment data. Parents of African American children on Medicaid with persistent asthma reported their children's asthma SFDs and their own measures of parent quality of life, mood, and resilience, and child mood and anxiety. **Results:** Baseline data from 217 parents (92.2% female, $M_{\text{age}} = 33.8 \text{ years} \pm 9.5$) of children ($M_{\text{age}} = 6.6 \text{ years} \pm 2.3$) were available. Parent resilience was significantly associated with parent mood. Better parent-reported quality of life (QOL) and mood were significantly associated with more child asthma SFDs. In contrast to our hypothesis, parent resilience did not moderate the relationship between parent mood and SFDs. **Discussion:** Higher parent-reported QOL and mood were significantly associated with better parent report of child asthma SFDs. Although parent resilience was associated with parent mood, it did not moderate the relationship to child SFDs. Future research is warranted to better understand the unique contribution of resilience in families with children with asthma.

Keywords: asthma, pediatrics, parents, depression, resilience

In the United States, asthma is the most common chronic disease in pediatric populations, with almost 9% of children and adolescents under the age of 18 years having an asthma diagnosis (Centers for Disease Control, 2018). Despite evidence-based asthma care guidelines

from the National Heart Lung and Blood Institute of the National Institutes of Health (National Heart, Lung, and Blood Institute, 2007), overall national pediatric asthma exacerbations, emergency departments visits, and hospitalizations have decreased only modestly since before

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the guidelines were introduced (Centers for Disease Control, 2018). In addition, marked disparities in asthma care and outcomes persist as minority, urban, and socioeconomically disadvantaged children continue to receive less guideline-based care and incur a disproportionate share of asthma-related morbidity (Kranjac et al., 2017).

Adherence to ongoing asthma management is complex and demanding, with daily use of controller medication and emergency management as needed. Parent stress and depression are associated with higher rates of child hospitalizations, increased health care service utilization, and more asthma exacerbations (Beck et al., 2016). In addition, there is more psychosocial stress reported among disadvantaged populations (Beck et al., 2016). It is important to understand the risk and resiliency factors of families in coping with stressors in order to develop clinical interventions to improve outcomes. For sociocultural and historical reasons, strength, including resilience, is a complex factor for African American women that can be a positive attribute and yet exacerbate the influence of stress on health outcomes through self-sacrificing behaviors (see Woods-Giscombé & Black, 2010). More information is needed about the impact of stress and resilience on African American family health. To address this need, the current study examines the associations of parent reported resilience, quality of life (QOL), and mood, with child mental health and asthma symptoms in a high-risk population.

Objectives and Purpose

We hypothesized that greater parent resilience would be associated with better parent mood, more symptom-free days (SFDs), better child mood, and less child anxiety. Further, we hypothesized that parent resilience would moderate the relationship between parent mood and SFDs.

Method

Participants

Participants were caregivers of African American children (4–12 years old) on Medicaid diagnosed with persistent asthma and enrolled in a randomized controlled trial of an

intervention targeting parental stress management. The results from this secondary data analysis report on data obtained as part of the baseline assessment for the intervention trial. Participants were randomized to either usual care, which consisted of participating in a guideline-based pediatric asthma program (Teach, Crain, Quint, Hylan, & Joseph, 2006), or to the treatment group that participated in the guideline-based asthma program as well as the parental stress management intervention. The stress management intervention included individual sessions between asthma wellness coaches and parents, text messages, and group sessions. Eligibility requirements included being a self-reported African American parent-child dyad, an absence of other serious medical diagnoses, having Medicaid insurance, and English fluency. The sample consisted of 217 parents (92.17% mothers) of children ($M_{\text{age}} = 6.6$ years; 39.17% female; see Table 1).

Procedure

The study was approved by the Institutional Review Board of Children's National Health System. Families were identified and screened for eligibility during their participation in an emergency department based asthma clinic (Teach et al., 2006). Following the clinic visit, interested parents provided consent and completed baseline study questionnaires either in person or by telephone within 2 weeks following the clinic appointment; completion of questionnaires took approximately 20 min, and participants received a gift card. Of the 290 eligible families screened, 217 consented (74.8%) and completed enrollment activities. Lack of interest or other time demands were the primary reasons for refusal.

Measures

Demographic and medical information were obtained through a questionnaire and medical chart review. The primary outcome of SFDs was selected in consultation with a wide range of parents and other stakeholders for the parent trial (Shelef et al., 2016). An SFD was defined as a 24-hr period with no signs or symptoms of asthma (wheezing, coughing, tightness in the chest, or shortness of breath), during the day or at night, by parent report. Parents were inter-

Table 1
Participant Demographics and Medical Information

Demographic variable	<i>M</i> ($\pm$ <i>SD</i>) or <i>N</i> (%)
Parent age (years)	33.8 $\pm$ 9.5
Parent race (African American)	217 (100)
Parent ethnicity	
Non-Hispanic	216 (99.5)
Hispanic	1 (.5)
Household income	
<\$5,000 yearly or <\$416 monthly	34 (15.67)
\$5,000–\$9,999 yearly or \$417–\$833 monthly	17 (7.83)
\$10,000–\$14,999 yearly or \$834–\$1,250 monthly	25 (11.52)
\$15,000–\$19,999 yearly or \$1,251–\$1,666 monthly	23 (10.60)
\$20,000–\$24,999 yearly or \$1,667–\$2,083 monthly	21 (9.68)
\$25,000–\$29,999 yearly or \$2,084–\$2,500 monthly	10 (4.61)
\$30,000–\$34,999 yearly or \$2,501–\$2,917 monthly	12 (5.53)
\$35,000–\$39,999 yearly or \$2,918–\$3,333 monthly	10 (4.61)
\$40,000–\$44,999 yearly or \$3,334–\$3,750 monthly	9 (4.15)
\$45,000–\$49,999 yearly or \$3,751–\$4,166 monthly	5 (2.30)
>\$50,000 yearly or >\$4,166 monthly	26 (11.98)
Refused	25 (11.52)
Education of parent	
Grade 1–11	28 (12.90)
GED or 12th grade	85 (39.17)
Some college/technical/vocational training	72 (33.18)
College graduate or more	32 (14.75)
Health literacy	
Never needs assistance	193 (89.0)
Needs any assistance	24 (11.0)
Child age	6.6 $\pm$ 2.3
Child race (African American)	217 (100)
Child ethnicity	
Non-Hispanic	216 (99.5)
Hispanic	1 (.5)
Symptom-free days in prior 14 days	9.5 $\pm$ 4.4
ED visits in prior 12 months	1.5 $\pm$ 1.3
Asthma severity (NAEPP guidelines)	
Mild persistent	147 (68.28)
Moderate persistent	64 (29.49)
Severe persistent	6 (2.76)
In the prior 14 days	
Symptom-free days	9.5 $\pm$ 4.4
Nights of disturbed sleep due to asthma (parent)	2.64 $\pm$ 3.8
Days plans were disrupted due to asthma (parent)	1.27 $\pm$ 2.7

Note. GED = General Educational Development; ED = Emergency Department; NAEPP = National Asthma Education and Prevention Program guidelines.

viewed by a trained research assistant about the previous 14 days to assess for symptoms.

Resilience. The Life Orientation Test—Revised (LOT-R; Scheier, Carver, & Bridges, 1994) is a brief measure to assess generalized resilience and optimism using a Likert scale for statements such as “I’m always optimistic about my future.” Higher scores indicate more resilience and optimism. LOT-R scores have dem-

onstrated high internal consistency and test-retest reliability.

Caregiver quality of life. The Pediatric Asthma Caregiver Quality of Life Questionnaire (PACQLQ; Juniper et al., 1996) was used to assess the impact of asthma on caregivers’ QOL, which has been used in many pediatric asthma studies of diverse populations and has demonstrated good validity. This version used

five response options, with higher scores meaning better QOL.

Parent mood. The Center for Epidemiological Studies-Depression Scale (CES-D-10; Radloff, 1977), which has demonstrated strong psychometric properties, was used to measure parent mood and psychological symptoms. The CES-D-10 is valid and reliable, and has demonstrated psychometric consistency across diverse samples, including African American female caregivers (Rozario & Menon, 2010). Higher scores indicate the presence of more depressive symptoms.

Child anxiety and mood. The PROMIS Parent Proxy Anxiety (PROMIS-A) and Depression (PROMIS-D) scales (Bevans, Gardner, Pajer, Riley, & Forrest, 2013) have been validated in African American parents and children, and were used for measures of child anxiety and mood. Higher scores on the scales indicate the presence of more symptoms of anxiety or depression.

Data Analysis

Pearson product-moment correlations were conducted to examine relationships among potential risk factors (e.g., QOL, parent mood), a protective factor (e.g., parent reported resilience), and asthma outcomes (SFDs) and child mental health (child anxiety and mood). One hierarchical regression analysis was conducted to evaluate the hypothesis of moderation by parental resilience. The analysis tested the contribution of the proposed risk factor (parent mood; first step), proposed protective factor (resilience; second step), and the moderating role of that proposed resource factor (interaction term; third step) in their association with child asthma SFDs.

Results

Descriptive Analyses

The sample had a mean of 9.5 (*SD* = 4.4) asthma SFDs over the prior 2 weeks (see Table 1). Parents had a mean LOT-R of 16.1 (*SD* = 3.4; Scheier et al., 1994). Parents had a mean CES-D-10 score of 9.1 (*SD* = 6.0), which is just below the clinical cutoff of 10, indicating that parents may be at risk for elevated depression symptoms. The PACQLQ mean was 52.5

Table 2

Associations Among Symptom-Free Days and Parent and Child Psychosocial Variables (*n* = 217)

Measure	Days free of asthma symptoms	Parent QoL (PACQLQ)	Parent mood (CES-D-10)	Parent resilience (LOT-R)	Child anxiety (PROMIS-A)	Child mood (PROMIS-D)
Days free of asthma symptoms	1.00					
Parent QoL (PACQLQ)	.38 (<.0001)	1.00	-.13 (.05)	.046 (.50)	-.17 (.01)	-.086 (.21)
Parent mood (CES-D-10)	.38 (<.0001)	-.33 (<.0001)	1.00	.18 (.007)	-.37 (<.0001)	-.22 (.001)
Parent resilience (LOT-R)	-.13 (.0528)	-.33 (<.0001)	1.00	-.21 (.002)	.44 (<.0001)	.35 (<.0001)
Child anxiety (PROMIS-A)	.046 (.4964)	.18 (.007)	-.21 (.002)	1.00	-.075 (.2752)	-.056 (.41)
Child mood (PROMIS-D)	-.17 (.0141)	-.37 (<.0001)	.44 (<.0001)	-.075 (.2752)	1.00	.65 (<.0001)
Days free of asthma symptoms	-.086 (.2078)	-.22 (.0010)	.35 (<.0001)	-.056 (.4137)	.65 (<.0001)	1.00
	1.00	.38 (<.0001)	-.13 (.05)	.046 (.50)	-.17 (.01)	-.086 (.21)

Note. Data are Pearson correlation coefficients (with *p* values in parentheses). PACQLQ = Pediatric Asthma Caregiver Quality of Life Questionnaire, higher scores mean better parent quality of life; CES-D-10 = 10 item Center for Epidemiological Studies-Depression Scale, higher scores mean more parent depressive mood symptoms; LOT-R = Life Orientation Test—Revised, higher scores mean more parent resilience; PROMIS-A = Patient Reported Outcome Measurement Information System Youth Anxiety Scale, higher scores mean more child anxiety; PROMIS-D = Patient Reported Outcome Measurement Information System Youth Depression Scale, higher scores mean more child depressive mood symptoms.

Table 3

Exploration of Resilience as a Moderator of the Relationship Between Parent Mood and Asthma Outcomes

Variable	Step 1 (CES-D only)				Step 2 (CES-D & LOT-R)				Step 3 (CES-D & LOT-R & interaction)			
	<i>b</i>	β	<i>SE</i>	<i>p</i>	<i>b</i>	β	<i>SE</i>	<i>p</i>	<i>b</i>	β	<i>SE</i>	<i>p</i>
CES-D	10.37	-.098	.05	.053	9.92	-.094	.05	.067	7.83	.12	.25	.63
LOT-R						.026	.09	.78		.16	.17	.37
Interaction										-.014	.016	.38
	Value	<i>p</i>			Value	<i>p</i>			Value	<i>p</i>		
<i>F</i>	3.79	.053			1.93	.15			1.55	.20		
ΔF					1.86				.38			
<i>R</i> ²	.017				.018				.022			
ΔR ²					.001				.004			

Note. CES-D 10 = Center for Epidemiological Studies-Depression; LOT-R = Life Orientation Test-Revised; *SE* = standard error.

(*SD* = 10.8; Juniper et al., 1996). Child mean PROMIS-A standardized score of 45.0 (*SD* = 10.0) and mean PROMIS-D standardized score of 43.5 (*SD* = 8.8) suggested low reports of child anxiety and depression (Bevans et al., 2013).

Health Outcomes

As indicated in Table 2, parent resilience did not correlate with asthma SFDs but was correlated with both parent mood and QOL. Parent QOL was significantly associated with SFDs, parent mood, child anxiety, and child mood. Parent mood was correlated with SFDs, child anxiety, and child mood. Lastly, parent resilience did not moderate the relationship between parent mood and child SFDs (see Table 3).

Discussion

Our analysis provided support for parts of the overall hypothesized model. Parental resilience was associated with parent mood and child asthma outcomes, as well as child mood and child asthma outcomes, yet showed no moderation by resilience. Parent mood was correlated with asthma outcomes, child psychosocial outcomes (both anxiety and mood), and parent resilience. There was no evidence of parent resilience as a moderator between parent mood and asthma health outcomes.

There were limitations including the cross-sectional design of this secondary data analysis,

precluding causal inference and in aspects of measurement. It is possible that resilience may have functioned as a factor of parent mood. The resilience instrument used may have measured the affective components of resilience but might have neglected to account for other domains (e.g., behaviors relating to problem solving, self-care, or use of social support). Future research that measures resilience as a multifactorial construct appears to be recommended.

Future research is further warranted to better understand the unique contribution of resilience in families with children with asthma, especially in African American families who are disproportionately affected by asthma and asthma treatment and care access (for more information, see Kranjac et al., 2017). Routine parental psychosocial screening for mood and QOL in clinical practice is recommended, as these factors were correlated with child health outcomes. Psychosocial screening is becoming more common for children in different illness groups, and standard screening of parents in asthma clinics may be helpful in identifying those at highest risk and most likely to benefit from further intervention. A family-based multidisciplinary approach is needed to elicit patient-reported outcomes to assess, identify, and treat those at high risk to aid illness management plan. Future studies focusing on African American families and using child-reported symptoms aiming to identify the optimal delivery systems needed to implement and sustain

parental support within pediatric asthma clinics would be beneficial for improving outcomes of both the child with asthma and his or her parents.

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