A Prospective Comparison of Moderating Relationships among Stressors, Hopelessness, and Internalizing Symptoms in Low-Income Urban Youth with Asthma

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ABSTRACT *There are many risk factors associated with the development of internalizing symptoms in low-income urban youth, and youth with asthma appear to be at greater risk for experiencing stressors in multiple domains. The purpose of the current study was to examine stressors, hopelessness, and the interaction between them, as predictors of trajectories of anxious/depressed and withdrawn symptoms over a 4-year period of adolescence. Participating in the study were 53 youth from Chicago public schools, the majority of whom identified themselves as African American or Latino. Multi-level modeling was used to examine major life events, daily hassles, exposure to violence, poverty, and hopelessness as predictors of both types of symptoms. Major life events and exposure to violence predicted anxious/depressed symptoms but not withdrawn symptoms. Hopelessness predicted both types of symptoms and further interacted with major life events to predict both anxious/depressed and withdrawn symptoms. Hopelessness also moderated the effects of daily hassles on anxious/depressed symptoms and poverty on withdrawn symptoms. Results of this study provide insight into the psychosocial risk factors associated with the experience of asthma in urban adolescents.*

KEYWORDS *Asthma, Urban, Adolescents, Ethnic minority, Stress, Internalizing symptoms, Hopelessness, Longitudinal*

Asthma is the most common chronic illness of childhood, and rates are highest in low-income urban minority youth.¹ Asthma is characterized as an inflammatory disorder of the airways that involves periods of airway obstruction², and individuals with asthma have an increased sensitivity to environmental allergens and are commonly diagnose with allergies and eczema.^{3,4} Multiple factors contribute to this increased risk including high exposure to airborne allergens, crowded housing, substandard housing conditions, and exposure to violence.^{5,6} Low-income urban youth of color also have especially high levels of depressive symptoms, and these elevations are also thought to be due to the chronic stressors of urban poverty.⁷ Unfortunately, a diagnosis of asthma may also act as a chronic stressor that increases the likelihood of development of depression and other internalizing symptoms in these youth.⁸ Thus, the primary aim of the current study is to better

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understand the relations among depression, hopelessness, and stressors in low-income urban youth with self-reported diagnoses of asthma.

ASTHMA AND INTERNALIZING SYMPTOMS

Meta-analyses confirm studies showing that children with asthma have higher levels of both self-reported depressive symptoms⁸ and parent-reported internalizing symptoms⁹ than either control or normative samples. Despite these findings, the majority of youth with asthma show levels of adjustment well within the normal range, and several studies have failed to find an association between asthma and depressive symptoms.^{9,10}

Even though asthma is associated with depressive symptoms and disorders in cross-sectional studies, it is not clear that there is a prospective, predictive relationship between asthma and depression because only a handful of studies have been conducted, and these have reported mixed results. Alati and colleagues¹¹ divided 5 year-old children with asthma into two groups: those with internalizing symptoms at age 5 and those without internalizing symptoms at age 5. They found that the youth without internalizing symptoms at age 5 had an increased risk of developing internalizing symptoms in adolescence. Similarly, Goodwin and colleagues¹² found that adolescents with asthma symptoms at baseline had an increased likelihood of developing a major depressive disorder 1 year later though they did not control for baseline levels of depression. On the other hand, Feldman, Ortega, McQuaid, and Canino¹³ failed to find a predictive relationship for asthma when baseline internalizing symptoms were controlled. More studies that take into account baseline levels of symptoms are needed to understand whether asthma is a risk factor for the development of depression or whether asthma and depression are related to each other through their shared associations with other variables.⁹ Studies should also examine specific types of internalizing problems (i.e., depression, withdrawal, and anxiety) to clarify whether some of the discrepancies in extant findings can be explained by different measures of internalizing symptoms.

Evidence from cross-sectional studies shows that asthma is associated with internalizing symptoms in low-income urban kindergarten age children¹⁴ and with depressive symptoms in low-income urban adolescents.¹⁵ However, the only longitudinal study conducted with urban youth failed to find a significant effect of asthma on depressive symptoms.¹⁰ Though this study had a small sample size that might have contributed to its failure to find a significant prospective relationship between asthma and depression, it is clear that more longitudinal studies are needed. Prospective investigations are especially needed in adolescent samples given the increase in rates of depression that occur during this time period.¹⁶ The mechanisms for risk that will be examined in the current study are those that are included in the cognitive models of depression in youth: stressors and hopelessness.

Cognitive theories of depression propose that individuals with cognitive vulnerabilities are likely to develop depression in response to stressful life events. The two most prominent cognitive theories of depression were proposed by Beck¹⁷ and Abramson and colleagues.^{18,19} Despite the utility of cognitive diathesis-stress models of depression in youth without chronic illness, few studies have examined these models in children with asthma or other chronic health conditions despite the known increase in internalizing symptoms in this population.²⁰ To our knowledge, no research to date has examined whether negative cognitions and stressors provide prospective risk for the development of depressive symptoms in youth. To address this gap, one of the

primary goals of the current study is to examine stressors and negative cognitions as predictors of depressive trajectories across 4 years of adolescence.

ASTHMA AND STRESS

Some research provides evidence that youth with asthma experience more stressors than do youth without asthma.⁷ Youth who live in poverty are at particular risk for experiencing stressful life events given that they experience stressors in multiple domains including discrimination and exposure to violence.²¹ Thus, urban youth with asthma may be at a particularly elevated risk for experiencing stressful life events. In addition to the commonly studied stressors of major life events and daily hassles, urban youth are more likely to experience exposure to violence and poverty. These specific types of stressors are related to asthma outcomes in urban youth. For example, school-aged children with asthma who are exposed to more community violence report more days with symptoms of asthma.²² Despite the importance of psychosocial stressors in theory and research, few studies have examined stressors in children with asthma in a prospective, longitudinal manner that allows one to clarify the directions of effects.

STRESS AND INTERNALIZING SYMPTOMS

Many studies have shown that stressors prospectively predict internalizing symptoms and disorders.²³ With respect to specific types of stressors, both poverty²⁴ and exposure to violence²⁵ predict internalizing symptoms in youth. Current research provides cross-sectional support for a positive association between stressors and internalizing symptoms in youth with asthma.²⁶ Two of the longitudinal studies that have been conducted failed to find that either asthma-specific or general stressors were predictive of changes in symptoms of internalizing problems in youth.^{27,28} Both of these studies utilized parental reports of symptoms only even though child reports of internalizing symptoms are generally preferred.²⁹ More prospective studies that take into account children's reports of depressive symptoms and include large enough sample sizes to detect effects are needed. One of the goals of the current study is to prospectively examine four specific types of stressors in relation to internalizing symptoms in urban youth with asthma to determine whether specific stressors are differentially related to outcomes.

ASTHMA AND NEGATIVE COGNITIONS

Studies are mixed as to whether children with asthma are a particular risk for developing more negative cognitive styles than youth without chronic illness. Youth with asthma reported a more negative self-concept than children with other disorders³⁰, but other studies have not found these differences.³¹ One study examined both hopelessness and self-concept and found no differences between children with asthma and control children on these cognitive variables.³² Furthermore, in this study, there was no effect for the severity of asthma on cognitive variables. Cognitive variables have been found to be related to symptoms of anxiety, but not depression in college-aged adults who were diagnosed with asthma as children.³³ Children with asthma have lower levels of self-esteem than children with diabetes or cancer, or healthy children³⁰ which is associated with internalizing symptoms.³²

THE CURRENT STUDY

The goal of the current study was to examine the relations among stressors, hopelessness, and internalizing symptoms in a sample of low-income urban adolescents with possible asthma. The current study focuses on these particular youth because they are likely to experience more risk factors for the development of adjustment difficulties.²⁵ What is the mechanism by which youth with asthma are at increased risk for internalizing symptoms? Are all four types of stressors (major life events, daily hassles, exposure to violence, and poverty) predictive of internalizing trajectories over time? Does hopelessness predict internalizing trajectories? Does the interaction between hopelessness and each different type of stressor predict internalizing trajectories over time?

METHOD

Participants

Participants in the present study were part of a larger study examining the impact of stressful life experiences on low-income urban youth. Three urban public elementary schools were selected for participation based on high percentages of low-income students. Students were classified as low-income based on eligibility for free/reduced school lunch programs. Participants identified their own racial group: 163 (42%) identified themselves as African American, 120 (31%) as Latino, 47 (12%) as European American, 26 (6%) as Asian American, 19 (5%) as bi-racial, and 13 (3%) identified themselves as belong to another racial/ethnic group. The larger sample included 252 females (64%) and 136 males (34%). Mean age at time 1 was 13.06 (SD=1.4). Only the 53 participants who reported the presence of asthma were included in the current study.³⁴ While single-item reports of asthma are not ideal, children over the age of 10 appear to be able to accurately report on their asthma diagnoses. Self-reports have been used in previous studies, particularly when the focus is on screening adolescents for school-based services.³⁵

Procedure

Elementary schools (i.e., K—8th grade) in Chicago were invited to participate in the current study if they had student poverty rates above 75% based on student eligibility for free or reduced school lunches. The two elementary schools that agreed to participate were highly representative of Chicago urban schools. The first was 99% low income and 99% African American, with the remaining 1% split evenly between Latino and European American students. The second school was 97% low income and 64% Latino, 15% African American, 15% European American, and 6% Asian American. The third participating school (a high school) was recruited because the two participating elementary schools feed into it. The high school is more socio-economically, racially and ethnically diverse than the elementary schools, with poverty rates of 48% and the following racial/ethnic breakdowns: 34% African American, 32% European American, 17% Latino, 14% Asian American, and 2% American Indian.

Parent consent forms were distributed to students in class and at report card pick-up days. In addition, parents were telephoned prior to interview data collections that were part of the larger project. Assent forms were distributed to students at the time of data collection.

Data collection took place approximately once each year over a 4-year-period. Participants were in grades 6–9 at time 1. As is common in longitudinal research, participants were lost to follow-up over the course of study with 34 participants remaining at time 2, 30 at wave 3, and 18 at wave 4. Attrition analyses were conducted to compare those who remained in the study at time 4 with those who left the study prematurely using ANOVAs and chi-square analyses. No significant differences on time 1 variables were found between study completers and non-completers.

Measures

Hopelessness. Youth hopelessness was measured using the Hopelessness Scale for Children.³⁶ This measure was adapted from the Beck Hopelessness Scale.³⁷ This measure contains 17 items such as “I might as well give up because I can’t make things better for myself.” Items are rated as either a 2 (true) or 1 (false) and then summed to create a summary score with higher scores representing higher levels of hopelessness.

Internalizing Symptoms. The YSR contains 119 items about behavior and adolescents rate the frequency of each behavior on a 0 to 2 point scale with higher scores representing more frequent symptoms. The anxious/depressed and withdrawn scales of the Youth Self Report Inventory were used in the current study. The YSR was standardized on a nationally representative sample of youth and reliability and validity are well established.³⁴

Major Life Events and Daily Hassles. Major life events and daily hassles were assessed using the Urban Adolescents Life Experiences Scale (UALES).²¹ The UALES items were generated by low-income, urban, predominantly African American, youth. Respondents were asked to rate the frequency with which they have been exposed to each of the stressful life experiences on a scale ranging from 1=never through 5=everyday, with higher numbers indicating greater frequency of exposure to stressors. Test–retest reliability of the UALES was .84 in a study of students in grades 6 through 12 conducted by the developers of the measure.²¹

Exposure to Violence. Youths’ exposure to violence was measured using a 51-item questionnaire that assesses whether youth had witnessed or experienced 27 different types of violent events. Sample items include: gang violence and drug trafficking. A summary score was created by summing the total number of events witnessed or experienced.

Poverty. Economic stressors were assessed using Conger’s Family Economic Pressure Index.³⁸ Fourteen items that assess perception of adequate financial resources and specific stressors related to poverty were included. Responses were scored on a one to three scale with higher scores representing more exposure to economic stressors.

RESULTS

Overview

Results of the current study are presented in four steps. First, descriptive statistics and correlations for internalizing symptoms, hopelessness, and the four stressors are

presented. Second, results of multi-level modeling testing for the main effects of stressors and hopelessness on symptoms are reported. Third, results of multi-level modeling testing for hopelessness as a moderator of the relation between stressors and internalizing symptoms are summarized.

Descriptive Statistics

Descriptive statistics are found in Table 1 and correlations among study variables can be seen in Table 2. Results showed several significant bi-variate correlations among study variables both within and across time-points. For example, T1 withdrawn symptoms were correlated with T1 poverty and T1 hopelessness as well as with T2 withdrawn symptoms.

Main Effects Analyses

Model specification proceeded in several steps.³⁹ First, the unconditional means model in which individual variance in intercepts was specified for both types of symptoms (anxious/depressive $\chi^2=4,928.59$; withdrawn $\chi^2=3,946.78$). Next, the unconditional linear model in which variance in both slopes and intercepts as well as covariance between intercept and slope parameters was specified (anxious/depressive $\chi^2=4,814.75$; withdrawn $\chi^2=3,886.55$). Most importantly, the unconditional

TABLE 1 Means and standard deviations (SD) for study variables

	N	Mean	SD
T1 hassles	52	98.99	18.51
T1 events	51	60.07	9.09
T1 poverty	47	28.29	8.14
T1 violence	48	84.67	21.49
T1 hopelessness	40	20.34	3.04
T1 anxiety/depression	51	5.11	4.35
T1 withdrawn	51	3.44	2.26
T2 hassles	35	86.69	13.85
T2 events	34	55.45	8.31
T2 poverty	38	31.06	8.64
T2 violence	38	81.87	20.41
T2 hopelessness	38	20.42	3.07
T2 anxiety/depression	35	3.04	4.18
T2 withdrawn	34	2.51	2.78
T3 hassles	31	84.15	10.77
T3 events	29	54.84	8.65
T3 poverty	30	30.55	9.12
T3 violence	30	87.66	27.71
T3 hopelessness	30	20.08	2.57
T3 anxiety/depression	26	2.15	3.49
T3 withdrawn	26	2.65	1.83
T4 hassles	18	87.24	11.79
T4 events	18	53.50	8.18
T4 poverty	14	32.87	10.08
T4 violence	14	82.29	25.16
T4 hopelessness	15	19.74	2.43
T4 anxiety/depression	14	2.37	2.24
T4 withdrawn	14	2.14	2.11

linear model fit the data best for both types of internalizing symptoms and showed that there was significant variance in intercept and slope which gave us permission to examine stressors and hopelessness as predictors of internalizing trajectories.

Each type of stressor and hopelessness were entered as level-1 predictors in the unconditional linear models for anxious/depressive and withdrawn symptoms as described above. Full results of these analyses can be seen in Table 3. Contrary to study hypotheses, there were very few main effects of stressors on internalizing symptom trajectories. For both major life events ($B=.12, p<.01$) and exposure to violence ($B=.04, p<.05$), higher levels of stress were associated with increases in levels of anxious/depressive symptoms over time. However, neither daily hassles nor poverty were significant predictors of anxious/depressive trajectories. There were no main effects for withdrawn symptoms. Higher levels of hopelessness were associated with higher levels of both anxious/depressed symptoms ($B=.42, p<.001$) and withdrawn/depressed symptoms ($B=.18, p<.05$).

Interactive Effects of Stressors and Hopelessness

Moderation analyses were conducted to determine whether the relationship between stressors and symptoms varied as a function of hopelessness. Interaction terms were formed between each of the four types of stressors (daily hassles, major life events, poverty, and exposure to violence) and hopelessness. Each interaction term was tested individually in a model that included either anxious/depressed or withdrawn/depressed symptoms as the outcome variable; stressors, hopelessness, and participant age as the level-1 variables; and the interaction between the stressors and hopelessness as a level-1 variable. Full results of the moderation analyses can be seen in Table 4.

Hopelessness significantly interacted with major life events ($B=.04, p<.05$) and daily hassles ($B=.02, p<.05$) but not exposure to violence or poverty to predict anxious/depressed symptoms. These interactions were plotted graphically to aid in interpretation, and results can be seen in Figures 1 and 2. Youth with high levels of both major life events and hopelessness had elevated rates of anxious/depressed symptoms while youth with high levels of major life events, but low levels of hopelessness, had lower rates of symptoms. A similar pattern of results was found with daily hassles.

Hopelessness also interacted with both major life events ($B=.02, p<.05$) and poverty ($B=.02, p<.05$), but not daily hassles or exposure to violence, in the prediction of withdrawn symptoms. The nature of these interactions can be seen in Figure 3 and shows that youth with high levels of both stressors and hopelessness reported the most withdrawn symptoms over time.

DISCUSSION

The primary goal of the current study was to examine trajectories of change in anxious/depressive and withdrawal symptoms in youth with asthma. Four specific types of stressors (daily hassles, major life events, exposure to violence, and poverty) and one type of negative cognition, hopelessness, were examined as predictors of changes in these trajectories. In addition, hopelessness was examined as a moderator of the relationship between each of these stressors and symptoms. A 4-year prospective design was used to test the hypotheses that stressors and negative cognitions would predict changes in internalizing symptoms over time and that moderating mechanisms would be responsible for these effects.

TABLE 2 Correlations among study variables

[illegible]

Variable	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.
1. T1 DH	.11	.12	.09	-.20	.04	.28	.11	.21	.46	.29	-.08	.28	-.20	-.07
2. T1 MLE	-.17	-.04	.06	-.09	-.13	.16	.10	.24	.34	-.12	-.52	.32	-.39	-.11
3. T1 Viol	-.20	-.07	.84**	.25	.12	.50**	.30	-.20	-.25	.59*	.46	.24	-.64*	-.63*
4. T1 Pov	-.05	-.20	-.20	.29	.01	-.03	.16	.15	-.26	-.29	.05	-.22	-.12	.06
5. T1 HSC	-.21	-.37	-.19	.29	.56**	.50*	.56**	.17	-.23	-.46	.24	-.12	.20	.06
6. T1 A/D	-.01	-.06	-.05	.15	.10	.73**	.66**	.09	-.46	-.05	-.21	-.37	.60*	.52
7. T1 With	-.10	-.09	.07	-.01	.11	.15	.39*	-.03	-.34	-.03	-.39	-.36	.56*	.32
8. T2 DH	.46*	.17	.10	.07	.15	.31	-.03	.64**	.55*	.18	.33	.16	-.20	-.53
9. T2 MLE	.37	.40*	.09	.27	.05	.16	-.18	.37	.66**	-.04	-.04	.11	-.31	-.23
10. T2 Viol	-.13	.01	.64**	.51**	.16	.60**	.27	-.34	-.18	.63*	.76**	.40	-.59*	-.45
11. T2 Pov	-.03	.34	.54**	.30	.09	-.12	.07	-.03	-.07	.19	.46	-.23	-.40	-.42
12. T2 HSC	.20	.09	-.13	.15	.29	.22	.12	.20	-.45	-.20	-.26	-.30	.40	.15
13. T2 A/D	.06	-.05	.16	-.03	-.71*	.50*	.09	.06	-.42	-.16	.01	-.16	.48	.27
14. T2 With	.19	-.07	-.01	-.15	.24	.54*	.33	.19	-.08	.24	.10	-.40	.48	.09
15. T3 DH	.18	-.19	-.26	.01	-.11	-.21	.24	.18	.33	-.57	-.57	-.37	.62	.60
16. T3 MLE			.29	-.22	-.26	-.51*	-.14	.26	.77**	-.25	-.33	-.31	-.37	-.38
17. T3 Viol				.24	.01	.26	.14	-.39	.12	.79**	.58*	.11	-.55*	-.63*
18. T3 Pov					.27	.34	-.01	.01	-.22	.17	.60*	.12	-.61*	-.51
19. T3 HSC						.11	.04	-.24	-.06	-.03	.18	.52	-.26	.15
20. T3 A/D							.59**	-.16	-.70*	.17	.48	.18	.17	.08
21. T3 With								-.32	-.42	.08	.05	-.04	.29	.40
22. T4 DH									.55*	-.38	.35	-.16	.25	-.45
23. T4 MLE										.07	-.16	.31	-.75	-.88*
24. T4 Viol											.44	-.15	-.17	-.18
25. T4 Pov												.09	-.37	-.40
26. T4 HSC													-.63*	-.31
27. T4 A/D														.74**
28. T4 With														

* $p < .05$; ** $p < .01$ T1 = Time 1, T2 = Time 2, T3 = Time 3, T4 = Time 4, DH = Daily Hassles subscale from the Urban Adolescent Life Events Scale, MLE = Major Life Events subscale from the Urban Adolescent Life Events Scale Viol = Exposure to Violence, Pov = Poverty from the Conger Family Economic Pressure Index, HSC = Hopelessness Scale for Children, A/D = YSR Anxiety/Depression Scale, With = YSR Withdrawn Scale

TABLE 3 Main effects of stressors and hopelessness on anxious/depressed and withdrawal symptoms

	Anxious/depressed			Withdrawn		
	<i>B</i>	<i>SE</i>	<i>t</i>	<i>B</i>	<i>SE</i>	<i>t</i>
Major life events						
Intercept	3.18	5.21	.61	-1.42	3.03	-.47
Age	-.36	.29	1.28	.15	.16	.89
Major life events	.10	.04	2.35*	.04	.03	1.55
Daily hassles						
Intercept	8.89	4.59	1.94~	.94	2.46	.38
Age	-.53	.27	1.93~	.10	.16	.63
Daily hassles	.03	.02	1.12	.01	.01	.57
Poverty						
Intercept	13.60	3.07	4.44***	4.56	1.20	2.31*
Age	-.78	.22	3.51**	-.16	.14	1.16
Poverty	.04	.04	.92	.02	.03	.96
Exposure to violence						
Intercept	10.85	3.10	3.50***	3.97	2.00	1.99*
Age	-.78	.21	3.72***	-.14	.14	1.02
Violence	.05	.02	2.6**	.01	.01	1.05
Hopelessness						
Intercept	3.89	3.80	1.04	-.62	2.50	.25
Age	-.62	.21	2.92**	-.01	.13	.08
Hopelessness	.42	.11	3.74***	.18	.07	2.43*

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

Consistent with study hypotheses, specific stressors and hopelessness emerged as significant predictors of internalizing trajectories in urban youth with asthma. However, fewer significant main effects were found than were expected. Daily hassles and major life events predicted anxious/depressive symptoms while none of the stressors individually predicted withdrawal symptoms. No studies to date have examined specificity in the relation between particular types of stressors and particular outcomes in urban youth with asthma. These results of the current study expand those found by MacLean and colleagues⁴⁰ in which a combined measure of daily hassles and major life events was related to increased levels of internalizing symptoms in youth with asthma.

The current study showed that hopelessness was a significant main effect predictor of both types of internalizing syndromes, anxious/depressed and withdrawal, in low-income urban youth with asthma. Few studies to date have examined negative cognitions in youth with asthma. Most that have done so have focused on a particular type of negative cognition, illness uncertainty that is specific to youth living with chronic illness.⁴¹ The current study expands previous work by examining a type of negative cognition that is implicated in depression in general adolescent samples.

The current study provided evidence that hopelessness moderated the impact of particular stressors on internalizing symptoms. With respect to anxious/depressive symptoms, hopelessness significantly interacted with major life events and exposure

TABLE 4 Interactive effects of stressors and hopelessness on anxious/depressed and withdrawn symptoms

	Anxious/depressed			Withdrawn		
	<i>B</i>	<i>SE</i>	<i>t</i>	<i>B</i>	<i>SE</i>	<i>t</i>
Major life events						
Intercept	40.45	19.96	2.03*	15.21	12.44	1.22
Age	-.33	.27	1.22	.18	.16	1.17
Major life Events	-.78	.33	2.37*	-.35	.21	1.67~
Hopelessness	-1.81	.89	2.03*	-.84	.56	1.49
MLE × HPL	.04	.02	2.74**	.02	.01	1.95~
Daily hassles						
Intercept	30.64	15.76	1.99~	-2.81	10.17	.28
Age	-.39	.25	1.54	.15	.15	1.02
Daily hassles	-.38	.16	2.31*	-.02	.11	.16
Hopelessness	-1.29	.74	1.74~	.09	.48	.20
DH × HPL	.02	.01	2.6**	.01	.01	.34
Poverty						
Intercept	-.55	8.70	.06	10.73	5.58	1.92~
Age	-.57	.22	2.58*	.06	.13	.49
Poverty	.07	.26	.27	-.40	.17	2.36*
Hopelessness	.59	.41	1.42	-.44	.27	1.63
POV × HPL	-.01	.01	.26	.02	.01	2.45*
Exposure to violence						
Intercept	1.69	9.12	.18	1.61	6.29	.26
Age	-.60	.21	2.88**	.01	.13	.03
Violence	.05	.10	.48	-.03	.07	.49
Hopelessness	.50	.41	1.2	.02	.29	.07
VIO × HPL	-.01	.01	.04	.01	.01	.66

DH Daily Hassles subscales from the Urban Adolescent Life Events Scale, *VIO* Exposure to Violence, *HPL* Hopelessness from the Hopelessness Scale for Children

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

to violence to predict outcomes. In addition, hopelessness significantly interacted with poverty to predict withdrawal symptoms. There was also a marginally significant interaction between major life events and hopelessness in the prediction of withdrawal symptoms. While several cognitive diathesis–stress models have been tested in youth and adults with chronic illness, to date, none have specifically examined these types of models in youth with asthma.

The current study has several strengths including its long-term longitudinal design and use of a community sample of adolescents. Adolescence is a particularly risky developmental period for the experience of depressive symptoms and increases in stressors⁴², and we were able to assess these variables prospectively. The youth in the current study were able to be followed for approximately 4 years which gives a more complete picture of their developmental progression than has been possible with other studies.⁶

Poverty and exposure to violence are likely to be most salient to urban youth,²⁵ however, they are less frequently studied in youth with chronic illness. The current

FIGURE 1. Hopelessness significantly interacts with major life events to predict anxious/depressed symptoms.

study provides evidence that both types of stressors are important to consider in urban youth with chronic illness. There was evidence of specificity with exposure to violence predicting anxious/depressed symptoms in interaction with hopelessness and poverty interacting with hopelessness to predict withdrawal symptoms. These findings suggest that when poverty is moderated by hopelessness, it has a unique relationship to withdrawn symptoms while exposure to violence is uniquely related to anxiety/depression.

FIGURE 2. Hopelessness significantly interacts with daily hassles to predict anxious/depressed symptoms.

Poverty x HPL Predicting Withdrawn Symptoms

FIGURE 3. Hopelessness significantly interacts with poverty to predict withdrawn symptoms.

Limitations and Future Directions

In addition to its strengths, the current study also has limitations that provide directions for future research. First, the current study only measured asthma status by youth self-report. It did not measure the time since diagnosis, medication use, or symptom severity, and so could not assess the full range of disability-related parameters specified in the disability-stress-coping model.⁴³ Future research would benefit from including these additional variables. Second, the current study did not include a measure of asthma-specific stressors that would allow for the examination of illness-specific stressors that contribute to stressors in multiple domains. Third, all study constructs were assessed through self-report questionnaire methods which might have created mono-method bias. However, there were few significant correlations among study variables suggesting that relationships among study variables were not artificially elevated in the current study.

Finally, while the current study was focused on the risk for poor adjustment in youth with chronic illness, certain factors provide resistance or resilience against poor adjustment, and these were not included in the current study. Resistance factors such as problem-solving ability, competence, and family environment, have been implicated in the relation between stressors and adjustment.⁴⁴ They are likely to decrease the experience of psychosocial stressors as well as moderate the relation between risk factors and adjustment. Further examination of stressors and resistance factors within samples of urban youth with asthma is warranted.

Implications and Conclusions

The current study highlights the nature of the stressful experiences of youth with asthma, their cognitive styles, and their impact on internalizing symptoms. The results of the current study suggest that hopelessness is a general risk factor for the development of internalizing symptoms in youth with asthma, both by itself and in interaction with particular stressors. Thus, in order to decrease internalizing distress in these youth with asthma, prevention and intervention programs should target responses to stressors such as cognitive style and coping responses.

Most intervention studies with this population have focused on improving pulmonary functioning or increasing asthma knowledge in low-income and other underserved populations.^{4,5} Few studies to date have focused on psychological outcomes, but one tested a combined stress management and educational intervention in a small sample of middle class children finding that the four-session intervention significantly reduced parent-reported internalizing symptoms.⁴⁶ This study also found a significant increase in asthma knowledge but not school attendance or social engagement.

There is clearly a need for more of this type of research in urban children as they are extremely vulnerable to poor psychological adjustment and have more severe asthma and poor asthma management.⁵ Programs focused on reducing the impact of stressful events will be particularly salient to these youth given their high level of exposure to stressors in multiple domains.^{2,5} Prevention and intervention programs should focus both on stressors related to asthma and stressors related to the context of urban poverty for the greatest impact on psychological and physiological outcomes.

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