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The Effect of Parental Social Support and Acculturation on Childhood Asthma Control

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Abstract

Objective—There exists large ethnic disparities in asthma among Latino children; Puerto Ricans (PR) are disproportionately affected, while Mexicans have the lowest prevalence and morbidity. Disparities are poorly understood, however, acculturation and social support are suggested to influence asthma control among children. This study investigated the relationship between acculturation, social support, and asthma control among PR and Mexican children and their caregivers.

Methods—Primary caregiver-child dyads (*N*=267) of PR (*n*=79) and Mexican (*n*=188) descent were recruited from clinics at two inner-city hospitals in Bronx, NY and three clinics in Phoenix, AZ. Children were 5-12 years of age and had a confirmed asthma diagnosis. Dyads completed measures of social support, acculturation and asthma control; logistic regression was used for analysis.

Results—Mexican children had better asthma control than PR children ($p<.001$). PR caregivers were more acculturated than Mexican caregivers ($p<.05$); however, acculturation did not predict control. Across Latino subgroups caregivers' total level of social support predicted better asthma control among children ($p<.05$), and support received from family and friends each independently predicted better control ($p<.05$).

Conclusions—Results suggest that social support reduces some of the burden associated with asthma management enabling caretakers to better control their children's asthma.

Keywords

Latinos; Puerto Rican; Mexican; Children; Caregivers; Ethnic Disparities

Introduction

Asthma prevalence

Asthma is the most commonly diagnosed childhood chronic illness (1), affecting approximately 7.1 million children in 2011 (2). Among Latinos asthma burden is

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particularly high making it an important sample on which to focus research. For example, Latino children under 17 years have higher asthma prevalence (12%) than non-Latino Caucasian children (4%) (3), and research suggests that minority children have disproportionate asthma morbidity as compared to Caucasian children (4).

Discrepancies exist between Latino subgroups as well, with asthma disproportionately affecting Puerto Ricans (PR) (5). Among children (<18 years), PR have the highest documented asthma prevalence (18.7%) and mortality (40.9 per million) and Mexicans have the lowest prevalence (4.8%) and mortality (9.2 per million) (6, 7). Further, among those living on the mainland U.S., PR children were found to have higher prevalence and worse morbidity than other Latino, African American, and non-Latino children (8).

Despite the observed and documented discrepancies between Latino subgroups, little is known about the causal mechanisms. Various pathways have been proposed, including genetic and biological factors; asthma beliefs; characteristics of the healthcare system; and pollutants and allergens, which may be related to poverty and geographic location (9). However, while some research support exists, none of these factors can definitively be identified as the cause of asthma outcomes, and it is unlikely that there is a sole contributor (9). Canino et al. proposed a multidimensional model consisting of four domains, which are believed to interact and affect the process of care and health outcomes (9, 10). These include: individual and family factors (e.g., race/ethnicity, immigration/acculturation-related factors, family relations), the child's environment, the health-care system (e.g., insurance, cultural sensitivity), and provider characteristics (9, 10). Individual and family factors, specifically the influence of ethnicity, acculturation, and family resources, were the primary focus of the current investigation.

Acculturation

Acculturation is a complex, multidimensional process through which an individual adapts to a host culture following immigration or migration (10). It may further be defined as a change in norms, ideas, values, and behaviors that occurs following continuous contact with a culture other than one's own (10, 11). Various immigration-related factors such as age of entry and duration of residence in the host country may play a role in this process (10).

Acculturation is frequently associated with multiple challenges, and importantly, a growing body of literature indicates that it has health implications that may transcend first generation immigrants (12). Despite the presence of several factors assumed to predispose immigrants to worse health (e.g., low likelihood of having insurance, economic diversity), Latinos residing in the U.S. often have better health outcomes than non-Latino Caucasians (12). This phenomenon is termed the "Hispanic Paradox" (13).

However, the "Hispanic Paradox" does not hold for all health conditions, and much of the research on which this theory is based has focused on the Hispanic population as a whole (12). A comprehensive review of the literature on acculturation and health among Latinos in the U.S. indicated that the effect of acculturation is complex and poorly understood (11). Notably, with regard to asthma, this paradox appears to apply primarily to Mexicans (7), and

the impact of acculturation and place of residence on asthma may have differential effects among PR and Mexicans.

Among PR, for example, studies have indicated higher lifetime asthma prevalence rates for children residing on the island of PR (41.3%) versus those living in the mainland U.S. (35.3%) despite lower rates of premature birth and prenatal smoke exposure and higher socioeconomic status among those residing in PR (14). Children residing in PR were also more likely to have been hospitalized for asthma than children in the Bronx (14). This association is opposite to that reported for other Latino subgroups, including Mexicans, for whom foreign-born status was found to be protective (8). Data from over 4000 Mexican children showed that birth in the U.S. was associated with increased risk of asthma after controlling for sex, age, ear infection history, and routine health care provision (15). Similarly, U.S.-born Mexicans were more likely than foreign-born Mexicans to report having asthma (16). Among Mexican caregivers lower levels of acculturation, as measured by caregiver nativity and length of time in the U.S., was associated with lower asthma prevalence rates (17).

Social support

Social support has been reported to have a positive impact on multiple health domains including immune and endocrine functioning; recovery from illness; health maintenance; chronic illness self-management; and medication adherence (6, 18, 19). Familismo, a high degree of reciprocity and a large reliance on the family for psychological, social, and security needs, is a central value among Latinos (20, 21) and, although not directly measured in this study, has frequently been cited as an explanation for better observed health within this population (22). For example, familismo and social support were suggested to explain superior birth outcomes among Mexican immigrants compared to U.S.-born women despite having multiple risk factors for adverse outcomes (23). Further, family conflict in Latino families was found to be associated with health risk behaviors (e.g., drug use) (24), and lower medication adherence (18). Support obtained from unrelated, close friends has also been found to have a beneficial impact on both physical and mental health (25). Moreover, several studies have found friend support to have a greater impact on mental health than family support in Mexican, Mexican-American, and Central American samples (26, 27).

Given the ample research demonstrating the effects of social support on health outcomes, it is not surprising that support, specifically family resources, has been identified as an individual factor believed to positively influence asthma outcomes among Latinos (10). Caring for a child with asthma is a time-consuming, and often stressful, task, especially for parents of young children who are typically considered incapable of self-management. Social support is believed to moderate the adverse impact of these and other stressors on asthma control (28, 29).

In a cross-sectional study of children with asthma aged 13-20 years, family support was positively associated with asthma control, quality of life, and fewer negative attitudes towards medication use and healthcare providers (30). However, only 11% of the sample was Latino, and no delineations were made according to ethnicity. Lower levels of family support were also associated with biological markers (e.g., levels of Immunoglobulin E,

eosinophil counts), which were related to worse asthma outcomes among adolescents (31). Peer relationships, however, had no significant relationship with symptoms or pulmonary function (31).

A positive relationship has also been demonstrated between maternal social support and favorable childhood asthma outcomes (28, 29). For example, in a sample of Brazilian mother-child dyads, maternal social support was negatively associated with non-atopic wheezing and was suggested to buffer the impact of maternal mental disorders on wheezing among their children (29). Another study found that Spanish-speaking mothers had the lowest levels of perceived social support ($p<.001$), however, ethnic sub-group differences were not assessed (28).

Research aims

Among Latino children in the Bronx and Phoenix, asthma prevalence rates are high, making it an important area for research. Further, despite well-established discrepancies in asthma prevalence and morbidity between PR and Mexicans the cause of these differences is still poorly understood. Aim 1 of these secondary analyses was to determine whether parental social support from 1) family and 2) friends would be associated with better asthma control among children. The effects of support are particularly relevant given the importance of family in Latino communities. We hypothesized that across Latino subgroups social support from both family and friends would be associated with better asthma control. Aim 2 sought to assess the interaction effects of ethnicity and social support from the above analyses. Aim 3 was to investigate the relationship between acculturation and childhood asthma control among PR and Mexicans residing within the U.S. We hypothesized that opposite effects would be observed, with higher levels of acculturation being associated with better asthma control among PR children and worse control among Mexicans.

Methods

This study was part of a longitudinal, multi-site study (PI: Co-Author, NIH NCCAM R01XXXX) with the primary objective of testing a multi-level explanatory model for asthma disparities between PR and Mexicans living within the continental U.S. In the larger trial parent-child dyads participated in a series of structured interviews and assessments (e.g., objective measure of lung function) at five time points over a 12-month period. Participants were compensated $20 for their participation in the baseline assessment. The results of this study are based on the baseline assessment.

Primary caregiver-child dyads were recruited from asthma clinics at two inner-city hospitals in Bronx, NY, two school-based health clinics in Phoenix, AZ, and the Phoenix Children's Hospital Breathmobile, a mobile asthma clinic. Recruitment methods included: in-person meetings during clinic visits, mailed recruitment letters/telephone calls from healthcare providers; and fliers posted in selected sites. Inclusion criteria included: ability to speak English or Spanish; confirmed diagnosis of asthma (from medical chart review); and primary caregiver of PR, PR-American, Mexican or Mexican-American origin who had primary/at least equal responsibility for daily management of the child's asthma. All children were between 5 and 12 years of age. Exclusion criteria included: other significant

pulmonary condition (e.g., cystic fibrosis) and cognitive learning disabilities that might make it difficult for parent/child to follow the study protocol. Participants signed an informed consent form approved by the human subjects committees of the Ohio State University, Albert Einstein College of Medicine, Arizona State University, Phoenix Children's Hospital, and Scottsdale Healthcare prior to participation. Assent was obtained from child participants.

Poverty

Using a measure by Gore, Aseltine, and Colton (32) we asked caregivers "What best describes your family's standard of living?" Response choices ranged from "very well off" to "poor." A dichotomous variable for poor (Y/N) was created; responses of "just getting along", "nearly poor", and "poor" were classified as "Yes".

Stephenson Multigroup Acculturation Scale

The Stephenson Multigroup Acculturation Scale (SMAS) is a 32-item measure consisting of two subscales: ethnic society immersion (ESI) and dominant society immersion (DSI) (33). The ESI measures the extent to which individuals are immersed in their society of origin in the domains of language, interaction, media, and food. The DSI measures the individual's immersion in American culture and the adoption of American practices (e.g., socializing with American people and perceived comfort within the U.S.). The SMAS has been validated in English within 5 ethnic groups, including Latino Americans of PR and Mexican origin. Cronbach's alpha for the total scale in English is .86; Cronbach's alpha for the ESI is .97 and .90 for the DSI. Stephenson (33) demonstrated significant mean differences on both the ESI and the DSI between three generations; the ESI decreased and DSI increased with each successive generation.The Spanish SMAS has been translated/back-translated and assessed for cultural compatibility; Cronbach's alpha for the ESI is .63 and for the DSI is . 59.

Social Networks

Social support was measured using the 12-item Social Networks (SN) questionnaire, obtained from the National Latino and Asian American Study (NLAAS) (22). It provides a total score and can be broken down into two subscales: family support and friend support. Each of these scores has acceptable internal consistency among Latino subgroups (SN-total score: Cronbach's α=.71; SN-family support, Cronbach's α=.71; SN-friend support, Cronbach's α=.75) (34). Adequate internal consistency was also obtained using a Spanish version (SN-family support, Cronbach's α=.72; SN-friend support, Cronbach's α=.78) (35). For our sample, Cronbach's alpha for the Spanish participants (N=185) were .66 for total social support, .43 for family support, and .51 for friend support. All Spanish NLAAS measures were translated/back-translated and evaluated for cultural relevance by a bilingual committee (22). Following professional translation, focus groups were conducted with Spanish-speaking participants, including PRs and Mexicans, to ensure translation was adequate and culturally appropriate (22).

Asthma Control Test

The Asthma Control Test (ACT) is a self-report measure used to assess children's asthma control over the past month. Separate versions were used for children ages 5 to 11 years (Childhood Asthma Control Test (C-ACT) and for children age 12 years (ACT)). For both versions total scores are dichotomized into poorly controlled (≤19) and well-controlled (>19) groups. For the ACT this is based upon studies demonstrating that subjects scoring at or below the cutoff have worse control as rated by specialists and lower lung function (based on percent predicted FEV_1) compared with subjects scoring above the cutoff (36). For the C-ACT a cutoff of 19 best balances sensitivity (68%) and specificity (74%) (37).

Scores on the C-ACT (Cronbach's α=.79) range from 0-27 and incorporate caregiver (3 items) and child responses (4 items). It has been validated in children aged 4 to 11 years through comparison to percent-predicted FEV_1 and assessment of control and change in medication as determined by a specialist (37). The C-ACT was translated into Spanish, back-translated, and assessed for cultural compatibility as part of the larger R01 protocol.

The ACT consists of 5 items, which are rated by the individual, with total scores ranging from 5 to 25 (36). It has good internal consistency (Cronbach's α=0.84) (36) and has moderate correlations with specialists' assessment of control (r=.45, p=.0001) (38). The Spanish ACT, developed through translation/back-translation, similarly has good reliability (Cronbach's α=.84) and validity (39) (C-ACT, Cronbach's α=.67; ACT, Cronbach's α=.55).

Statistical analysis

Independent samples t-tests and chi square analyses were used to assess between group differences on demographic (e.g., child's age and gender, caregiver report of poverty); predictors (i.e., SN scores, SMAS subscale scores); and outcome variables (e.g., asthma control). Binary logistic regression was used to determine the impact of acculturation and social support on children's asthma control. Covariates were entered in Step 1 of the model; these included: child's age, gender, self-reported controller medication use within the past month, and parental self-reported poverty. Marital status (yes/no) was also entered as a covariate for analyses investigating the influence of social support on asthma control. Key predictor variables (i.e., SN-total score, SN-family support, SN-friend support, SMAS-ESI, and SMAS-DSI) were entered in Step 2, with each variable independently entered into a different model. Interaction analyses were run using binary logistic regression to investigate the relationship between ethnicity and acculturation and social support, respectively. The same covariates were entered in Step 1 of the model, and the interaction term was entered in Step 2.

Results

Demographic characteristics

There were 267 parent-child dyads who participated in the study; 188 were Mexican and 79 were PR. Mexican dyads were recruited from the Bronx and Phoenix sites (n=32 and n=156, respectively). All but one PR dyad was recruited from the Bronx. There were no significant differences between the Mexican samples in the Bronx versus Phoenix on measures of

acculturation, poverty, child's age, gender, or controller medication use, caregivers' relationship to the child, primary language spoken, or education.

No significant between-group differences were reported between the PR and Mexican samples with regard to the child's gender or age (See Table 1). The majority of primary caregivers in both ethnic groups were mothers (86.1% of PR caregivers, 95.7% of Mexican caregivers), but there were significantly more mothers in the Mexican sample ($p<.05$). Mexican caregivers were significantly more likely to be married at the time of baseline ($p<.001$). Additionally, more Mexican participants self-reported poverty (67%) than PR participants (31.5%) ($p<.001$) and more Mexican participants completed the baseline interview in Spanish (90.4%) than PR participants (19%) ($p<.001$), suggesting that more Mexican participants identify Spanish as their primary language (See Table 1). Additionally, significantly more PR caregivers had attained at least a high education or its equivalent (i.e., GED) (60.8%) than Mexican participants (45.5%) ($p<.05$) (See Table 1).

Ethnic group and childhood asthma control

The full model containing ethnicity and all covariates was statistically significant, χ^2 (5, $n=267$)=50.81, $p<.001$, indicating that the model was able to distinguish between participants who reported poorly controlled asthma versus those who reported well-controlled asthma (See Table 2). Ethnic group was the strongest predictor of asthma control, and more Mexican children had well controlled asthma (56.4%) than Puerto Rican children (15.2%), *OR*=8.53, *95% CI* [4.10, 17.76], $p<.001$.

Acculturation and social support

There was a significant positive association between family support (SN-family) and ethnic society immersion (SMAS-ESI), $r=.20$ (265) , $p<.001$. Similarly, friend support (SN-friend) was correlated with ethnic society immersion (SMAS-ESI), $r=.21$ (265) ($p<.001$). There was no significant correlation between dominant society immersion and social support.

Hypotheses 1 and 2: SN and childhood asthma control

After controlling for marital status, Mexican caregivers reported significantly higher total social support as measured by the SN-total score ($M=3.19$, $SD=.47$) than PR participants ($M=2.95$, $SD=.54$), F(2, 264)=8.20, $p<.05$. Similarly, Mexican caregivers reported greater social support from family than PR caregivers (SN-family: Mexicans $M=3.23$, $SD=.54$; PR $M=2.89$, $SD=.70$), F(2, 264)=12.89, $p<.001$). The difference between ethnic groups' report of support from friends was not significant.

Consistent with our first hypothesis, all models were statistically significant and social support significantly contributed unique variance to each model (See Table 3). Support received from friends was the strongest predictor of reporting well-controlled asthma (*OR*=1.86, 95% CI [1.18, 2.95], $p<.05$), indicating that caregivers reporting more social support from friends were nearly 2 times as likely to have children with well-controlled asthma.

Regarding our second aim, we found no significant interactions between social support and ethnicity (SN-total: *OR*=1.08, 95% CI [.95, 1.22], *p*=.26; SN-family: *OR*=1.04, 95% CI [.98, 1.10], *p*=.24; SN-friend: *OR*=1.34, 95% CI [.41, 4.39], *p*=.63).

Hypothesis 3: SMAS and childhood asthma control

PR caregivers had significantly higher DSI scores (*M*=3.40, *SD*=.44), indicating greater levels of acculturation, than Mexican participants (*M*=2.98, *SD*=.39), *t*(265)=−7.66 *p*<.05. Groups did not differ significantly with regard to ESI. However, neither SMAS-ESI nor SMAS-DSI significantly predicted asthma control (See Table 4). There were no significant interactions between acculturation and ethnicity on asthma control [ESI: *OR*=.58, 95% CI [.08, 4.15], *p*=.58; DSI*: OR*=1.57, 95% CI [.31, 7.87], *p*=.58), which did not support our third hypothesis that opposite effects would be observed between Mexican and PR caregivers.

Discussion

Consistent with other literature, ethnicity significantly predicted asthma control, with Mexican children being more likely to have well-controlled asthma. Mexican caregivers were also less acculturated, but this was only notable on the DSI-subscale, indicating that PR reported greater association with the dominant society and its customs (e.g., language, food preferences). No differences were found with regard to immersion in ethnic society. These findings underscore the notion that acculturation is not a binary measure (e.g., the idea that one's beliefs/customs align with either the dominant or ethnic society). Similarly, the results may indicate integration (i.e., immersion in both ethnic and dominant societies) among PR caregivers and separation (i.e., immersion in ethnic society and withdrawal from the dominant one) among Mexicans (33, 40). While the former might seem synonymous with having more social networks and therefore a greater support system, our findings suggest otherwise. We found that across ethnic groups family and friend support were positively correlated with higher acculturation on the ESI-subscale. This highlights the interrelatedness between these constructs and is consistent with close relationships traditionally reported among Latinos. Further, Mexicans reported higher social support than PR on total support, which was attributed to higher family support, even after controlling for differences in marital status. This may suggest that dual immersion can lead to alienation from others, such as less acculturated family members, or that adoption of American culture may increase one's sense of autonomy.

Our first hypothesis, that caregivers' social support would predict asthma control among children, was supported. This was found to be true for all forms of support and is consistent with previous research. Asthma is a chronic, stressful condition that requires constant monitoring and management. Particularly for young children, the caregiver is responsible for these tasks. Compounding the difficulties of daily management, crisis situations (e.g., emergency room visits, missed school) can be emotionally, physically, and financially taxing. Social support has been found to have positive effects on mental health (25-27); lack of psychiatric illness and greater availability of emotional resources may enable caregivers to better attend to children's needs. Similarly, caregivers who perceive greater support may have greater self-efficacy regarding their ability to manage these difficulties, and they may

practically have more assistance in doing so (e.g., family/friends willing to babysit, multiple sources of financial assistance).

Within Latino communities *familismo* is a central value and has often been hypothesized to explain health among these individuals. For example, it has been suggested that family ties alleviate asthma-related stress following immigration (10). Our results suggest that it is the presence of support, rather than the source, that determines child wellness, and particularly for individuals who have emigrated away from their families, friends may serve similar functions. The interaction of ethnicity and social support did not significantly predict pediatric asthma control, which suggests that across Latino subgroups support provides instrumental benefits for managing children's asthma symptoms. Additional research is needed to determine whether there are differential effects of family and friend support, and if so, whether these effects are associated with other factors (e.g., acculturation, place of residence).

Our second hypothesis was not supported; acculturation did not significantly predict asthma control and there were no significant interactions between ethnicity and acculturation. However, research on acculturation and asthma outcomes among Latino subgroups, particularly PR children, is limited. Most of the studies conducted on this topic have focused on prevalence rates. Further, among the small number of studies that have examined the association between acculturation and asthma control, there is wide variation in the measurement of acculturation. Preferred language (17, 42, 43), caregiver nativity (10, 17, 43), length of time in the U.S. (17), and location of residence (i.e., mainland U.S. versus country of origin) (44, 45) have all been used as proxies for acculturation. These measures may overlook significant aspects of acculturation, such its multidimensionality and the influence of ethnic enclaves within the U.S. Additionally, circular migration (e.g., frequent relocation between the island of PR and the mainland U.S.) among PR may result in individuals engaging in culturally-based medical practices (e.g., use of complementary and alternative medicine, use of emergency departments for medical care), which may be associated with poorer asthma control.

Several limitations should be considered when interpreting the results of this study. Pediatric asthma disparities are likely multifactorial. Therefore, the present study is limited in its investigation of only two factors suggested to influence asthma control. For example, evidence suggests that genetic differences between Latino subgroups may play a role in observed asthma disparities (47, 48), and studies have indicated that PR children with asthma have lower bronchodilator responsiveness and more positive skin prick tests results, indicating greater atopy, than Mexican children (47-49). Therefore, while the present study examines one area that may contribute to asthma disparities, these disparities may result from a complex interplay of many factors, such as genetics, patient-provider relationships, and asthma beliefs. The low Cronbach's alpha for the Spanish versions of the SMAS and SN questionnaires in our study is another limitation. Lastly, our study only looked at the predictive abilities of acculturation and social support; the pathways of effect were beyond the scope of this paper.

Given our significant findings regarding the effects of social support on pediatric asthma control, future research should investigate the ways in which it does so. Two potential pathways that warrant attention are caregiver stressors and mental health. Additionally, given the important role of asthma care providers in pediatric asthma control, measures of provider support should be included in the future.

Conclusions

This study found that Mexicans have better asthma control than PR, which is consistent with previous research. Additionally, our study revealed that across ethnic groups, caregiver social support positively predicted well-controlled asthma among children. Acculturation did not significantly predict asthma control. The lack of an association may be an artifact of the ethnic communities from which our Mexican participants were recruited, which may limit pressures for acculturation. Alternatively, however, research in this area is limited and existing studies widely vary in their measurement of acculturation, making it difficult to generalize across studies. While there remains much to be learned about the asthma disparities between PR and Mexican children, this finding is significant, and interventions that target this factor (e.g., support from other community members, support groups) could result in better pediatric asthma outcomes.

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Table 1

Demographic information for PR vs. Mexican participants

	PR (N = 79)	Mexican (N =188)	p value
Child Demographics			
Age M (SD)	9.23 (2.23)	9.67 (2.15)	.50
Gender %(n)			
Male	59.5 (47)	67.0 (126)	.24
Female	40.5 (32)	33.0 (62)	
Controller medication use %(n)			
Yes	78.5 (62)	69.1 (130)	.12
No	21.5 (17)	30.9 (58)	
Caregiver demographics			
Relationship to child %(n)			
Mother	86.1 (68)	95.7 (180)	.005*
Other	13.9 (11)	4.3 (8)	
Marital Status %(n)			
Yes	30.4 (24)	55.3 (104)	.001**
No	69.6 (55)	44.7 (84)	
Primary language %(n)			
English	81.0 (64)	9.6 (18)	.001**
Spanish	19.0 (15)	90.4 (170)	
Education %(n)			
High school graduate/GED or greater	60.8 (48)	45.5 (85)	.02*
Less than High school graduate/GED	39.2 (31)	54.5 (102)	
Poverty %(n)			
Yes	31.6 (25)	67.0 (126)	.001**
No	68.4 (54)	33.0 (62)	

* Significant at <.05

** Significant at <.001

Table 2

Ethnicity and childhood asthma control

Predictor	β	OR	95% CI
Step 1			
Child's age	−.09	.91	[0.81, 1.03]
Gender	−.38	.68	[0.39, 1.20]
Controller medication use	.59	1.79	[0.99, 3.26]
Poverty	−.12	.89	[0.64, 1.59]
Step 2			
Ethnicity	2.14**	8.53	[4.10, 17.76]

** Significant at <.001

Table 3

SN and childhood asthma control

	SN subscales								
	SN-total			SN-family			SN-friend		
Predictor	**β**	**OR**	**95% CI**	**β**	**OR**	**95% CI**	**β**	**OR**	**95% CI**
Step 1									
Child's age	−.08	.93	[.82, 1.04]	−.08	.93	[.82, 1.04]	−.07	.93	[.83, 1.05]
Gender	−.47	.62	[.37, 1.07]	−.47	.63	[.37, 1.07]	−.47	.63	[.37, 1.07]
Controller medication use	.39	1.48	[.84, 2.61]	.40	1.49	[.84, 2.62]	.40	1.50	[.84, 2.64]
Poverty	.51	1.67	[1.00, 2.78]	.49	1.64	[98, 2.73]	.50	1.65	[99, 2.75]
Marital Status	.19	1.22	[.70, 2.12]	.23	1.26	[.73, 2.20]	.42	1.52	[.91, 2.55]
Step 2									
SN	.12*	1.13	[1.03, 1.25]	.06*	1.06	[1.01, 1.11]	.62*	1.86	[1.18, 2.95]

SN=Social Networks

*Significant at <.05

Table 4

SMAS and childhood asthma control

	SMAS subscales					
	ESI			DSI		
Predictor	**β**	**OR**	**95% CI**	**β**	**OR**	**95% CI**
Step 1						
Child's age	−.05	.95	[.85, 1.07]	−.05	.95	[.85, 1.06]
Gender	−.49	.61	[.36, 1.03]	−.46	.63	[.38, 1.07]
Controller medication use	.41	1.51	[.86, 2.64]	.39	1.47	[.84, 2.57]
Poverty	.48	1.62	[.98, 2.69]	.35	1.42	[.84, 2.38]
Step 2						
SMAS	.48	1.61	[.81, 3.21]	−.33	.72	[.40, 1.27]

* Significant at <.05