Published in final edited form as:

Acad Pediatr. 2019 July ; 19(5): 534–541. doi:10.1016/j.acap.2018.09.012.

Differences in febrile and respiratory illnesses in minority children: The sociodemographic context of restrictive parenting

Danielle S. Roubinov, PhD¹, Nicole R. Bush, PhD^{1,2}, Nancy Adler, PhD^{1,2}, and W. Thomas Boyce, MD^{1,2}

¹Weill Institute for Neurosciences, Department of Psychiatry, University of California, San Francisco

²Department of Pediatrics, University of California, San Francisco

Abstract

Objective: To examine the moderating role of restrictive parenting on the relation of socioeconomic status (SES) to febrile illnesses (FI) and upper respiratory illnesses (URI) among ethnic minority and non-minority children.

Methods: Children from diverse ethnic backgrounds (Caucasian, African American, Asian, Latino, Other, or Multiethnic) were followed across the course of the kindergarten year. Parents reported on SES and parenting. A nurse completed 13 physical exams per child over the year to assess FIs and URIs.

Results: During the school year, 28% of children ($n = 199$, 56% ethnic minority) exhibited one or more FIs (*Range* 0–6) and 90% exhibited one or more URIs (*Range* 0–10). No main or moderating effects of SES or restrictive parenting on FIs or URIs were found among *Caucasian* children. However, among *ethnic minority* children, the relation of SES to FIs was conditional upon restrictive parenting ($b = .66$, $p = .02$): the fewest FIs were found for lower SES, minority children whose parents reported more restrictive practices. Additionally, in *minority* children, more restrictive parenting was marginally associated with fewer URIs ($b = -.21$, $p = .05$).

Conclusions: Unexpectedly among minority children, the fewest illnesses occurred among lower SES children whose parents endorsed more restrictive parenting. This may be due to unique appraisals of this rearing style among minority children in lower SES environments and its potential to influence immune functioning. Results suggest variability in the effects of parenting on offspring health and support context-specific evaluations of parenting in efforts to ameliorate early health disparities.

Corresponding author: Danielle Roubinov, Department of Psychiatry, University of California, San Francisco, 3333 California Avenue, Suite 465, San Francisco, CA, 94118; danielle.roubinov@ucsf.edu.

Conflict of Interest: The authors have no potential conflicts of interest to disclose.

Financial Disclosure: The authors have no financial relationships relevant to this article to disclose.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Keywords

Socioeconomic status; ethnicity; parenting; child; physical health

Socioeconomic status (SES) exerts a profound influence on health during the early years of life. Lower SES is associated with children's overall poorer health, impaired growth, more acute and chronic health conditions, and greater frequency of injuries, with effects that may endure across the lifespan. Research on these relations early in life is important not only for reducing childhood health disparities, but also for shifting the developmental trajectories that underlie differences in health across the lifespan. In the current study, we focus on the relation of SES to two frequent forms of childhood morbidity that often result in school absence and lost work time among parents: febrile illnesses (FIs) and upper respiratory illnesses (URIs).

The macro-level effects of SES represent one component of a complex set of multilevel influences on early health disparities. Proximal factors within the family environment, particularly qualities of the parent-child relationship, have been shown to exert a strong influence on a range of health outcomes among children, including the development of febrile and upper respiratory illnesses.⁷ A compelling body of literature has also observed associations between parenting and inflammation, the latter of which is implicated in most upper respiratory illness symptoms. Greater inflammation has been observed among offspring exposed to harsher and more inconsistent parenting, although of note, research in this area has been predominately conducted among samples that are relatively homogenous in terms of SES and ethnic/racial composition.

Consideration of diversity is important when studying the social determinants of children's health, particularly when examining parenting. Parenting behaviors do not operate in a vacuum and the value and health implications of varied parenting styles may be best understood by examining the larger socioeconomic and cultural context in which they unfold. In particular, the consequences of more restrictive parenting practices may vary with social- and demographically-driven differences in parents' motivation and affective reasoning for exerting greater control behaviors. Illustratively, poorer quality family environments have been associated with higher offspring inflammation when SES was lower, but lower inflammation when SES was higher. Thus, rather than exerting independent effects, it may be the case that SES and parenting dynamically interact across multiple domains of children's ecologies to shape early health outcomes.

Physical health among children from ethnic minority groups is also consistently poorer as compared to majority culture children, and such discrepancies are not fully explained by differences in SES. Large-scale studies have observed persistent ethnic disparities across broad indicators of children's health, including asthma, chronic illnesses, injury, obesity, and overall mortality. Differences in ethnic norms surrounding certain caregiving behaviors and how they function in varied socioeconomic contexts may also shape how restrictive parenting is related to children's health outcomes within minority and non-minority families. Suggestive of such differences, Ehrlich and colleagues observed a significant relation between family relationship stress and greater inflammation among offspring from White

families, but not ethnic minority families. The authors suggested that the non-significance of such relations among minority youth may be due to the fact that authoritarian (i.e., more restrictive) parenting is perceived as less stressful and more normative within this cultural context.

The aim of the present study was to examine the dynamic influences of SES and restrictive parenting on children's respiratory illnesses and fevers and evaluate whether these relations varied across ethnic minority and non-minority kindergarten children. These objective indicators of children's health were obtained through standardized, physical examinations conducted by a registered nurse.

Methods

Participants

Children and their parents were drawn from a larger study of early exposure to environmental adversity, social status, and health outcomes in kindergarten (see). Parent/caregiver reported data were provided by biological mothers (87%), biological fathers (9%), adoptive mothers (2.5%), biological grandmothers (0.6%), and individuals with other relationships to the child (0.9%), all hereafter referred to as "parent."

Procedures

During the fall of three successive kindergarten years, families were recruited from six public schools in the San Francisco Bay Area selected to represent the sociodemographic characteristics of the geographic region. A registered nurse conducted individual examinations of each child in a private location on school premises during regular school hours. The standard physical exam included an assessment of the child's core body temperature by an infrared ear thermometer, inspection of the eyes, ears, nose, throat, cervical lymph nodes, and skin, and auscultation of the child's chest and breath sounds. This study was approved by the Committee for the Protection of Human Subjects of the University of California, Berkeley and the Committee on Human Subjects of the University of California, San Francisco.

Measures

Family socioeconomic status.—Parents' self-reported their total household income using an 11-point scale ranging from *less than \$10,000* to *over \$200,000*. Parents were also asked to report their level of educational attainment and the education level of their partner/secondary caregiver in the household on a 6-point scale that ranged from *less than a high school degree* to *professional/graduate degree*. Total household income and highest educational level in the household were standardized and averaged to create a more robust measure of family SES, an analytic approach that has been used in prior research within this sample to examine relations between SES and children's health. SES was treated as a continuous variable in all analyses.

Restrictive/controlling parenting.—Parents' use of restrictive and controlling parenting practices was assessed with a modified version of the Child-Rearing Practices Report

(CRPR). Parents filled out this paper and pencil measure at home in fall of the kindergarten year and mailed it back to study staff upon completion. The CRPR is a well-validated, widely used measure of restrictive parenting that was chosen for the present study because of extensive evidence of its relations with children's adjustment. The original version of the CRPR is a 91-item Q-sort; due to our broad study focus and to reduce subject burden, a reliable 18-item version of the instrument was administered in questionnaire form. Items measured strict, high limit-setting, and controlling practices related to child-rearing on 7-point scale ranging from "extremely untrue" to "extremely true" and averaged such that higher values indicated more strict and restrictive parenting ($\alpha = 0.83$).

Ethnic minority status.—Nearly one-quarter of our sample identified as multiethnic and there was an unbalanced (and often small) distribution of individuals across several other minority groups. In light of the power constraints posed by such small groups and in order to optimally account for ethnic group membership, we created a dichotomous categorical variable based on child ethnicity: Caucasian (non-minority) and ethnic minority. The ethnic minority group included children who belonged to one of the following groups: Hispanic/Latino, Black/African-American, Asian, Multiethnic, and Other (see Table 1). While this strategy was appropriate for the present analyses and for the distribution of our sample, we do not mean it to infer that all ethnic minority individuals are homogenous in terms of our socioeconomic and familial variables of interest.

Febrile illnesses (FIs).—Core body temperatures greater than or equal to 38.0°C (100.4°F) indicated the presence of a fever, while temperatures less than 38.0°C (100.4°F) reflected the absence of a fever. The number of FIs was summed across the 13 exams to create a count of total febrile illnesses.

Upper respiratory illness (URI).—The nurse diagnosed a URI if symptoms of one of the following conditions were present: diffuse URI, pharyngitis, conjunctivitis, otitis media with effusion, cough, and other respiratory illness. This diagnosis was rendered independently from that of FI and the two diagnoses were not mutually exclusive.^a The number of URI diagnoses was summed across the 13 exams to create a count of total URIs.

Parent employment status.—Parents reported their employment status and the employment status of the other caregiver/contributing member to their household income. For the present analyses, a dichotomous variable was created to indicate whether both individuals worked full-time or if at least one individual worked less than full-time.

Children's history of daycare.—Parents indicated the number of months their child spent in at least 30 hours per week of daycare prior to kindergarten entry.

Preliminary Analyses and Statistical Analysis Plan

Across the full sample ($n = 338$), children underwent between 1 and 13 school-based physical exams completed by a registered nurse. To eliminate potential biases from

^aThere were instances in which children were diagnosed with an URI and a FI. On average across the 13 exams, 13% of children with an URI also had a FI.

including children who were not available to complete the intended 13 exams, only children with complete febrile illness (FI, $n = 199$) and upper respiratory illness (URI, $n = 202$) data were included in the present analyses. Children from one school were more likely to be excluded from analyses than those from the other five schools due to incomplete data; this school is located in a neighborhood of generally lower SES. T-tests and chi-square analyses compared children with and without complete FI/URI data. There were no group differences on key variables of interest, including: ethnic minority status ($p = .97$ for febrile illness sample, $p = .81$ for URI sample), socioeconomic status ($p = .59$, $p = .32$), parent(s) employment status ($p = .11$, $p = .31$), months spent in daycare prior to kindergarten ($p = .85$, $p = .83$), or restrictive/controlling parenting ($p = .92$, $p = .92$). In Table 1, we present participant characteristics for children in the present analyses.

Prior to conducting our primary analyses, we evaluated whether the interactive effects of SES and restrictive parenting on FIs and URIs should be conducted in a multiple group framework (comparing ethnic minority versus non-minority children) or run using the full sample without stratifying by race/ethnicity. To make this determination, we compared the fit of an unconstrained model in which all paths were allowed to differ between ethnic minority and non-minority groups to the fit of a constrained model in which paths were restricted to be equal between ethnic minority and non-minority groups. All models were run in MPlus version 7.1 using Poisson regression due to the count nature of our dependent variable. A significant decrement in model fit when the paths are constrained to be equal provides evidence that the associations among the variables differed by race/ethnicity. The chi-square difference test cannot be used with models in which the outcome is a count variable. Thus, we evaluated model fit using the Bayesian Information Criterion (BIC), with a BIC difference of >10 as evidence in favor of the model with the lower BIC value. In the case of the models predicting FIs and URIs, the BIC of the unconstrained model was smaller by a value of >10 compared to the constrained model, indicating the superiority of a multiple group model stratified on the basis of ethnic minority status (FI model: constrained versus unconstrained BIC difference = 120.126; URI model: constrained versus unconstrained BIC difference = 132.937).

Using this multiple group framework, we conducted our primary analyses to evaluate the main and interactive effects of SES and restrictive/controlling parenting on the total number of FIs and URIs in ethnic minority and non-minority children. Within the models, Poisson regression coefficients represent the expected log count of FIs or URIs as a function of restrictive/controlling parenting, socioeconomic status, and their interaction, controlling for potential confounding variables (described below). To aid in interpretability, results are also presented in tables as incident rate ratios (IRRs) with 95% confidence intervals (CIs).

Two variables were included to address potential confounds that could bias relations in our models. All physical exams were completed during regular classroom hours. Thus, exam data were not available for children who were absent on designated exam days. It was hypothesized that a child with a FI or URI may have been more likely to be absent from school if a caregiver was able to stay home with the child (i.e., if at least one parent was working less than full-time) and thus, all models included a dichotomous variable that represented parent employment status (both parents worked full-time versus at least one

parent worked less than full-time). Nonresidential, group day care has been associated with more frequent infections and respiratory illnesses among children and such early exposure has been related to both increased and decreased risk for illness following the initiation of school. All models also controlled for children's previous experience in a daycare setting.^b

Results

Among children with complete exam data, the count of FIs ranged from 0 to 6 with 28% of the sample evidencing one or more FIs. The counts of URIs ranged from 0 to 10 with 90% of the sample that had complete exam data having one or more URIs (see Table 1).

Febrile illnesses (FIs)

Among minority children, lower SES ($b = .51, p < .01$) and higher levels of restrictive/controlling parenting ($b = -.71, p = .01$) were each associated with a decrease in the log count of FIs, however these relations were conditional upon a significant interaction ($b = .66, p = .02$; see Table 1). SES was positively associated with FIs at higher levels of restrictive parenting (i.e., one SD above the mean). There was no significant association between SES and FIs when parenting was less restrictive (one SD below the mean). However, as demonstrated by the significant main effect of parenting in Table 2 and illustrated in Figure 1, the overall count of FIs was higher for children raised by less restrictive parents relative to those whose parents reported being more restrictive. Thus, among minority children, the lowest FI counts were identified among those reared in lower SES family environments with more restrictive parents. The attenuating influence of more restrictive parenting declined at higher levels of family SES among minority children. Among Caucasian, ethnic majority children, there were no significant main effects or interactive effects of SES or restrictive parenting on FIs (p 's ranging from .21 to .79; see Table 2).

Upper Respiratory Illnesses (URI)

Five or more URIs were observed in approximately 20% of the sample. Among minority children, SES was not related to URIs ($p = .89$), nor was there an interaction between SES and restrictive parenting on URI count ($p = .31$). There was a marginally significant relation between more restrictive parenting and fewer URIs ($b = -.21, p = 0.05$; see Table 2 and Figure 2). Among Caucasian children, there were no significant main or interactive effects of SES or restrictive parenting on URIs (p 's ranging from .32 to .73; see Table 2).

Discussion

The present study represents a preliminary attempt to disentangle the dynamic influences of SES and parenting on health outcomes among ethnic minority and non-minority children. We found that lower levels of SES were associated with less frequent FIs, particularly in the context of more restrictive parenting for ethnic minorities. Conversely, FIs were highest

^bWe also evaluated multilevel models that accounted for the clustering of children within classrooms. The coefficients were not appreciably different in these models and the pattern/significance of findings remained unchanged. In favor of parsimony and ease of interpretation, we present the results of our original Poisson models.

among minority children in higher SES environments with lower levels of restrictive parenting. Additionally, in minority children only, more restrictive parenting was marginally associated with fewer URIs. There were no main or interactive effects of SES and parenting on FIs or URIs among non-minority children.

Our findings are a surprising contrast to the large body of literature that has documented robust relations between lower SES and children's poor health. However, results of the present study are not without precedent; select research has found associations between *higher* SES and poorer health among minority samples. The hygiene hypothesis suggests that early exposure to microbes and infections may reduce susceptibility to illness and chronic conditions among children later in life. To the extent that suboptimal housing and other environmental risks of lower family SES exposes children to more respiratory pathogens, this may provide immunity that is protective during the initiation of formal schooling. It has also been suggested that higher levels of SES do not afford ethnic minorities the same protective health benefits as compared to majority culture individuals (hypothesis of "diminishing returns"), possibly due to racial disparities in income at equivalent education levels or experiences of discrimination that become more pronounced at higher levels of SES.

There was also a marginally significant relation between more restrictive parenting and less frequent URIs for minority children. Although we are tentative about interpreting marginally significant effects, we believe this relation is worth discussion given its alignment with our FI findings. Restrictive and controlling parenting practices have long been viewed as detrimental to children's development. However, cultural norms and beliefs influence both parenting style and the manner in which parenting behaviors are appraised by children. Ethnic minority parents, particularly those in low SES communities, may use more restrictive practices in an attempt to ensure their children's safety or prepare them for the dangers of living in a riskier neighborhood with higher levels of crime. It may be case that ethnic minority and lower SES contexts provide a unique lens of lived experiences through which children perceive adaptive (and more favorable, less upsetting) motives or meanings underlying parental restriction. This has been suggested by patterns observed in the differential effects of controlling parenting on children's socioemotional development across varied ethnic/racial contexts. For example, the positive statistical association between parents' use of harsh discipline and problem behaviors observed in Caucasian children has been found to be non-significant (and in some cases, negative) among African American children. Higher levels of parental control have also been related to important cultural values in Mexican American and Asian American families. Thus, although the (negative) terms "restrictive" and "controlling" have been universally applied to describe the parenting practices in both ethnic minority and non-minority families in the present study, such behaviors may not be cognitively appraised in the same (negative) manner by children across ethnic groups. Rather, ethnic minority children may perceive such parenting behaviors as normative, adaptive, and consistent with values of the larger sociocultural context.

How might such differences in the appraisal or perception of restrictive parenting influence children's physical health outcomes? There is compelling evidence of the influence of early family factors on immune functioning, as well as empirical support for cognitive and

behavioral factors that offer protection against immune-compromising pathogens. For example, adults with a more positive emotional style and greater social support have been shown to be at reduced risk for developing URIs following experimental exposure, possibly due to the release of proinflammatory cytokines.⁷ Thus in the current study, it may be the case that ethnic minority children (particularly those reared in a low SES environment) appraise restrictive, high limitsetting parenting practices as generally supportive and protective in a manner that stimulates healthy immune system functioning. Parents also guide children to adopt health promoting behaviors, and those with a more restrictive style may instill routine handwashing and other hygiene-related practices that are protective against illness.

There were no significant direct or moderated relations of SES and parenting to physical health outcomes among Caucasian children. Income and education are select measures of the multidimensional SES construct and prior research suggests that minority health outcomes may be more strongly associated with objective measures of SES (e.g., income, education, occupation) than with subjective measures (e.g., perceived social position), while the latter is more influential than the former among majority individuals. Thus, it may be the case that subjective SES is more salient to the physical health of Caucasian children in our sample than objective SES. Moreover, prior research of SES-health associations among children has often focused upon parental report of chronic illness, acute injury, and general health status. While such broader health outcomes are not unrelated to the present study's physical exam-based illness measures, there are methodological and substantive differences that may limit the comparability of our findings to prior research.

Our study has several limitations. We dichotomized our sample into minority and nonminority groups due to the small numbers of children within specific ethnic minorities, however this precluded more in-depth analysis of processes that may distinguish between groups. We used self-reports of parenting, which may be subject to social desirability biases. This may be particularly true among ethnic minority parents who could be concerned about how responses will be viewed by non-minority individuals in positions of high social standing. In addition, we cannot rule out the possibility that two or more URIs diagnosed during consecutive exams may represent one prolonged illness, though the duration of time between data collection points (approximately three weeks) renders it more likely that such diagnoses are separate occurrences. We controlled for parents' employment status in an effort to reduce potential bias related to the availability of a caregiver to remain home with an ill child, however we did not have data to account for the degree of flexibility within parents' work schedules, which may be greater in some higher SES families. Finally, although our findings did not differ when we accounted for the clustering of children within classrooms, our sampling frame was suboptimal for examining school-level effects. Future research that allows for more sufficiently balanced numbers of classrooms and schools across the range of SES is warranted.

A substantial number of young children in the United States live in socioeconomically disadvantaged environments that influence early development. However, economic deprivation is only one component of a larger set of interactive, familial and sociocultural influences that shape physical health outcomes early in life. We found that SES interacted

with parenting practices to influence minority children's physical health in somewhat surprising ways: Minority children reared in low SES environments had the lowest FIs when parents were more restrictive. More restrictive parenting was also marginally associated with less frequent URIs among minority children. Although abusive, neglectful, and other unequivocally negative parenting practices clearly adversely affect children's health and development across the lifespan, our results suggest the need to thoughtfully evaluate parenting styles sometimes deemed as "restrictive" and consider them in context. Results of the present study also provide further support for the importance of culturally sensitive care, though there can be considerable challenges to the implementation of tailored services within the constraints of healthcare settings. It is clear that there is pressing work to be done in this area as the socioeconomic and ethnic diversity of the U.S population increases. We argue for an ongoing, open dialogue about diversity and continued research in this area that aims to understand and prevent disparities in health.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

Funding Sources: This study was supported by grants awarded to W. Thomas Boyce from the National Institute of Mental Health (R01 MH62320), the MacArthur Foundation Research Network on Psychopathology and Development, and the Canadian Institute for Advanced Research.

References

1. Chen E, Matthews KA, Boyce WT. Socioeconomic differences in children's health: how and why do these relationships change with age? *Psychol Bull.* 2002;128(2):295–329. [PubMed: 11931521]
2. Cohen S, Janicki Deverts D, Chen E, Matthews KA. Childhood socioeconomic status and adult health. *Annals of the New York Academy of Sciences.* 2010;1186(1):37–55. [PubMed: 20201867]
3. Chen E, Brody GH, Miller GE. Childhood close family relationships and health. *Am Psychol.* 2017;72(6):555–66. [PubMed: 28880102]
4. Cobb JMT, Steptoe A. Psychosocial influences on upper respiratory infectious illness in children. *Journal of psychosomatic research.* 1998;45(4):319–30. [PubMed: 9794278]
5. Wyman PA, Moynihan J, Eberly S, Cox C, Cross W, Jin X, et al. Association of family stress with natural killer cell activity and the frequency of illnesses in children. *Arch Pediatr Adolesc Med.* 2007;161(3):228–34. [PubMed: 17339503]
6. Eccles R Understanding the symptoms of the common cold and influenza. *Lancet Infect Dis.* 2005;5(11):718–25. [PubMed: 16253889]
7. Miller GE, Chen E. Harsh family climate in early life presages the emergence of a proinflammatory phenotype in adolescence. *Psychol Sci.* 2010;21(6):848–56. [PubMed: 20431047]
8. Roubinov DS, Boyce WT. Parenting and SES: relative values or enduring principles? *Current Opinion in Psychology.* in press.
9. Schreier HM, Roy LB, Frimer LT, Chen E. Family chaos and adolescent inflammatory profiles: the moderating role of socioeconomic status. *Psychosom Med.* 2014;76(6):460–7. [PubMed: 24979577]
10. Mehta NK, Lee H, Ylitalo KR. Child health in the United States: recent trends in race/ethnic disparities. *Soc Sci Med.* 2013;95:6–15. [PubMed: 23034508]
11. Cheng TL, Goodman ERace, ethnicity, and socioeconomic status in research on child health. *Pediatrics.* 2014;135(1):e225–e37.

12. Soenens B, Vansteenkiste M, Van Petegem S. Let us not throw out the baby with the bathwater: Applying the principle of universalism without uniformity to autonomy supportive and controlling parenting. *Child Development Perspectives*. 2015;9(1):44–9.
13. Ehrlich KB, Miller GE, Rohleder N, Adam EK. Trajectories of relationship stress and inflammatory processes in adolescence. *Dev Psychopathol*. 2016;28(1):127–38. [PubMed: 25851449]
14. Bush NR, Obradovic J, Adler N, Boyce WT. Kindergarten stressors and cumulative adrenocortical activation: the “first straws” of allostatic load? *Dev Psychopathol*. 2011;23(4):1089–106. [PubMed: 22018083]
15. Adler N, Bush NR, Pantell MS. Rigor, vigor, and the study of health disparities. *Proceedings of the National Academy of Sciences*. 2012;109(Supplement 2):17154–9.
16. Roubinov DS, Hagan MJ, Boyce WT, Adler NE, Bush NR. Family Socioeconomic Status, Cortisol, and Physical Health in Early Childhood: The Role of Advantageous Neighborhood Characteristics. *Psychosom Med*. 2018;80(5):492–501. [PubMed: 29742755]
17. Block JH. The Child-Rearing Practices Report (CRPR): A set of Q items for the description of parental socialization attitudes and values. 1986.
18. Aunola K, Tolvanen A, Viljaranta J, Nurmi JE. Psychological control in daily parentchild interactions increases children’s negative emotions. *J Fam Psychol*. 2013;27(3):453–62. [PubMed: 23750527]
19. Rickel AU, Biasatti LL. Modification of the block child rearing practices report. *Journal of Clinical Psychology*. 1982;38(1):129–34.
20. Wasserman L Bayesian model selection and model averaging. *Journal of mathematical psychology*. 2000;44(1):92–107. [PubMed: 10733859]
21. Dales RE, Cakmak S, Brand K, Judek S. Respiratory illness in children attending daycare. *Pediatr Pulmonol*. 2004;38(1):64–9. [PubMed: 15170875]
22. Nafstad P, Hagen JA, Oie L, Magnus P, Jaakkola JJ. Day care centers and respiratory health. *Pediatrics*. 1999;103(4 Pt 1):753–8. [PubMed: 10103298]
23. Cote SM, Petitclerc A, Raynault MF, Xu Q, Falissard B, Boivin M, et al. Short- and longterm risk of infections as a function of group child care attendance: an 8-year population-based study. *Arch Pediatr Adolesc Med*. 2010;164(12):1132–7. [PubMed: 21135342]
24. Duncan GJ, Magnuson K, Votruba-Drzal E. Moving Beyond Correlations in Assessing the Consequences of Poverty. *Annu Rev Psychol*. 2017;68:413–34. [PubMed: 27648987]
25. Chen E, Martin AD, Matthews KA. Understanding health disparities: The role of race and socioeconomic status in children’s health. *American Journal of Public Health*. 2006;96(4):702–8. [PubMed: 16507739]
26. McDade TW. Early environments and the ecology of inflammation. *Proceedings of the National Academy of Sciences*. 2012;109(Supplement 2):17281–8.
27. Farmer MM, Ferraro KF. Are racial disparities in health conditional on socioeconomic status? *Social science & medicine*. 2005;60(1):191–204. [PubMed: 15482878]
28. Grolnick WS, Pomerantz EM. Issues and challenges in studying parental control: Toward a new conceptualization. *Child Development Perspectives*. 2009;3(3):165–70.
29. Bornstein MH. Cultural Approaches to Parenting. *Parent Sci Pract*. 2012;12(2–3):212–21. [PubMed: 22962544]
30. White R, Zeiders KH, Gonzales NA, Tein J-Y, Roosa MW. Cultural values, US neighborhood danger, and Mexican American parents’ parenting. *Journal of Family Psychology*. 2013;27(3):365. [PubMed: 23750519]
31. Deardorff J, Cham H, Gonzales NA, White R, Tein J-Y, Wong JJ, et al. Pubertal timing and Mexican-origin girls’ internalizing and externalizing symptoms: The influence of harsh parenting. *Developmental psychology*. 2013;49(9):1790. [PubMed: 23231686]
32. Deater-Deckard K, Dodge KA. Externalizing behavior problems and discipline revisited: Nonlinear effects and variation by culture, context, and gender. *Psychological Inquiry*. 1997;8(3):161–75.
33. Choi Y, Kim YS, Kim SY, Park IJ. Is Asian American parenting controlling and harsh? Empirical testing of relationships between Korean American and Western parenting measures. *Asian American journal of psychology*. 2013;4(1):19. [PubMed: 23977415]

34. Rachman S. Invited essay: Cognitive influences on the psychological immune system. *Journal of Behavior Therapy and Experimental Psychiatry*. 2016;53:2–8. [PubMed: 27664815]
35. Cohen S, Doyle WJ, Skoner DP, Rabin BS, Gwaltney JM. Social ties and susceptibility to the common cold. *Jama*. 1997;277(24):1940–4. [PubMed: 9200634]
36. Doyle WJ, Gentile DA, Cohen S. Emotional style, nasal cytokines, and illness expression after experimental rhinovirus exposure. *Brain, Behavior, and Immunity*. 2006;20(2):175–81.
37. Morrongiello BA, Corbett M, Bellissimo A. “Do as I say, not as I do”: family influences on children’s safety and risk behaviors. *Health Psychol*. 2008;27(4):498–503. [PubMed: 18643008]
38. Ostrove JM, Adler NE, Kuppermann M, Washington AE. Objective and subjective assessments of socioeconomic status and their relationship to self-rated health in an ethnically diverse sample of pregnant women. *Health Psychol*. 2000;19(6):613–8. [PubMed: 11129365]
39. Shonkoff JP, Boyce WT, McEwen BS. Neuroscience, molecular biology, and the childhood roots of health disparities: building a new framework for health promotion and disease prevention. *JAMA*. 2009;301(21):2252–9. [PubMed: 19491187]
40. Pediatrics AAo, Medicine CoPE, Physicians ACoE, Committee PEM. Patient-and family-centered care and the role of the emergency physician providing care to a child in the emergency department. *Pediatrics*. 2006;118(5):2242–4. [PubMed: 17079599]

What's New

Among minority children in this study, better physical health outcomes were unexpectedly found for lower SES children whose parents endorsed a more restrictive parenting style.

Socioeconomic and parenting influences on children's health may differ between ethnic minority and non-minority children.

Figure 1. Results of Poisson model: Frequency of febrile illnesses (FIs) as a function of the interaction of socioeconomic status (SES) and restrictive parenting on among minority children
Note. SES and parenting were both modeled as continuous measures in all analyses. To demonstrate the interactive association, this figure shows example SES and restrictive parenting results taken from those models, plotted and graphed at one standard deviation above and below the mean for each variable. Minority children from lower SES families who were exposed to more restrictive parenting had the fewest (FIs). There was no relation between SES and fevers for children exposed to less restrictive parenting.

Figure 2. Results of Poisson model: Frequency of upper respiratory illness (URI) as a function of restrictive parenting among minority children

Note. The interaction of restrictive parenting and SES did not reach statistical significance in this model, however SES is included to graphically depict the results in a manner consistent with Figure 1.

SES and parenting were both modeled as continuous measures in all analyses. To demonstrate the interactive association, this figure shows example SES and restrictive parenting results taken from those models, plotted and graphed at one standard deviation above and below the mean for each variable. Minority children who were exposed to more restrictive parenting had fewer URIs.

Table 1.

Participant characteristics and study descriptives

	Full sample (n = 202) ^a	Non-Minority (n = 89)	Ethnic Minority (n = 113)
Sex			
Boys	103 (51.0%)	51 (57.3%)	52 (46.0%)
Girls	99 (49.0%)	38 (42.7%)	61 (54.0%)
Age	5.31 (0.31)	5.36 (0.33)	5.27 (0.28)
Race			
Non-Minority (Caucasian)	89 (44.1%)	89 (44.1%)	--
Ethnic Minority	113 (55.9%)	--	113 (55.9%)
Hispanic/Latino	8 (4.0%)	--	8 (4.0%)
Black/African-American	36 (17.8%)	--	36 (17.8%)
Asian	21 (10.4%)	--	21 (10.4%)
Multiethnic	47 (23.3%)	--	47 (23.3%)
Other	1 (0.5%)	--	1 (0.5%)
Family Income (n = 199)			
Less than \$10,000	9 (4.5%)	--	9 (8.2%)
\$10,000-\$19,999	9 (4.5%)	--	9 (8.2%)
\$20,000-\$29,000	7 (3.5%)	1 (1.1%)	6 (5.5%)
\$30,000-\$39,000	8 (4.0%)	1 (1.1%)	7 (6.4%)
\$40,000-\$49,999	9 (4.5%)	2 (2.2%)	7 (6.4%)
\$50,000-\$59,999	12 (6.0%)	3 (3.4%)	9 (8.2%)
\$60,000-\$79,000	26 (13.1%)	13 (14.6%)	13 (11.8%)
\$80,000-\$99,999	31 (15.6%)	15 (16.9%)	16 (14.5%)
\$100,000-\$149,000	49 (24.6%)	29 (32.6%)	20 (18.2%)
\$150,000-\$199,999	28 (14.1%)	19 (21.3%)	9 (8.2%)
Above \$200,000	11 (5.5%)	6 (6.7%)	5 (4.5%)
Parent Education			
Less than high school	5 (2.5%)	--	5 (4.4%)
High school diploma	4 (4.0%)	--	8 (7.1%)
Some college or 2-year degree	39 (19.3%)	5 (5.6%)	34 (30.1%)
College graduate	36 (17.8%)	17 (19.1%)	19 (16.8%)
Some graduate or professional school beyond college	22 (10.9%)	13 (14.6%)	9 (8.0%)
Professional or graduate degree	92 (45.5%)	54 (60.7%)	38 (33.6%)
Socioeconomic status (<i>M, SD</i>)	0.04 (0.87)	0.39 (0.50)	-0.31 (0.93)
Harsh parenting (<i>M, SD</i>)	3.62 (0.74)	3.29 (0.58)	3.90 (0.75)
Parent/caregiver work status (n = 195)			
Both parents work full-time	104 (53.6%)	47 (54.0%)	57 (53.3%)
At least one parent works less than full-time	90 (46.4%)	40 (46.0%)	50 (46.7%)
Months spent in >30 hours/week of daycare (<i>M, SD</i>)	21.58 (13.79)	18.23 (12.82)	24.26 (14.33)
FIs (<i>M, SD</i>)	0.53 (1.06)	0.64 (1.26)	0.22 (0.88)
URIs (<i>M, SD</i>)	2.90 (2.32)	2.84 (2.13)	2.94 (2.47)

^a
n = 199 in FI model

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 2.

Estimates from multiple group Poisson regression models predicting number of febrile illnesses (FI) and upper respiratory illnesses (URI)

	FI				URI			
Minority children	B	SE	p	IRR (95% CI)	B	SE	p	IRR (95% CI)
Parent/caregiver work status	.04	.29	.88	1.05 (0.47, 1.84)	-.12	.17	.47	.89 (0.65, 1.04)
Months spent in >30 hours/week of daycare	.01	.01	.47	1.01 (0.99, 1.02)	.01	.01	.10	1.01 (1.00, 1.02)
Strict parenting	-.71	.28	.01	.49 (0.22, 0.76)	-.21	.11	.05	.81 (0.68, 0.94)
Socioeconomic status	.51	.19	<.01	1.67 (1.18, 2.42)	.01	.11	.89	1.01 (0.84, 1.23)
Restrictive parenting × socioeconomic status	.66	.28	.02	1.93 (1.20, 3.52)	-.13	.13	.31	.88 (0.67, 1.06)
Caucasian children								
Parent/caregiver work status	1.05	.34	<.01	2.89 (0.56, 4.41)	-.24	.15	.11	.78 (0.57, 1.09)
Months spent in >30 hours/week of daycare	.01	.01	.48	1.01 (0.97, 1.02)	-.01	.01	.10	.99 (0.98, 1.00)
Strict parenting	1.58	1.25	.21	4.86 (0.40, 11.14)	.09	.14	.51	1.09 (0.90, 1.41)
Socioeconomic status	.17	.59	.79	1.19 (0.17, 6.13)	-.06	.17	.73	.94 (0.68, 1.23)
Restrictive parenting × socioeconomic status	-.81	1.09	.46	.45 (0.02, 2.43)	.26	.26	.32	1.30 (0.62, 1.63)