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Home Tobacco Smoke Exposure and Neighborhood Support and Safety among U.S. School-aged Children

E. Melinda Mahabee-Gittens, MD, PhD[*],
Cincinnati Children's Hospital Medical Center, University of Cincinnati College of Medicine

Rebecca A. Vidourek, PhD,
University of Cincinnati - Main Campus

Keith A. King, PhD,
University of Cincinnati- Main Campus

Ashley L. Merianos, PhD

Abstract

Children who are socioeconomically disadvantaged face a myriad of environmental hardships in the neighborhoods in which they live. This study examined the associations between home tobacco smoke exposure (TSE) and neighborhood support, neighborhood safety, and school safety among U.S. school-aged children. Children ages 6–11 years were included in this secondary analysis of 2018–2019 National Survey of Children's Health data (N = 17,300). Children's home TSE status was categorized into three levels: (1) no TSE: Child did not live with a smoker; (2) Outside TSE only: Child lived with a smoker who did not smoke inside the home; and (3) Inside TSE: Child lived with a smoker who smoked inside the home. Parent-reported measures of perceived neighborhood support, and neighborhood and school safety were examined; covariates included the child's age, sex, and race/ethnicity; the parent's education; the family's household structure, and federal poverty level. Weighted logistic and ordinal regression models were built adjusting for the covariates. In total, 13.2% of children had outside TSE and 1.7% of children had inside TSE. Multivariable logistic regression model results indicated that children with outside TSE were at decreased odds (AOR = 0.79, 95%CI = 0.65–0.96) of living in a supportive neighborhood compared to children with no TSE. Ordinal regression model results indicated that children with outside TSE (AOR = 0.77, 95%CI = 0.61–0.97) and children with inside TSE were at decreased odds (AOR = 0.62, 95%CI = 0.39–0.99) of going to a school that was perceived as safe. Community-level programs, policies, and funding are needed to improve neighborhood characteristics among children with TSE to improve their future health outcomes.

Keywords

tobacco smoke exposure; neighborhood; school; school safety; children

[*]Corresponding author can be reached at: melinda.mahabee-gittens@cchmc.org.

Introduction

Children who are socioeconomically disadvantaged face a myriad of environmental hardships in the neighborhoods and homes in which they live (Gitterman et al., 2016; Green et al., 2021; Swope & Hernandez, 2019). They are at increased risk to live in neighborhoods with poor social environments (Booth et al., 2018; Nejad et al., 2021), which may be characterized as having low collective efficacy and high social stressors (Mair et al., 2010). Poor neighborhood collective efficacy can manifest in neighborhoods that have low social cohesion such as lack of relationships or trust between neighbors, or lack of willingness to help residents (Sandel et al., 2016). High neighborhood social stressors may consist of low rates of perceived safety or high rates of criminal activity (Nejad et al., 2021). When children live in neighborhoods that are unsupportive, unsafe, or violent, they are at increased risk for adverse health outcomes such as asthma, obesity, and poor dietary intake, sleep, and academic achievement (Aryee et al., 2022; Mayne et al., 2022; Mayne et al., 2021; Ruiz et al., 2018). Children who live in low-income homes are also at increased risk of living with household smokers, as up to 54% of impoverished children have tobacco smoke exposure (TSE) (Merianos et al., 2019; Shastri et al., 2021). Further, TSE rates are higher in children who live in poorer neighborhoods potentially due to the increased density of tobacco outlets, living in multiunit housing, and poor enforcement of home smoking bans (Anastasiou et al., 2020; Kaviany et al., 2022; Thorpe et al., 2020).

In addition to being at risk of living in unsupportive and unsafe neighborhoods and in homes with high TSE, low-income children are at risk to attend unsafe schools (Hong & Eamon, 2012; Lorenzo-Blanco et al., 2016; Pentek & Eisenberg, 2018; Yablon & Addington, 2010). Similar to the adverse health and academic outcomes observed in children who live in unsafe neighborhoods, children who feel unsafe at school are at increased risk of having asthma, lower academic achievement, lower school engagement, and insufficient sleep (Aryee et al., 2022; Meldrum et al., 2018; Ruiz et al., 2018; Subramanian & Kennedy, 2009); these outcomes have also been reported in children with TSE (Choi et al., 2020; He et al., 2020; Merianos et al., 2021).

To our knowledge, there is no research that has examined and compared the associations of neighborhood support and neighborhood and school safety of children with and without home TSE. Such knowledge would provide data that could be used to develop and improve research interventions and community-level programs aimed at improving health outcomes and academic achievement among at-risk children. Since children who are socioeconomically disadvantaged may not be able to move out of neighborhoods in which there is a high prevalence of adult tobacco use (Green et al., 2021), it is important to identify whether there are specific neighborhood characteristics that may need to be addressed to help parents and other adult tobacco users to successfully quit smoking. This information could be used to develop targeted TSE reduction interventions for affected children. To address this research gap, the current study employed the four-level social-ecological model of health framework to better understand individual (i.e., sociodemographics and TSE), relationship (i.e., neighborhood support), and community and societal (i.e., neighborhood and school safety) level factors of children with and without home TSE (Clinical and Translational Science Awards Consortium Community Engagement

Key Function Committee Task Force on the Principles of Community Engagement, 2011). The study objectives were to examine the associations of children's home TSE and parents' perceptions of neighborhood support, neighborhood safety, and school safety among U.S. school-aged children. We hypothesized that children with home TSE would have lower neighborhood support, neighborhood safety, and school safety than children with no home TSE.

Methods

Participants and Procedures

We performed a secondary data analysis of the 2018–2019 National Survey of Children's Health (NSCH), a cross-sectional survey that assesses the physical and emotional health and well-being of 0–17-year-old U.S. children. The NSCH is conducted by the U.S. Census Bureau with funding and administrative direction by the U.S. Health Resources and Services Administration's Maternal and Child Health Bureau (U.S. Census Bureau, 2019, 2020). After random selection, U.S. households were mailed an invitation to participate and an adult caregiver/parent completed a screener questionnaire that identified all children living in the household. If more than one child resided in a household, one child was randomly selected, and a detailed age-specific questionnaire was completed by the adult caregiver/parent; further details can be found elsewhere (CAHMI, 2018; U.S. Census Bureau, 2018a, 2018b). The overall weighted response rate was 43.1% (N = 30,530) for the 2018 NSCH survey, and 42.4% (N = 29,433) for the 2019 NSCH survey (U.S. Census Bureau, 2019, 2020). A total of 18,396 6–11-year-olds participated in the respective age-specific topical questionnaire for the 2018–2019 NSCH. For the current study's analysis, we excluded participants with missing data on child home TSE status and/or school safety (n = 1,096). Therefore, our total analytic sample was 17,300 U.S. children ages 6–11 years old.

This study was limited to 6–11-year-old children in order to: (1) exclude children who may have already initiated tobacco use (e.g., adolescents) (Gentzke et al., 2020); and (2) examine children who were likely to attend school due to their age. A university-based institutional review board considered the present study as "not human subjects" research since the NSCH contains publicly available, de-identified data; thus, this study was exempted from review.

Measures

Child home TSE including outside and inside TSE.—To assess child TSE status, we analyzed responses to parental assessments which asked if their child lived with any household members who smoked tobacco (yes/no), and if yes, whether they smoke outside or inside the home (yes/no). These two questions were combined to create the child's TSE status. Children's home TSE status was categorized into three levels: (1) no TSE: child did not live with a smoker; (2) outside TSE only: child lived with a smoker who did not smoke inside the home; and (3) inside TSE: child lived with a smoker who smoked inside the home.

Neighborhood support.—To assess whether children lived in supportive neighborhoods, parents were asked: "To what extent do you agree with these statements about your neighborhood or community? …" (1) "People in this neighborhood help each other out;"

(2) “We watch out for each other’s children in this neighborhood;” and (3) “When we encounter difficulties, we know where to go for help in our community (CAHMI, 2019, 2020).” Response options ranged from “definitely agree” to “definitely disagree.”

A specific 2018–2019 NSCH child and family health measure indicator was living in a supportive neighborhood, which combined the three items and defined children as living in supportive neighborhoods if their parents answered at least one item as “definitely agree” and at least “definitely agree” or “somewhat agree” to the other two items (CAHMI, 2021). Therefore, we assessed whether children lived in supportive neighborhoods overall based on these criteria (i.e., yes/no), as well as by type of support (i.e., neighborhood support, neighborhood cohesion, and neighborhood social capital), using the original scale responses ranging from “definitely agree” (0) to “definitely disagree” (3), with “definitely disagree” serving as the reference category in analyses.

Neighborhood safety.—Another 2018–2019 NSCH child and family health measure indicator included in this study was living in a safe neighborhood (CAHMI, 2021). To assess whether children lived in safe neighborhoods, parents were asked: “To what extent do you agree with these statements about your neighborhood or community? …” This child is safe in our neighborhood (CAHMI, 2019, 2020).” Response options ranged between “definitely agree,” “somewhat agree,” “somewhat disagree,” and “definitely disagree.” We used the original scale responses ranging from “definitely agree” (0) to definitely disagree (3), with “definitely disagree” serving as the reference category in analyses.

School safety.—The final 2018–2019 NSCH child and family health measure indicator included in this study was the child’s safety at school (CAHMI, 2021). To assess whether parents believed their child was safe at school, parents were asked one question: “To what extent do you agree with this statement about your neighborhood or community? …” This child is safe at school (CAHMI, 2019, 2020).” The response options were: “Definitely agree,” “somewhat agree,” “somewhat disagree,” and “definitely disagree.” We used the original scale responses ranging from “definitely agree” (0) to definitely disagree (3), with “definitely disagree” serving as the reference category in analyses.

Sociodemographics.—We examined the following sociodemographic variables: Child age, sex, race/ethnicity (i.e., non-Hispanic white, non-Hispanic black, Hispanic, non-Hispanic other/multiracial), parent education level (i.e., high school graduate and equivalent or less, some college, college degree or higher), family household structure (i.e., two currently married parents, two not currently parents married, single parent, other family type), and family federal poverty level (i.e., 0–199%, 200–299%, 300–399%, 400% or higher). NSCH provided a calculated variable for federal poverty level based on State Children’s Health Insurance Program income groups in order to protect household confidentiality of actual family income values (CAHMI, 2021).

Statistical Analysis—The 2018–2019 NSCH methodology guidelines (CAHMI, 2019, 2020) were followed, which included the application of sampling weights to account for NSCH survey nonresponses and possible sampling frame issues, and in order to match survey responses with the U.S. child population in both survey years. Descriptive statistics

were calculated including raw sample size counts and weighted percentages for all variables including child home TSE status, neighborhood support, neighborhood safety, school safety, and the covariates. We conducted weighted chi-square tests to examine the relationships between the categorical covariates and child home TSE groups, and a weighted one-way analysis of variance (ANOVA) test to examine child age and child home TSE groups. In order to examine the associations between child home TSE status and neighborhood and school characteristics, a weighted adjusted logistic regression model was built for whether the child lived in a supportive neighborhood (i.e., yes/no), and a series of weighted adjusted ordinal regression models were built for supportive neighborhood type, neighborhood safety, and school safety. Logistic and ordinal regression models also included the following sociodemographic covariates: Child age, sex, race/ethnicity, parent education level, family household structure, and family federal poverty level. Collinearity statistics demonstrated that multicollinearity was not present between the independent variables with variance inflation factors (VIFs) ranging from 1.01–1.52. A two-sided p-value with $p < 0.05$ was considered significant; analyses were conducted using SPSS Complex Samples version 28.0 (CAHMI, 2021).

Results

The mean (standard error, SE) age of the 17,300 children in the study sample was 8.56 (0.03) years (Table 1). Approximately half of the sample were male (50.9%), non-Hispanic white (50.7), and had parents who completed ≥ college degree (49.9%). Most of the child sample lived with two parents who were currently married (64.2%) and 40.5% had a family federal poverty level of 0–199%. A total of 13.2% (n = 2,278) of the children had outside TSE and 1.7% (n = 298) had inside TSE.

Child Home TSE Status and Living in a Supportive Neighborhood

By home TSE status, 57.2% of children with no TSE, 49.4% of children with outside TSE, and 45.2% of children with inside TSE lived in a supportive neighborhood (Table 2). Multivariable logistic regression model results indicated that children with outside TSE were at decreased odds (adjusted odds ratio [AOR] = 0.79, 95% confidence interval [CI] = 0.65–0.96) of living in a supportive neighborhood compared to children with no TSE, after covariate adjustment.

Child Home TSE Status and Specific Types of Neighborhood Support

People help each other out.—By home TSE status, children with no TSE had the lowest mean score (M = 0.90, SE = 0.02) for people helping each other out in the neighborhood, which indicates higher neighborhood support, followed by children with outside TSE (M = 1.00, SE = 0.04) and then children with inside TSE (M = 1.14, SE = 0.09) (Table 3). Adjusted ordinal regression model results indicated that children with outside TSE (AOR = 0.78, 95%CI = 0.66–0.92) and inside TSE were at decreased odds(AOR = 0.56, 95%CI = 0.36–0.85) of living in a supportive neighborhood where people help each other out compared to children with no TSE, when adjusting for the sociodemographic covariates.

People watch out for each other's children.—By home TSE status, children with no TSE had the lowest mean score (M = 0.78, SE = 0.02) for people watching out for each other's children, which indicates higher neighborhood support, followed by children with outside TSE (M = 0.81, SE = 0.04) and children with inside TSE (M = 0.96, SE = 0.08) (see Table 3). Adjusted ordinal regression model results indicated that children with inside TSE were at decreased odds (AOR = 0.65, 95%CI = 0.45–0.92) of living in a supportive neighborhood where people watch out for each other's children compared to children with no TSE, when adjusting for the sociodemographic covariates.

People know where to go for help in the community.—By home TSE status, children with no TSE had the lowest mean score (M = 0.80, SE = 0.03) for knowing where to go for help in the community when they encounter difficulties, which indicates higher neighborhood support, followed by children with outside TSE (M = 0.88, SE = 0.04) and children with inside TSE (M = 0.96, SE = 0.13) (see Table 3). Adjusted ordinal regression model results indicated that children who had outside TSE alone were at decreased odds (AOR = 0.83, 95%CI = 0.690.98) of living in a supportive neighborhood where people know where to go for help in the community when they encounter difficulties compared to children with no TSE, when adjusting for the sociodemographic covariates.

Child Home TSE Status and Living in a Safe Neighborhood—By home TSE status, children with no TSE had the lowest mean score for living in a safe neighborhood (M = 0.30, SE = 0.02), indicative of higher neighborhood safety, followed by children with outside TSE (M = 0.36, SE = 0.03) and children with inside TSE (M = 0.41, SE = 0.06) (Table 4). There was no association found between child home TSE status and living in a safe neighborhood.

Child Home TSE Status and Going to a Safe School—By home TSE status, children with no TSE had the lowest mean score for going to a safe school (M = 0.47, SE = 0.02), indicative of higher school safety followed by children with outside TSE (M = 0.50, SE = 0.03) and children with inside TSE (M = 0.55, SE = 0.07) (see Table 4). Adjusted ordinal regression model results indicated that children with outside TSE (AOR = 0.77, 95%CI = 0.61–0.97) and inside TSE were at decreased odds (AOR = 0.62, 95%CI = 0.390.99) of going to a school that was perceived as safe, when adjusting for the sociodemographic covariates.

Discussion

In this study, we examined data from the NSCH, a nationally representative survey of U.S. children, and found that 6–11-year-olds with outside TSE and inside TSE were at decreased odds of attending a school that was perceived as safe. We also report that school-aged children with outside TSE were at decreased odds of living in a supportive neighborhood, and that there were differential associations found based on type of neighborhood support. Specifically, both children with outside TSE and children with inside TSE were less likely to live in a neighborhood where people help each other out compared to children with no TSE. Children with inside TSE were less likely to live in a neighborhood where people watch out for each other's children, whereas children with outside TSE were

less likely to live in a neighborhood where people know where to go for help in the community when they encounter difficulties. Overall, child home TSE status was a risk factor for parent-perceived poor neighborhood support. Children, especially those who live in disadvantaged neighborhoods, may be more likely to live in homes in which they are exposed to tobacco smoke if their parents experience stress or anxiety due to living in unsupportive neighborhoods with low levels of cohesion (Hiscock et al., 2012; Perski et al., 2022). Additionally, if smoking is a normative and socially acceptable behavior in these neighborhoods, then parents may experience more difficulty quitting smoking or enforcing indoor smoking bans (Karasek et al., 2012). Moreover, prior research indicates that lack of neighborhood support, cohesiveness, or collective efficacy is associated with poor child outcomes including poor diet and sleep, behavioral and mental health conditions, lower cognitive skills, and inadequate child supervision and monitoring (Ben-Arieh et al., 2014; Caughy et al., 2008; Mayne et al., 2022; Odgers et al., 2009; Vyncke et al., 2013). Thus, research interventions and community programs are needed to target children with TSE who live in neighborhoods with these characteristics so that child outcomes can be improved. Adding components to tobacco cessation interventions that could improve neighborhood and social support or that work towards changing perceived tobacco norms may improve cessation rates (Karasek et al., 2012). Further, enforcing tobacco bans in public housing and public places may also help to improve tobacco cessation outcomes (Monson & Arsenault, 2017).

It is encouraging that there were no statistically significant differences between child home TSE status and living in a safe neighborhood. However, both inside and outside TSE were associated with decreased perceived school safety. It is also important to note that in parallel with prior research, this study demonstrates that there were significant differences between the sociodemographic covariates of child race/ethnicity, parent education level, family household structure, and family federal poverty level and living in a safe neighborhood (Gitterman et al., 2016; Green et al., 2021; Swope & Hernández, 2019). Regarding school safety, children with outside TSE and children with inside TSE were at decreased odds of reporting that they felt that their child was safe at school. While the findings on child TSE and school safety add to the existing literature on associated child risk factors, this study's results on the sociodemographic characteristics associated with school safety have been observed in other work (Berman et al., 2018; Lacoe, 2014; Voight et al., 2015). Specifically, we also observed sociodemographic differences with school safety including child race/ethnicity, family household structure, and family federal poverty level. When children attend unsafe schools, they are at risk of having lower academic achievement and health consequences including increased school absences, poor sleep, and increased reports of lifetime asthma and asthma severity (Aryee et al., 2022; Mayne et al., 2021; Ruiz et al., 2018; Subramanian & Kennedy, 2009). Moreover, compared to children with no TSE, children with TSE are also at risk of having lower academic and cognitive achievements, poor sleep, and asthma and other illnesses (Choi et al., 2020; He et al., 2020; Merianos et al., 2021; U.S. Department of Health and Human Services, 2014). It is possible that children with TSE live in unsupportive neighborhoods and attend unsafe schools due to factors related to higher tobacco product use in adults, which results in increased child TSE. These factors include high rates of poverty, unemployment, and stress in smokers and residents

who live in low-income neighborhoods in which there is a long-standing history of smoking and TSE, poor enforcement of housing smoking bans, and a higher density of stores that sell and market tobacco products (Anastasiou et al., 2020; Cornelius et al., 2020; Kaviany et al., 2022; Mays et al., 2014; Ribisl et al., 2017; Thorpe et al., 2020).

This study has numerous strengths including the use of two waves of data from the NSCH, a well-known national survey that provides data from a representative sample of U.S. children (U.S. Census Bureau, 2019, 2020). However, there are limitations that accompany use of the NSCH, including the cross-sectional nature of data collection which does not allow causal or longitudinal conclusions, and the lack of biochemical verification of parent reports of child TSE patterns. Further, the neighborhood and school measures were also parent-reported and represented parents' perceptions of support and safety, which may have been higher or lower than actual conditions.

Implications for Health Behavior Theory

According to the four-level social-ecological model of health (Clinical and Translational Science Awards Consortium Community Engagement Key Function Committee Task Force on the Principles of Community Engagement, 2011), child home TSE status was associated with multiple factors related to the physical and social environments of children. Collectively, these findings indicate that children with TSE need community-level programs, policies, and funding to improve the levels of safety and support in neighborhoods and schools. First, it is important to identify which high-poverty neighborhoods are most in need of support so that those areas can be targeted (Sandel et al., 2016). These areas can be identified and mapped with tools such as the child opportunity index (COI) (Acevedo-Garcia et al., 2014) so that funding and support can be provided to develop comprehensive strategies to change neighborhoods and schools (Sandel et al., 2016). Innovative strategies to achieve this should maintain community engagement throughout the process (Nurture Development/ABCD Institute, 2018), and may include educating and empowering community members about the importance of joining and working as a group to improve the future academic and health outcomes of their children. This could include involving and enlisting community leadership programs, older residents in supporting parents and children thereby improving the neighborhood social capital, and community developers in building high-quality housing in which neighborhood residents are proud and feel connected (CDC, n.d.; Jespersen et al., 2021; Jutte et al., 2015; Sandel et al., 2016). Further, health behavior researchers can conduct secondary data analyses on prior community development projects to determine which strategies were successful, the associated costs and resources needed, and which types of programs should be avoided in the future (Jutte et al., 2015). In conclusion, individual-, relationship-, community-, and societal-level factors need to be addressed to reduce home TSE and to increase neighborhood supports and neighborhood and school safety among U.S. school-aged children.

Discussion Questions

1. Our findings indicate that children with TSE had lower neighborhood support compared to children with no TSE. What are the best approaches to increase perceived and actual neighborhood supports?
2. In addition to individual- and relationship-level factors, what are community- and society-level changes that can address neighborhood and school safety issues that may result in positive changes in child health outcomes?

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Table 1

Sociodemographics of U.S. School-aged Children 6–11 Years Old, 2018–2019 NSCH

Characteristic	Overall (N = 17,300) *n* (%)[a]
Child Age, *M* (SE)	8.56 (0.03)
Child Sex	
Male	8,994 (50.9)
Female	8,306 (49.1)
Child Race/Ethnicity	
Non-Hispanic white	11,854 (50.7)
Non-Hispanic black	1,105 (12.9)
Hispanic	2,124 (25.2)
Non-Hispanic other or multiracial	2,217 (11.2)
Parent Education Level	
≤ High school graduate/equivalent	2,651 (27.7)
Some college	4,204 (22.3)
≥ College degree	10,445 (49.9)
Family Household Structure	
Two currently married parents	11,884 (64.2)
Two not currently married parents	1,231 (8.5)
Single parent	3,310 (21.2)
Other family type	875 (6.2)
Family Federal Poverty Level	
0–199%	5,004 (40.5)
200–299%	2,884 (15.9)
300–399%	2.498 (12.1)
≥ 400%	6,914 (31.5)

Note. Abbreviations: NSCH, National Survey on Children's Health; M = mean; SE = standard error.

[a] *n* refers to raw counts and percentages are weighted column percent unless noted otherwise.

Table 2

Child Home TSE Status and Living in a Supportive Neighborhood among U.S. School-aged Children 6–11 Years Old, 2018–2019 NSCH

	Child Lives in Supportive Neighborhood	Multivariable Logistic Regression		
	n (%)[a]	AOR	95% CI	*p*-value[b]
Home TSE Status				
No TSE	9,216 (57.2)	Ref	Ref	Ref
Outside TSE	1,238 (49.4)	**0.79**	**0.65, 0.96**	**0.016**
Inside TSE	136 (45.2)	0.72	0.46, 1.12	0.149
Child Age, *M* (SE)	8.55 (0.03)	1.01	0.97, 1.05	0.713
Child Sex				
Male	5,497 (56.1)	Ref	Ref	Ref
Female	5,093 (55.9)	0.98	0.86, 1.12	0.814
Child Race/Ethnicity				
Non-Hispanic white	7,777 (63.4)	Ref	Ref	Ref
Non-Hispanic black	522 (45.3)	**0.59**	**0.48, 0.73**	**< 0.001**
Hispanic	1,056 (48.3)	**0.61**	**0.51, 0.74**	**< 0.001**
Non-Hispanic other or multiracial	1,235 (52.2)	**0.63**	**0.52, 0.76**	**< 0.001**
Parent Education Level				
≤ High school graduate/Equivalent	1,374 (50.0)	1.01	0.83, 1.24	0.863
Some college	2,278 (51.0)	0.89	0.76, 1.04	0.139
≥ College degree	6,938 (61.6)	Ref	Ref	Ref
Family Household Structure				
Two currently married parents	7,784 (60.2)	Ref	Ref	Ref
Two not currently married parents	614 (51.7)	0.91	0.79, 1.20	0.507
Single parent	1,674 (45.5)	**0.73**	**0.61, 0.87**	**< 0.001**
Other family type	518 (54.6)	1.05	0.77, 1.42	0.769
Family Federal Poverty Level				
0–199%	2,527 (47.6)	**0.60**	**0.50, 0.72**	**< 0.001**
200–299%	1,608 (54.4)	**0.67**	**0.56, 0.81**	**< 0.001**
300–399%	1,563 (58.8)	**0.75**	**0.61, 0.92**	**0.005**
≥ 400%	4,892 (66.5)	Ref	Ref	Ref

Note. Abbreviations: NSCH = National Survey on Children's Health; TSE = tobacco smoke exposure; M = mean; SE = standard error; AOR = adjusted odds ratio; CI = confidence interval; Ref = reference category.

[a] *n* refers to unweighted sample size and % refers to weighted row percent, unless otherwise noted.

[b] Multivariable logistic regression model adjusting for the covariates of child age, child sex, child race/ethnicity, parent education level, family household structure, and federal poverty level. Bold font indicates statistical significance $p < 0.05$.

Table 3

Child Home TSE Status and Type of Neighborhood Support among U.S. School-aged Children 6–11 Years Old, 2018–2019 NSCH

	People in Neighborhood Help Each Other Out	Ordinal Regression			People Watch Out for Each Other's Children in Neighborhood	Ordinal Regression			People Know Where to Go for Help in Community	Ordinal Regression		
	M (SE)[a]	AOR	95% CI	*p*-value[b]	*M* (SE)[a]	AOR	95% CI	*p*-value[b]	*M* (SE)[a]	AOR	95% CI	*p*-value[b]
Home TSE Status												
No TSE	0.90 (0.02)	Ref	Ref	Ref	0.78 (0.02)	Ref	Ref	Ref	0.80 (0.03)	Ref	Ref	Ref
Outside TSE	1.00 (0.04)	**0.78**	**0.66, 0.92**	**0.004**	0.81 (0.04)	0.93	0.78, 1.12	0.449	0.88 (0.04)	**0.83**	**0.69, 0.98**	**0.031**
Inside TSE	1.14 (0.09)	**0.56**	**0.36, 0.85**	**0.007**	0.96 (0.08)	**0.65**	**0.45, 0.92**	**0.017**	0.96 (0.13)	0.76	0.46, 1.26	0.290
Child Age, *M* (SE)	-	1.01	0.98, 1.05	0.549	-	1.00	0.96, 1.03	0.874	-	1.01	0.97, 1.04	0.681
Child Sex												
Male	1.01 (0.04)	Ref	Ref	Ref	0.85 (0.04)	Ref	Ref	Ref	0.88 (0.05)	Ref	Ref	Ref
Female	1.02 (0.04)	0.93	0.83, 1.05	0.251	0.85 (0.04)	1.00	0.88, 1.12	0.952	0.88 (0.05)	0.97	0.86, 1.10	0.619
Child Race/Ethnicity												
Non-Hispanic white	0.85 (0.04)	Ref	Ref	Ref	0.71 (0.03)	Ref	Ref	Ref	0.72 (0.05)	Ref	Ref	Ref
Non-Hispanic black	1.10 (0.05)	**0.55**	**0.45, 0.68**	**< 0.001**	0.96 (0.05)	**0.59**	**0.47, 0.73**	**< 0.001**	0.90 (0.06)	**0.68**	**0.56, 0.83**	**< 0.001**
Hispanic	1.10 (0.05)	**0.55**	**0.46, 0.67**	**< 0.001**	0.86 (0.05)	**0.71**	**0.59, 0.85**	**< 0.001**	0.95 (0.06)	**0.63**	**0.52, 0.76**	**< 0.001**
Non-Hispanic other or multiracial	0.99 (0.05)	**0.70**	**0.59, 0.82**	**< 0.001**	0.87 (0.04)	**0.68**	**0.57, 0.80**	**< 0.001**	0.93 (0.06)	**0.61**	**0.51, 0.72**	**< 0.001**
Parent Education Level												
≤ High school graduate/equivalent	1.05 (0.04)	**0.80**	**0.67, 0.96**	**0.015**	0.80 (0.04)	1.20	1.0, 1.44	0.056	0.87 (0.06)	0.97	0.81, 1.16	0.088
Some college	1.03 (0.04)	**0.85**	**0.73, 0.99**	**0.043**	0.89 (0.04)	0.98	0.84, 1.14	0.799	0.92 (0.05)	0.87	0.75, 1.02	0.744
≥ College degree	0.95 (0.04)	Ref	Ref	Ref	0.86 (0.04)	Ref	Ref	Ref	0.85 (0.05)	Ref	Ref	Ref
Family Household Structure												
Two currently married parents	0.94 (0.04)	Ref	Ref	Ref	0.79 (0.04)	Ref	Ref	Ref	0.85 (0.05)	Ref	Ref	Ref
Two not currently married parents	1.03 (0.06)	0.79	0.62, 1.01	0.067	0.83 (0.05)	0.90	0.71, 1.13	0.365	0.90 (0.07)	0.89	0.69, 1.14	0.353
Single parent	1.14 (0.05)	**0.64**	**0.54, 0.76**	**< 0.001**	0.96 (0.05)	**0.71**	**0.60, 0.84**	**< 0.001**	0.98 (0.05)	**0.78**	**0.66, 0.93**	**0.006**
Other family type	0.93 (0.06)	0.99	0.77, 1.27	0.916	0.82 (0.05)	0.88	0.69, 1.12	0.297	0.79 (0.07)	1.19	0.91, 1.56	0.211

	People in Neighborhood Help Each Other Out	Ordinal Regression			People Watch Out for Each Other's Children in Neighborhood	Ordinal Regression			People Know Where to Go for Help in Community	Ordinal Regression		
	***M* (SE)[a]**	**AOR**	**95% CI**	***p*-value[b]**	***M* (SE)[a]**	**AOR**	**95% CI**	***p*-value[b]**	***M* (SE)[a]**	**AOR**	**95% CI**	***p*-value[b]**
Family Federal Poverty Level												
0–199%	1.12 (0.04)	**0.60**	**0.50, 0.70**	**< 0.001**	0.93 (0.03)	**0.62**	**0.53, 0.74**	**< 0.001**	0.97 (0.05)	**0.69**	**0.58, 0.82**	**< 0.001**
200–299%	1.04 (0.04)	**0.68**	**0.58, 0.80**	**< 0.001**	0.9 (0.04)	**0.64**	**0.54, 0.76**	**< 0.001**	0.91 (0.05)	**0.72**	**0.61, 0.85**	**< 0.001**
300–399%	0.97 (0.05)	**0.81**	**0.67, 0.97**	**0.023**	0.83 (0.05)	**0.75**	**0.62, 0.89**	**0.001**	0.85 (0.06)	**0.83**	**0.69, 0.99**	**0.045**
≥ 400%	0.91 (0.04)	Ref	Ref	Ref	0.73 (0.04)	Ref	Ref	Ref	0.79 (0.05)	Ref	Ref	Ref

Note. Abbreviations: NSCH = National Survey on Children's Health; TSE = tobacco smoke exposure; M = mean; SE = standard error; AOR = adjusted odds ratio; CI = confidence interval; Ref = reference category.

[a] *M* (SE) refers to the mean (SE) neighborhood support scores with lower scores indicative of higher support (range 0 ("definitely agree") to 3 ("definitely disagree")).

[b] Three separate ordinal regression models with the reference category as "definitely disagree" and adjusting for the covariates of child age, child sex, child race/ethnicity, parent education level, family household structure, and federal poverty level. Bold font indicates statistical significance $p < 0.05$.

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Table 4

Child Home TSE Status and Neighborhood and School Safety among U.S. School-aged Children 6–11 Years Old, 2018–2019 NSCH

	Child Lives in Safe Neighborhood	Ordinal Regression			Child is Safe at School	Ordinal Regression		
	M (SE) [a]	AOR	95% CI	*p*-value[b]	*M* (SE) [a]	AOR	95% CI	*p*-value[b]
Home TSE Status								
No TSE	0.30 (0.02)	Ref	Ref	Ref	0.47 (0.02)	Ref	Ref	Ref
Outside TSE	0.36 (0.03)	0.93	0.76, 1.14	0.493	0.50 (0.03)	**0.77**	**0.61, 0.97**	**0.028**
Inside TSE	0.41 (0.06)	0.75	0.50, 1.13	0.166	0.55 (0.07)	**0.62**	**0.39, 0.99**	**0.045**
Child Age, *M* (SE)	-	1.03	1.0, 1.08	0.090	-	**0.95**	**0.91, 0.99**	**0.013**
Child Sex								
Male	0.51 (0.03)	Ref	Ref	Ref	0.36 (0.03)	Ref	Ref	Ref
Female	0.51 (0.03)	1.00	0.87, 1.14	0.956	0.35 (0.03)	1.05	0.91, 1.22	0.515
Child Race/Ethnicity								
Non-Hispanic white		Ref	Ref	Ref		Ref	Ref	Ref
Non-Hispanic black	0.41 (0.03)	**0.69**	**0.56, 0.86**	**< 0.001**	0.35 (0.03)	0.81	0.64, 1.01	0.064
Hispanic	0.53 (0.04)	**0.67**	**0.55, 0.82**	**< 0.001**	0.41 (0.03)	**0.64**	**0.51, 0.80**	**< 0.001**
Non-Hispanic other or multiracial	0.55 (0.04)	**0.63**	**0.52, 0.76**	**< 0.001**	0.35 (0.03)	**0.82**	**0.67, 1.0**	**0.046**
Parent Education Level								
≤High school graduate/Equivalent	0.52 (0.03)	0.89	0.73, 1.09	0.245	0.35 (0.03)	0.9	0.72, 1.13	0.372
Some College	0.53 (0.03)	**0.81**	**0.70, 0.95**	**0.011**	0.37 (0.03)	0.88	0.73, 1.05	0.155
≥College Degree	0.47 (0.03)	Ref	Ref	Ref	0.34 (0.03)	Ref	Ref	Ref
Family Household Structure								
Two parents, currently married	0.47 (0.03)	Ref	Ref	Ref	0.33 (0.03)	Ref	Ref	Ref
Two parents, not currently married	050 (0.05)	0.97	0.75, 1.26	0.834	0.32 (0.03)	1.06	0.80, 1.40	0.709
Single parent	0.56 (0.03)	**0.79**	**0.66, 0.94**	**0.008**	0.39 (0.03)	**0.78**	**0.64, 0.95**	**0.012**
Other family type	0.50 (0.04)	0.85	0.64, 1.14	0.281	0.38 (0.04)	0.81	0.58, 1.13	0.218
Family Federal Poverty Level								
0–199%	0.56 (0.03)	**0.59**	**0.49, 0.71**	**< 0.001**	0.35 (0.03)	0.88	0.71, 1.1	0.267
200–299%	0.55 (0.03)	**0.58**	**0.47, 0.70**	**< 0.001**	0.38 (0.03)	**0.71**	**0.57, 0.89**	**0.003**
300–399%	0.49 (0.04)	**0.71**	**0.57, 0.87**	**< 0.001**	0.38 (0.03)	**0.73**	**0.58, 0.93**	**0.009**
≥400%	0.43 (0.04)	Ref	Ref	Ref	0.32 (0.03)	Ref	Ref	Ref

Note. Abbreviations: NSCH = National Survey on Children's Health; TSE = tobacco smoke exposure; M = mean; SE = standard error; AOR = adjusted odds ratio; CI = confidence interval; Ref = reference category.

[a] *M* (SE) refers to the mean (SE) safe neighborhood and safety scale scores with lower scores indicative of higher safety (range 0 ("definitely agree") to 3 ("definitely disagree")).

[b] Two separate ordinal regression models with the reference category as "definitely disagree" and adjusting for the covariates of child age, child sex, child race/ethnicity, parent education level, family household structure, and federal poverty level. Bold font indicates statistical significance $p < 0.05$.

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