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Neighborhood Environment and Children's Physical Activity and Body Mass Index: Evidence from Military Personnel Installation Assignments

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Abstract

Background: The majority of existing studies use observed, rather than experimental or quasi-experimental, variation in individuals' neighborhood environments to study their influence on body weight and related behaviors.

Purpose: This study leverages the periodic relocation of military personnel to examine the relationship between neighborhood environment and children's physical activity (PA) and BMI in military families.

Methods: This study utilizes data on 12- and 13-year-old children from the Military Teenagers Environments, Exercise, and Nutrition Study ($N = 903$). Multivariate regression models are estimated, separately for families living on- and off-post, to examine the relationship between parents' perceptions of the neighborhood environment, measured using the Neighborhood Environment Walkability Scale–Youth Version (NEWS-Y), and children's self-reported PA and BMI.

Results: Different features of the neighborhood environment were significant for off- versus on-post families. For children living off-post, a 1 standard deviation (SD) increase in the proximity-to-recreational-facilities subscale was associated with 16.5 additional minutes per week ($p < 0.05$) of moderate PA (MPA), but street connectivity had a significant negative association with vigorous activity. For children living on-post, a 1 SD increase on the crime safety subscale was associated with 22.9 additional minutes per week ($p < 0.05$) of MPA. None of the NEWS-Y subscales were associated with children's BMI.

Conclusions: Efforts to increase children's PA in military families should take into account that different aspects of the neighborhood environment matter for children living on- versus off-post.

Introduction

The obesity epidemic has focused attention on how neighborhood built environments (hereafter, ''neighborhood environments'') affect individuals' participation in physical activity (PA) and ultimately their BMI. Lack of PA is viewed as an important contributor because most children (58%), adolescents (92%), and adults (95%) fail to meet the recommended guidelines.[1] Despite growing attention, our understanding of the relationship between neighborhood environments and PA, and subsequently BMI, remains limited because it is generally infeasible to randomly assign individuals to environments. As a result, the vast majority of empirical studies use observed, rather than experimental or quasi-experimental, variation in individuals' neighborhood environments[2–4] to study their influence on behaviors. However, this approach may bias inference if individuals self-select into neighborhood environments based on their preferences for health-related behaviors.[5] Therefore, experts have called for studies that leverage natural experiments.[4,5]

This study leverages the periodic relocation of military personnel, which generates unique variation in their families' neighborhood environments. These relocations ''assign'' military personnel to installations based on the military's needs. As a result, their neighborhood environments are not subject to the same level of residential selection that undermines typical observational studies. This context provides an innovative opportunity to examine the relationship between neighborhood environments and children's PA and BMI.

There are nearly 2 million children in military families, making this a vital and substantial population.[6] Contrary to common beliefs, children in military families exhibit

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similar troubling patterns as their civilian counterparts with respect to obesity and related behaviors. Approximately 30% of military children ages 6–17 years are overweight/obese,[7] compared to 34% in the general population ages 6–19.[8] Among children ages 6–11, the percent watching 3 or more hours per day of television is 40% in the military versus 34% in the National Health and Nutrition Examination Survey (NHANES) samples and the percent eating fast food 3 or more times per week is 15% versus 17%.[7,9] Available estimates of PA for military children are not directly comparable to NHANES, but nevertheless show that the majority fail to meet recommended guidelines: Only 38% of 12- to 17-year-olds engage in vigorous activity for 20 or more minutes per day on at least 5 days per week.[7] These children also exhibit similar racial-ethnic patterns in obesity as civilians, with African Americans and Hispanics faring worse than whites. Last, previous surveys indicate that a large fraction of the nearly 2 million children in military families live in civilian communities and attend public schools.[10] Therefore, findings based on these children may have relevant implications for the general population.

This study contributes one of the first examinations of the relationship between neighborhood environments and both PA and BMI among children in military families. Despite intense interest among policy makers, spearheaded by the First Lady's Let's Move initiative,[11,12] the research on military families has focused primarily on the resiliency to deployment, injury, and other factors.[13–15]

Methods

Context

The data analyzed were collected during the Military Teenagers Environment Exercise and Nutrition Study (M-TEENS). The M-TEENS surveyed families of army enlisted personnel located at 12 army installations in the continental United States (Fig. 1). The included installations consisted of the 10 large divisional posts and two medium-sized installations and were spread across all four Census regions: West (Joint Base Lewis-McChord [JBLM], Fort Carson), Northeast (Fort Drum), South (Fort Bragg, Fort Benning, Fort Bliss, Fort Campbell, Fort Hood, Fort Polk, Fort Stewart, and Fort Sill), and Midwest (Fort Riley). The South is overrepresented owing to the distribution of army installations. Figure 1 shows locations of these installations and the state-level childhood obesity rates. The study installations vary considerably in their state-level childhood obesity rates.

Participants

Using the army's personnel records, enlisted personnel who had at least 1 dependent child ages 12–13 years (as of March 31, 2013) and who were located at these 12 army installations for at least 18 months were contacted by M-TEENS. Recruitment was conducted during March–December of 2013 by e-mails sent to the service members' military e-mail and mailings sent to their home address, which were obtained from the Defense Manpower Data Center. A much larger sample than needed was initially

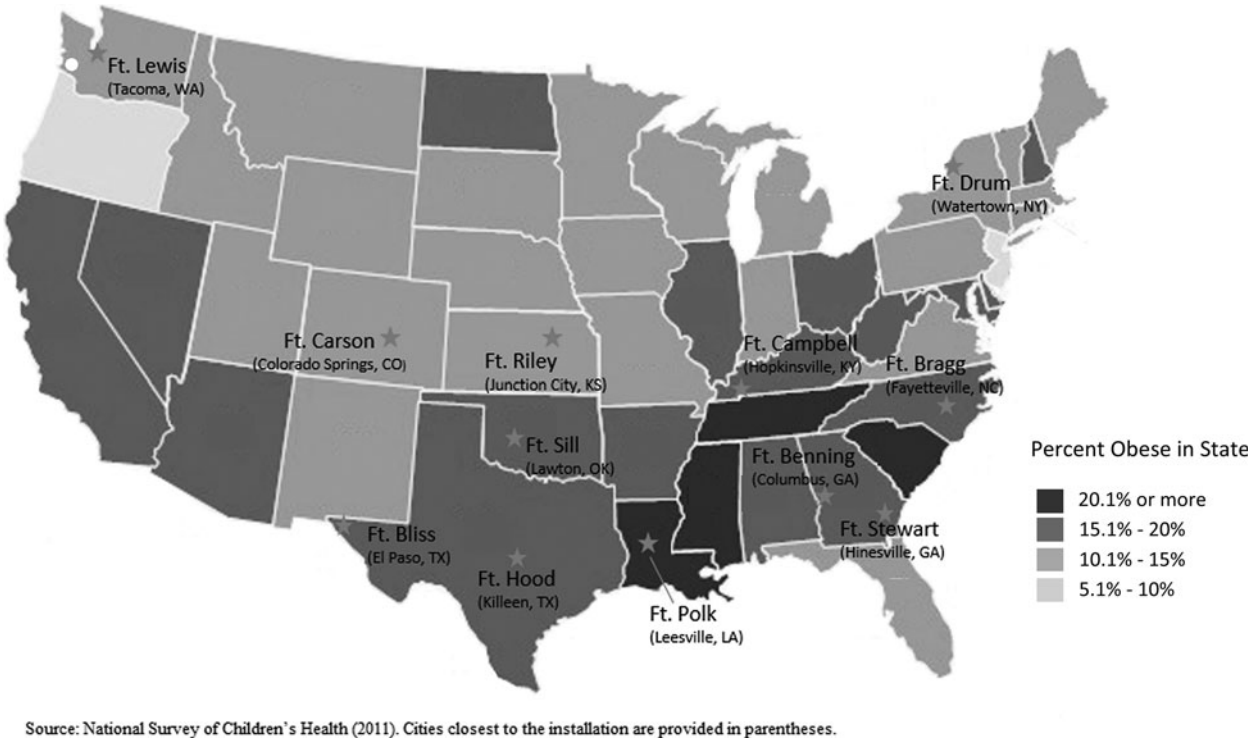

Figure 1. Army installations participating in the M-TEEN study. M-TEENS, the Military Teenagers Environment Exercise and Nutrition Study.

contacted owing to several factors. First, military families are a mobile population as a result of periodic reassignment to new installations, so their contact information may not always be updated in a timely manner. Second, the military's records contain information on millions of service members and errors in the contact information are to be expected. Third, information on members' active duty status may also not be current, especially if they recently left the military. And last, response rates in military samples have historically been low.[16,17] Therefore, a total of 8545 families were initially e-mailed or mailed recruitment materials, of which 2106 completed the eligibility screener.

Families were eligible to participate if they met three eligibility conditions. First, the service member did not intend to leave the military within the coming year. Second, the 12- or 13-year-old child resided with the enlisted parent at least half-time. Finally, the 12- or 13-year-old child was enrolled in a public or Department of Defense Education Activity school. Of those screened, 1794 (85%) were eligible and 1188 (66%) consented to participate.

Online surveys were completed between spring 2013 and winter 2013–2014. One 12- or 13-year-old child in the household completed a questionnaire about his or her typical vigorous and moderate physical activity (VPA/MPA) per week and reported his or her height, weight, and birthdate. One parent or guardian (hereafter, ''parent'') completed a questionnaire about the neighborhood environment, from which we constructed the Neighborhood Environment Walkability Scales–Youth version (NEWS-Y) subscales. The parent also reported his or her own and family characteristics.

The analysis sample consisted of 903 child-parent pairs with survey responses. The sample families lived in 408 Census Block Groups on and around the installations (47.7% lived on-post; 52.3% lived off-post).

The study was approved by the institutional review boards at RAND (Santa Monica, CA), University of Southern California (Los Angeles, CA), and the army's Human Research Protection Office.

Measures

Neighborhood Environment Walkability Scale–Youth version. Parents completed the parent version of the youth-focused NEWS questionnaire developed and validated by Saelens and colleagues.[18–20] The NEWS-Y provides succinct, empirically derived measures of various aspects of the neighborhood environment related to youth PA. The questionnaire consists of 66 items that can be allocated into nine subscales capturing land-use mix (diversity), proximity to recreation facilities, land-use mix (access), street connectivity, walking/cycling facilities, aesthetics, pedestrian/automobile traffic safety, and crime safety (where traffic safety and crime safety are the inverses of the traffic and crime scales used by Saelens and colleagues). Subscale descriptions with sample items are provided in Table 1. The full text of the NEWS-Y scale is available online.[21]

Physical activity. Similar to the NHANES, children were asked the following questions about their usual PA and were asked to think about *all* activities, including sports, recreation, fitness, and getting to and from places.

''*In a typical week*, *do you do any moderate-intensity physical activities that cause a small increase in breathing or heart rate (for example, brisk walking*, *recreational bicycling*, *baseball*, *skateboarding*, *recreational swimming) for at least 10 minutes continuously*?'' Response categories included: Yes/No. If they answered ''Yes,'' they were asked, ''*In a typical week*, *on how many days do you do moderate-intensity physical activities*?'' Response categories included 1, 2, 3, 4, 5, 6, and 7 days. Finally, they were asked, ''*How much time do you spend doing moderate-intensity activities on a typical day*?'' Response categories included: <20, 20–30, 31–45, 46–60, 61–90, and >90 minutes.

Similar questions were asked for usual days per week and minutes per day of VPA, where examples included running, swimming, and playing basketball/soccer/tennis.

Responses to the above questions were combined to construct the usual minutes per week of MPA and VPA using midpoints of the time categories top coded at 90 minutes.

Body mass index. Children also self-reported their height and weight, which was used to construct BMI, defined as weight in kilograms divided by the square of height in meters. Age- and gender-specific BMI percentiles were calculated based on the 2000 BMI-for-age growth charts issued by the CDC[22] to account for differential trends in body growth and fat change across age and gender.

Statistical Analysis

Multivariate regression models estimated the association between the nine NEWS-Y subscales separately with each child outcome. Separate models for families living on- and off-post were estimated because of concerns about differential residential selection and about differing environments between on- and off-post communities. The subscale raw scores were converted into *z*-scores, so the estimated coefficients capture the change in the outcome associated with a 1 standard deviation (SD) increase in the subscale score.

All regressions controlled for child's age (months), gender, and race/ethnicity (non-Hispanic white, non-Hispanic black, Hispanic/Latino, or other); parents' marital status, both parents' education levels (less than high school, high school graduate or equivalent, some college, and college graduate or higher), military parent's rank (corporal/specialist or lower; sergeant; staff sergeant; sergeant first class; and master sergeant/first sergeant or higher); household income ($<=$\$40,000, \$40,001–\$50,000, \$50,001–\$75,000, and \$75,001 or higher), number of adults and children in the household, on-post residence, and time at current installation (12 months or less, 13–24 months, 25–48 months, and 49 or more months). All covariates were parent-reported.

Table 1. Subscales in the Neighborhood Environment Walkability Scale–Youth Version (NEWS-Y)

Subscale	No. of items	Example items, response options, and subscale creation
A. Land-use mix-diversity	20	How long it would take to walk to shops, services, and other destination (*e.g.*, supermarket, post office, library)? 1 = 1–5 minutes; 5 = 31+ minutes. Sum of destinations within a 10-minute walk.
B. Recreational facilities	14	How long would it take to walk to types of recreation destinations (*e.g.*, swimming pool, basketball court, parks)? 1 = 1–5 minutes, 5 = 31+ minutes. Sum of facilities within a 10-minute walk.
C. Residential density	4	How common are different types of homes in the neighborhood? 1 = there are none, 5 = all residences are (*e.g.*, stand-alone one family homes, apartments). Weights applied to each type of housing to estimate the density and responses were averaged (higher scores indicate higher density).
D. Land-use mix-access	6	Stores are within easy walking distance of my home, it is easy to walk to a transit stop, streets are hilly: 1 = strongly disagree, 4 = strongly agree. Responses averaged (higher scores indicate better access).
E. Street connectivity	3	Streets in my neighborhood do not have many cul-de-sacs, there are many different routes for getting from place to place: 1 = strongly disagree, 4 = strongly agree. Responses averaged (higher scores indicate better street connectivity).
F. Walking/cycling facilities	3	In my neighborhood there are sidewalks, sidewalks are separated from traffic, there is grass/dirt between the streets and sidewalks: 1 = strongly disagree, 4 = strongly agree. Responses averaged (higher scores indicate better pedestrian infrastructure).
G. Neighborhood aesthetics	3	In my neighborhood there are trees, there are interesting things to look at: 1 = strongly disagree, 4 = strongly agree. Responses averaged (higher numbers indicate better aesthetics).
H. Pedestrian/ automobile traffic safety	7	There is so much traffic on nearby streets that it is unpleasant to walk, the speed of traffic is usually slow, streets have good lighting: 1 = strongly disagree, 4 = strongly agree. Responses were reverse scored and averaged (higher scores indicate better perceived safety).
I. Crime safety	6	High neighborhood crime rate, worried about being outside alone because of being taken or hurt by a stranger, worried about being in a park because of being taken or hurt by a stranger: 1 = strongly disagree, 4 = strongly agree. Responses were reverse scored and averaged (higher scores indicate lower perceptions of crime/more safety).

Source: Rosenberg and colleagues.[19]

Analyses were conducting using STATA statistical software (12.1; StataCorp LP, College Station, TX).

The study's primary hypothesis is that children will be more physically active and have lower BMI in neighborhoods that score higher (*i.e.*, more amenable to PA) on the NEWS-Y scales.

Results

Table 2 provides the characteristics of the M-TEENS sample and descriptive statistics for exposure and outcome measures. Mean age of children in the sample was 158.1 months (13.2 years). Consistent with the military population overall, minorities were over-represented. Nearly 41% of the sample were white non-Hispanic (40.8%), 20.7% were black non-Hispanic, 24.6% Hispanic/Latino, and 13.9% were categorized as other.

Table 3 reports the main regression results. Among families living off-post, proximity to recreational facilities demonstrated a positive association with children's PA. A 1 SD increase in this subscale was associated with 16.51 additional minutes ($p < 0.05$) of MPA per week. There was a positive association of similar magnitude with VPA, but that was not statistically significant. In contrast, street connectivity showed a negative association with minutes per week of VPA ($b = -24.52$; $p < 0.05$). Among families living on-post, only crime safety was positively associated with MPA ($p < 0.05$), but not VPA. None of the subscales, however, had a significant association with children's BMI for on- or off-post families.

No significant gender differences were detected (see Supplementary Tables 1–3; tables are available online at www.liebertpub.com/chi). Models that controlled for installation (or region) fixed effects yielded similar results to our main models (see Appendix). Further, alternate models that used nonlinear specifications of the NEWS-Y subscales (*e.g.*, categorical measures, quadratic) strongly supported linearity (not shown).

Discussion

A fundamental challenge in understanding how the neighborhood environment impacts PA, and consequently BMI, is residential selection. Specifically, individuals may

Table 2. Descriptive Statistics of the Study Sample

	% or mean (SD)	
	On-post (*N*=431) (47.7%)	Off-post (*N*=472) (52.3%)
NEWS-Y scale raw score (possible score range)		
NEWS-Y A: Land-use mix-diversity (1–5)	2.1 (.99)	2.2 (1.1)
NEWS-Y B: Recreational facilities (1–5)	2.8 (.81)	2.2 (.96)
NEWS-Y C: Residential density (40–200)	89.5 (37.4)	66.8 (35.3)
NEWS-Y D: Land-use mix-access (1–4)	2.7 (.48)	2.5 (.54)
NEWS-Y E: Street connectivity (1–4)	2.8 (.70)	2.5 (.69)
NEWS-Y F: Walking/cycling facilities (1–4)	3.1 (.69)	2.4 (1.0)
NEWS-Y G: Neighborhood aesthetics (1–4)	2.6 (.74)	2.7 (.78)
NEWS-Y H: Pedestrian/traffic safety (1–4)[a]	2.8 (.53)	2.7 (.54)
NEWS-Y I: Crime safety (1–4)[a]	3.3 (.74)	3.3 (.74)
Child outcomes		
Min/week of vigorous physical activity	214.4 (198.9)	183.7 (167.0)
Min/week of moderate physical activity	161.9 (181.0)	143.6 (157.6)
BMI	20.4 (4.1)	20.5 (4.2)
BMI z-score	0.16 (1.7)	0.19 (1.5)
Selected covariates		
Child age (months)	157.5 (8.1)	158.6 (7.2)
Child % female	49.2	46.4
Child race/ethnicity, %		
White non-Hispanic	43.2	38.6
Black non-Hispanic	20.3	19.7
Hispanic/Latino	23.1	27.5
Other[b]	13.3	14.2
Military parents with 4-year degree, %	13.9	14.8
Civilian parents with 4-year degree, %	16.9	22.0
Annual household income, %		
$50,000 or less	56.4	32.5
$50,001–$75,000	29.7	40.4
$75,001 or higher	13.9	27.1
Months at current installation	36.4 (22.0)	44.5 (30.2)

[a]The traffic and crime "safety" scales were inverted relative to the original "crime" and "traffic" scales used by Sallis and colleagues in order to make the expected signs consistent across scales.

[b]Includes multiracial, Asian, American Indian/Alaska Native, and Native Hawaiian/Pacific Islander.

Min/week, minutes per week; SD, standard deviation.

self-select into neighborhoods that reflect or support their existing interests and behaviors. Therefore, one cannot assume that neighborhoods are randomly or exogenously assigned and, in turn, residential selection may confound estimates of how those neighborhood characteristics affect behaviors and health. Previous studies that examine residential selection suggest that this factor might have a smaller influence on PA than the built environment,[5,23,24] although this is a difficult issue to settle.

The present study leverages unique variation in neighborhood environments generated by the assignment of military personnel to installations to serve the military's needs. This assignment process renders even cross-sectional data valuable. Neighborhood environments on and around military installations are likely to vary considerably, in large part because of the significant variation in geographic location and installation size. This variation can be illustrated by installations such as JBLM and Fort Campbell. JBLM is located in Washington state, which has among the lowest rates of childhood obesity in the country (11.0% in 2011).[25] In contrast, Fort Campbell is located on the Kentucky-Tennessee border, both of which rank

Table 3. Association between NEWS-Y Subscale and Children's Physical Activity and BMI

	Live on-post			Live off-post		
NEWS-Y Scale	**Min/week of vigorous physical activity**	**Min/week of moderate physical activity**	**BMI z-score**	**Min/week of vigorous physical activity**	**Min/week of moderate physical activity**	**BMI z-score**
A. Land-Use Mix: Diversity	5.53 (−16.54, 27.60)	12.90 (−7.50, 33.31)	0.03 (−0.17, 0.23)	−6.25 (−23.31, 10.81)	−3.89 (−19.45, 11.67)	0.07 (−0.08, 0.23)
B. Neighborhood Recreation Facilities	3.62 (−21.35, 28.60)	13.39 (−9.40, 36.17)	0.09 (−0.13, 0.32)	16.72 (−0.44, 33.89)	**16.51* (0.76, 32.25)**	0.08 (−0.06, 0.23)
C. Residential Density	−0.32 (−22.80, 22.15)	−4.91 (−25.64, 15.83)	−0.05 (−0.25, 0.15)	−15.59 (−34.43, 3.25)	−9.98 (−27.17, 7.20)	−0.07 (−0.24, 0.11)
D. Land-Use Mix: Access	11.81 (−11.28, 34.91)	11.27 (−10.08, 32.62)	−0.02 (−0.22, 0.19)	−6.76 (−23.57, 10.04)	8.09 (−7.42, 23.62)	−0.05 (−0.20, 0.10)
E. Street Connectivity	13.64 (−7.88, 35.17)	3.08 (−16.84, 23.00)	0.04 (−0.15, 0.23)	**−24.52** (−41.95, −7.08)**	−9.56 (−25.71, 6.59)	−0.07 (−0.23, 0.09)
F. Walking/cycling Facilities	13.92 (−15.29, 43.12)	19.73 (−7.18, 46.64)	−0.08 (−0.34, 0.17)	1.13 (−14.40, 16.65)	−3.23 (−17.58, 11.12)	−0.00 (−0.14, 0.14)
G. Neighborhood Aesthetics	18.60 (−2.68, 39.88)	7.45 (−12.33, 27.23)	0.00 (−0.19, 0.19)	−8.79 (−25.43, 7.84)	−2.84 (−18.24, 12.56)	−0.06 (−0.21, 0.09)
H. Pedestrian/automobile Traffic Safety	−3.50 (−25.12, 18.12)	12.96 (−6.85, 32.76)	0.05 (−0.14, 0.24)	−1.67 (−18.74, 15.40)	7.10 (−8.53, 22.72)	−0.02 (−0.17, 0.13)
I. Crime Safety	12.75 (−7.94, 33.44)	**22.91* (3.91, 41.92)**	0.05 (−0.14, 0.23)	7.55 (−10.32, 25.43)	0.83 (−15.75, 17.42)	−0.06 (−0.22, 0.09)

All regressions were adjusted for sociodemographic covariates. Figures in parentheses are 95% confidence intervals. The traffic and crime "safety" scales were inverted relative to the original "crime" and "traffic" scales used by Sallis and colleagues in order to make the expected signs consistent across scales.

**$p < 0.01$; *$p < 0.05$.

Min/week, minutes per week.

among states with the highest rates of childhood obesity (Kentucky 19.7% and Tennessee 20.5% in 2011).[25] Likewise, in the study sample, the mean NEWS-Y score for proximity to recreational facilities for JBLM families was 0.44 SD units higher than the mean for Fort Campbell families. One of the items in this subscale was proximity to a large public park: 34% of families at JBLM reported having a large public park within a 10-minute walk of their residence versus only 20% of families at Fort Campbell. Therefore, when military personnel are assigned to such diverse parts of the country, it creates potentially exogenous variation in their neighborhood environments. However, the results are not driven entirely by installation or geographic differences, because fixed-effects models yielded similar results. These models were not reported as our main models because they use *within*-installation (or region) variation in environments, which is more likely to be confounded by residential selection than variation *across* installations.

Study findings suggest that some features of the neighborhood environment were associated with children's PA, although the specific features that mattered differed for off- versus on-post families. In off-post families, proximity to recreational facilities mattered most. A recent study by Tappe and colleagues[26] that examined the association between parent-reported NEWS-Y subscale scores and children's PA in Seattle/King County and San Diego County found that children's overall PA, whether measured using parent reports or accelerometers, demonstrated a significant positive association with proximity to recreational facilities, but not with other features of the environment. de Vet and colleagues,[27] who conducted a recent review of reviews, also found that availability of and proximity to parks and exercise facilities, measured both objectively and subjectively, were positively related to youth PA. What was most striking was that proximity to recreational facilities was such a consistent finding despite significant variation in the samples, measures, and methods employed in the studies.

The negative association of street connectivity with children's PA in off-post families is also consistent with previous literature. In contrast to adults, previous studies among children suggest that neighborhoods with low street connectivity might have cul-de-sacs or low-traffic areas that are better suited for children's outdoor play.[2]

Crime safety, which has been found to have inconsistent associations with youth PA in previous studies,[2] seemed to matter for children living on-post. This is somewhat surprising given that installations have significant security, but might be explained by residential selection (*i.e.*, families most sensitive to safety might choose to live on-post or restrict outdoor PA). Residential density and land-use mix, which have been found to have consistent associations in previous studies, did not appear to matter in the present study.

Overall, findings for off-post families are more consistent with previous literature, which is not surprising given that those families are exposed to similar environments as the general population.

The results showed no measureable association between NEWS-Y subscales and children's BMI. Insufficient exposure to the neighborhood environment is unlikely to explain the null findings for BMI given that families' median length of stay at their current installations was 34 months. Though speculative, a potential explanation might be that more-walkable neighborhoods also offer greater access to food environments, including unhealthy food (*e.g.*, fast food outlets), which might lower diet quality, thereby countering any benefits from increased PA. Future research should examine whether neighborhood walkability is associated with diet in order to gain a complete picture of how neighborhood environments relate to obesity.

Limitations

The study's findings should be interpreted in light of potential limitations. First, the study outcomes are based on children's self-reports. While self-reported outcomes might raise concerns regarding potential measurement error, their use is common in the literature, especially in larger, geographically dispersed samples.[2] As described earlier, military families in the study sample were dispersed across 12 army installations around the country. Such geographic spread provided significant variability in the environments. However, conducting objective measurements of PA and BMI among such a dispersed sample is prohibitively expensive, hence the reliance on self-reported measures. Second, our study uses parent-reported measures of the neighborhood environment instead of objective measures. Though objective measures may be preferred because of their accuracy and reliability, evidence from studies that collect both perceived and objectives measures for the same individuals suggests that perceived measures may be more strongly related to PA than objective measures, although possibly owing to bias in the former.[28,29] Indeed, sociological and psychological research suggests that individual perceptions are derived from filtering objective characteristics through standards of evaluation, which are based on past experiences, aspiration levels, adaptation processes, and individual personality characteristics.[30] Therefore, perceived and objective measures need not be viewed as alternate measures of a single construct, but rather two inter-related, but separate, constructs. The NEWS-Y scale was developed by Saelens and colleagues[18] and is one of the most widely cited and validated scales for perceived measures of neighborhood environment. The various NEWS subscales have been shown to correlate well with objective measures of the environment[20] and have been adapted for use in other countries.[31] Importantly, the use of existing validated scales such as the NEWS-Y allows direct comparison across studies. This is an important issue because inconsistencies in environmental measures (*e.g.*, studies often develop their own measures) have been cited in review

articles as a major hurdle to synthesizing the literature.[2,27] Third, military life has unique features (*e.g.*, relocations and deployments), which may influence the generalizeability of the findings. Finally, whereas the installation assignment is potentially exogenous, choice of residence around a given installation may not be and so concerns about residential selection cannot be eliminated.

Conclusions

Utilizing unique variation in neighborhood environments generated by the military's installation assignments, this study finds that some features of the neighborhood environment may be associated with children's PA among military families. The specific features that matter differ for on- versus off-post families. This suggests that efforts aimed at increasing children's PA among military families should take into account these differences and develop tailored programs.

Author Disclosure Statement

No competing financial interests exist.

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