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Physically Constructed and Socially Shaped: Socio-Material Environment and Walking for Transportation in Later Life

YANG LI

RESEARCH PAPER
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Abstract

The predictive power of three intersecting environmental dimensions on late-life walking was investigated: built structures, social infrastructure, and social capital, conceptually based on the ecological framework of place within a life course perspective, which posits that a living environment is simultaneously a physical place, a social place, and a set of social bonds. Multilevel models were used to examine the extent to which environments defined as interactions of the social and material environmental dimensions reliably predict walking for transportation among U.S. adults aged 60 or older in the 2015 National Health Interview Survey (n=11,180). Random intercepts representing 221 environments showed an intraclass correlation of 21%, indicating high levels of between-environment variance in walking. Social infrastructure had the highest predictive power for walking, followed by material structures and social capital. Synergistic interventions that incorporate the intersecting nature of the socio-material environment may be most effective in promoting physical activity in later life.

Title

Author
Yang Li

Author's affiliation
LIVES Centre, University of Lausanne

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Correspondance to
yang.li@unil.ch

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1. Introduction

Engaging in physical activity provides a myriad of health benefits for older adults (Taylor et al., 2004). Walking, the most common form of physical activity, contributes to cardiovascular, musculoskeletal, and psychosocial health (Callow et al., 2020; Soares-Miranda et al., 2016; Taylor et al., 2004), enhanced quality of life (Fisher & Li, 2004), and decreased mortality risks among older adults (Landi et al., 2008). Yet, more than half of adults aged 65 or older in the United States fail to meet the federal physical activity guidelines, with declining levels of physical activity among older cohorts (Centers for Disease Control and Prevention, 2018).

The multitude of health benefits associated with walking and the high levels of physical inactivity among older adults have galvanized research to better understand the potential intervention pathways to promote walking in older populations. In particular, research has examined modifiable attributes in the environment that incentivize walking or help eliminate barriers to walking among older adults (Barnett et al., 2017; Taylor et al., 2004), indicating that safe, accessible, and pedestrian-friendly neighborhoods with well-maintained pavements motivate walking in later life (Barnett et al., 2017).

Despite a substantial literature on the material dimensions of the environment, prior research largely neglects the social dimensions of the environment and, in particular, the interactions between the material and social dimensions of the environment relating to older adults' walking activity. This limits our understanding of the potential intervention mechanisms through which physical activity may be incentivized, because each living environment in reality consists simultaneously of the material and social dimensions that could potentially interact to shape individual health behaviors (Li et al., 2005; Moore, 2014; Scharlach, 2017). An environment with well-maintained sidewalks, for instance, may lack access to social settings such as libraries or churches that would motivate people to go outside and interact with others, which may in turn limit walking as people in this given environment lack the incentive to walk to a social space to engage in social exchanges or foster social contacts. This gap in the literature restricts synergistic and multilevel interventions from being developed to promote walking – interventions that target not only built material structures but also their intersections with the social environment (e.g., social infrastructure and social bonds). The present study addresses this gap in the literature by investigating the role of the social environment in walking and the extent to which socio-material environmental interactions shape older adults' walking activity.

1.1 Ecological Framework of Place

The ecological framework of place helps to explain the role of socio-material environmental interactions in older adults' walking activity. The early ecological model of aging (Lawton, 1982) suggests that behaviors and outcomes are conditional upon contextual processes that interact with individual competences in the environment. Building upon early theories, the ecological framework of place within a life course perspective (Moore, 2014) posits that our lives are shaped by living spaces that are simultaneously a physical place, a social place, and a set of social bonds that interact and interpenetrate to confer meaning on spaces. This ecological framework of place thus transcends the meaning of space to include not just the physical material structures such as buildings and streets (e.g., sidewalks, trails), but also social settings where communications and exchanges take place (e.g., libraries, churches), and social relationships that reflect the bonds and interdependencies (e.g., trust) among members in a given living space. In other words, behaviors are embedded in environments that are concurrently "physically constructed" and "socially shaped" (Wahl & Lang, 2004).

In the context of walking and physical activity, the ecological framework of place suggests that environmental motivators and barriers related to walking may be material, social, or socio-material in nature, whereby different dimensions of the environment *combine* to shape behaviors of walking. For example, the material environment may interact with psychosocial factors to shape older adults' physical activity: older people living in more socially supportive environments tend to engage in more frequent walking than those living in less supportive environments, despite similar walkability as represented by material structures (Carlson et al., 2012). Still, qualitative evidence from 'longevity villages' in the Mediterranean suggests that many adults remain physically active at older ages (Tourlouki et al., 2010), frequently walking to social settings (e.g., "kafenio", or coffee house in Greece) or local stores and services to establish social contacts and engage in social activities, despite living in mountainous terrains where grounds are often uneven or unpaved (Legrand et al., 2021). Although material environmental motivators for walking have been studied extensively (Barnett et al., 2017; Taylor et al., 2004), little is known about the role of the social environment and the extent to which socio-material environmental interactions shape older adults' walking activity (Leung & Chung, 2020).

The present study considers two aspects of the social environment in relation to walking: social infrastructure and social capital, in addition to the material environmental dimension. Social infrastructure is defined as places and settings that shape the way people interact, particularly through local, face-to-face exchanges which form the foundations of a social life (Klinenberg, 2018). Examples of social infrastructure include shops, cinemas, libraries, churches, and parks (Klinenberg, 2018). Social infrastructure may incentivize walking by providing opportunities for social interaction (e.g., going to a church) or serving as destinations that enable incidental social contact (e.g., going to a supermarket), which is particularly valued by older adults who have reduced social contact after retirement (Mercado & Páez, 2009; Nathan et al., 2012). Social capital pertains to elements of social relationships that foster collective action for common benefit, including, for example, trust among members of a community and the feeling that one can get help from neighbors (Coleman, 1988; Ehsan & Spini, 2020; Kawachi, 1999; Lochner, Kawachi, & Kennedy, 1999). Social capital may incentivize physical activity through diffusion of healthy behavioral norms or heightened sense of safety in the community (Lindström, 2011), while social capital may also foster normative climates (Szreter & Woolcock, 2004). Although social infrastructure is not the same as social capital, the former may facilitate the development of the latter through communication and interactions (Klinenberg, 2018).

Based on the ecological framework of place within a life course perspective, therefore, the present study conceptualizes living spaces as "environments" constructed based on combinations of contextual attributes that cut cross three intersectional environmental dimensions: material structures, social infrastructure, and social capital (**Figure 1**). Employing innovative epidemiological methods, the study goes beyond the conventional approach by situating individuals within their relevant intersecting environmental classifications and quantitatively examining the role of socio-material environmental interactions in shaping older adults' walking activity. To illustrate, an example intersection may be an environment where people have no access to sidewalks, libraries or churches, but can walk to parks and other places for relaxation, and where neighbors do offer help and have trust among one another. This research addresses two focal questions: (1) To what extent are disparities in walking explained by intersectional environmental dimensions that encompass material structure, social infrastructure, and social capital? (2) How much of the total between-environment variation in walking is attributable to intersectional environmental interaction? The study identifies the intersectional dimensions with the highest predictive power for walking along with the specific environments where older adults are most likely to engage in walking, offering precise and targeted evidence for multilevel interventions to promote walking in later life.

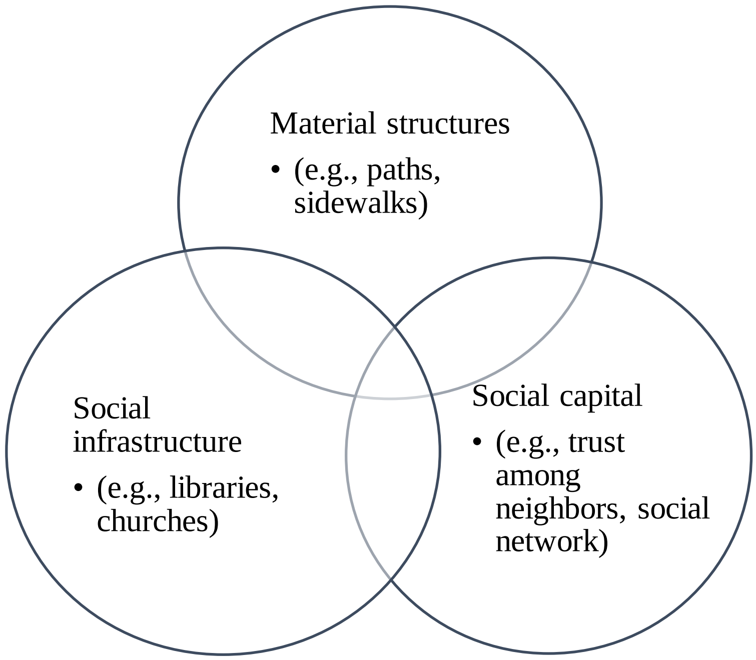

Figure 1: Socio-material environment for older adults' physical activity

2. Methods

2.1 Data

Data were obtained from the 2015 National Health Interview Survey (NHIS), a nationally representative, in-person household survey of the non-institutionalized civilian US population (National Center for Health Statistics [NCHS], 2016). Data on walking and perceived environmental attributes were obtained from the Physical Activity section of the Cancer Control Supplement, a component of the 2015 NHIS. In the Physical Activity section, all sample adults were queried about walking for transportation in the past 7 days as well as walkability of their communities – a new feature of the 2015 NHIS (NCHS, 2016). Data for demographic controls were obtained from the Sample Adult core file of the 2015 NHIS. Sample weights for the 2015 NHIS were based on the 2010 Census population estimates (NCHS, 2016). The NHIS has been approved by the Research Ethics Review Board (ERB) of the National Center for Health Statistics and the U.S. Office of Management and Budget (NCHS, 2016). All NHIS respondents provided oral consent prior to participation (NCHS, 2016).

2.2 Measures

Outcome. Walking for transportation in this study is defined as engaging in at least one 10-minute period of walking to reach a destination in the past 7 days at the time of survey (Ussery et al., 2017) and was assessed using the following survey question: "During the past 7 days, did you walk to get some place that took you at least 10 minutes?" Respondents who provided affirmative responses were classified as walkers, consistent with Ussery et al. (2018).

Environmental dimensions. *Material structures* (Pikora et al., 2003) were assessed using three questions: "Where you live, are there roads, sidewalks, paths or trails where you can walk?"; "Where you live, do most streets have sidewalks?"; " Are there bus or transit stops that you can walk to?" *Social infrastructure* (Klinenberg, 2018) was assessed using three questions: "Where you live, are there shops, stores, or markets that you can walk to?"; "Are there places like movies, libraries, or churches that you can walk to?"; "Are there places that you can walk to that help you relax, clear your mind, and reduce stress?" *Social capital* (Ehsan & Spini, 2020; Kawachi, 1999) was assessed using two questions asking respondents whether "people in the neighborhood can be trusted" and whether "people in the neighborhood help each other". All responses were coded dichotomously: 1="Yes", 0 = "No" or "Don't know" for responses to questions on material structures and social infrastructure, and 1= "Somewhat agree" or "Definitely agree", 0 = "Somewhat disagree" or "Definitely disagree" or "Don't know" for responses to questions on social capital, consistent with Omura and colleagues (2020).

Demographic controls. The study controlled for age, gender, education, race and ethnicity status, based on prior research suggesting that these attributes were consistently associated with physical activity in later life (Barnett et al., 2017; Taylor et al., 2004).

In total, 256 intersectional "environments" were created based on the cross-classification of eight dichotomously coded environmental attributes that encompass material structures, social infrastructure, and social capital, as indicated above. 221 environments had at least 1 respondent aged 60+. The average number of respondent aged 60+ per environment was 51. Thus, the final analytical sample consisted of 11,180 adults aged 60 or older nested within 221 environments.

2.3 Analytic strategy

To estimate the predictive power of intersectional environments on walking, I used the multilevel analysis of individual heterogeneity and discriminatory accuracy (MAIHDA), a set of multilevel models that partition the total variance into between-strata and within-strata variances (Evans et al., 2018; Merlo, 2018). This innovative approach to model intersectional contextual attributes and health inequities (Merlo, 2018) is shown to have important advantages over conventional fixed effect approaches, including precision-weighted estimates, model parsimony, ease of interpretation, and reliable estimates for strata with small sample sizes, relative to the multivariate approach (Evans et al., 2018). Importantly, it allows for an ecological consideration of health inequities by partitioning the total variance between micro- (individual) and meso- (contextual) levels and situating individuals in their corresponding intersectional environments (Evans et al., 2018).

The analysis was carried in three steps. First, each individual was nested within their relevant environmental intersection, and estimates random effects at the intersectional category level. Second, to understand the relative predictive power of each intersectional dimension, I used the MAIHDA technique and analyzed the proportional change in variance between a null model and the model with an added dimension of interest (e.g., social capital) (Sochas, 2020). The larger the proportional change in the random intercepts' variance between the two models, the more predictive power that added dimension has. Third, intersectional interaction was calculated as the difference between total effect (additive and interactive) and the main effect (additive only) (Fisk et al., 2018), where additive reflects the accumulation of effects and interactive effects capture mutual reinforcement (Evans et al., 2018). The theoretical foundation, empirical strategies and advantages of this technique have been documented in the social epidemiological literature (Evans et al., 2018; Merlo, 2018; Persmark et al., 2019; Sochas, 2020).

3. Results

Table 1 reports descriptive characteristics of the study sample. Overall, 24% of adults aged 60 years or older in the sample engaged in at least one 10-minute period of walking for transportation in the past 7 days at the time of survey. Forty-six percent of the sample were men, and 54% were women. Mean age was 70. Approximately 43% of the sample obtained high school education or less, while 57% attained college education or more. In terms of race and ethnicity, about 77% of the sample were non-Hispanic white, 10% non-Hispanic black, 4% non-Hispanic Asian, 1% non-Hispanic other race, and 8% Hispanic (any race).

Table 1 also shows perceived environmental attributes among sample respondents. In terms of material structures, 78% reported that there were roads, paths or trails they can walk to; 41%

reported that there were bus or transit stops they can walk to; 51% reported that most streets had sidewalks. For social infrastructure, 62% of the sample reported that there were places that they can walk to that help them relax and reduce stress (e.g., parks); 44% reported that there were shops, stores, or markets that they can walk to; 35% indicated that there were movies, libraries, or churches that they can walk to. For social capital, 84% of the sample indicated that people in the neighborhood can be trusted; 81% reported that people in the neighborhood help each other.

Table 1: Study sample characteristics

	Mean or %
Walked for transportation in past 7 days (Yes/No)	23.8%
Material structure	
Paths and trails	77.9%
Bus and transit stops	40.8%
Sidewalks	51.3%
Social Infrastructure	
Place to relax (e.g., parks)	61.5%
Shops and markets	44.2%
Libraries, cinemas, churches	35.2%
Social Capital	
Trust neighbors	83.6%
Neighbors offer help	81.3%
Demographic controls	
Gender	
Male	45.6%
Female	54.4%
Age (60+): Mean (SD)	70.4 (7.7)
Educational attainment	
High school or less	43.1%
College or more	56.9%
Race/ethnicity	
Non-Hispanic white	76.9%
Non-Hispanic black	9.7%
Non-Hispanic Asian	4.3%
Non-Hispanic other	0.7%
Hispanic	8.3%

N = 11,180. Results based on weighted data using stratification weight.

Table 2 provides results for multilevel models on intersectional environment dimensions and walking for transportation. Results showed that social infrastructure had the highest predictive power for walking, given that the inclusion of social infrastructure in the additive part of the model reduced the random intercept's variance by 90.6% (Model 9), relative to the null model (Model 1) where the additive effects of environment dimensions were not considered. By contrast, material structures and social capital had relatively lower predictive power for walking: their inclusion in the additive part of the model reduced the random intercept's variance by 62.1% (Model 5) and 23.6% (Model 12), respectively, relative to Model 1. When all dimensions were included (Model 14) in the additive part, the random intercept's variance was reduced by 94.5%. This means that 5.5% of the between-environment variation remains unexplained by the additive effects, but was captured by intersectional interaction, and is part of an initially relatively large total variance (ICC = 21.2%, Model 1), indicating the high levels of variability in walking across environments. The non-additive patterning captured by intersectional interaction suggests that unique combinations of environment dimensions interacted to shape walking.

Table 2: Multilevel analysis of walking for transportation among older adults nested within 221 socio-material environments (binomial logistic random intercepts models)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Material structures														
Paths, trails		2.54 (1.87, 3.44)			1.35 (1.02, 1.79)									1.11 (0.90, 1.37)
Transit stops			2.74 (2.22, 3.38)		2.01 (1.61, 2.51)									1.16 (0.99, 1.37)
Sidewalks				2.61 (2.08, 3.27)	1.58 (1.24, 2.01)									1.16 (0.98, 1.37)
Social infrastructure														
Place to relax						3.22 (2.57, 4.04)			1.80 (1.52, 2.13)					1.60 (1.36, 1.87)
Shops, markets							3.37 (2.76, 4.12)		1.98 (1.66, 2.36)					1.67 (1.41, 1.99)
Libraries, cinemas, churches								2.84 (2.36, 3.42)	1.51 (1.27, 1.78)					1.35 (1.15, 1.59)
Social capital														
Neighbors offer help										2.53 (1.93, 3.32)		1.81 (1.35, 2.42)		1.09 (0.91, 1.31)
Trust neighbors											2.76 (2.08, 3.67)	2.03 (1.49, 2.76)		1.21 (1.00, 1.46)
Demographic controls													(a)	(a)
Between-environment variance	0.88	0.72	0.42	0.54	0.34	0.42	0.27	0.30	0.08	0.73	0.72	0.68	0.77	0.05
ICC (%)	21.17	17.86	11.27	14.14	9.25	11.23	7.49	8.47	2.47	18.16	17.93	17.03	19.03	1.45
PCV (%)	Ref.	-19.03	-52.71	-38.70	-62.07	-52.88	-69.85	-65.56	-90.57	-17.41	-18.65	-23.59	-12.49	-94.52

ICC = intra-class correlation. PCV = proportional change in variance. Regression estimates: Odds ratios and 95% CI are reported.
Note (a): demographic controls include age, gender, educational attainment, and race/ethnicity.

Which living environments predict high and low probabilities of walking? **Table 3** reports the predicted probability of walking by environment based on intersectional environment dimensions. For purpose of illustration, 10 environments each with the highest and lowest predicted probabilities are shown. There are wide disparities in the predicted probability of walking by combined environment dimensions that include material structures, social infrastructure, and social capital. Older adults living in an environment where all eight environment dimensions or motivators are present have the highest probability (41%) of walking for transportation. At the other end of the spectrum, older adults who live in an environment without any of the material or social dimensions have the lowest probability (6%) of walking to reach a destination. In addition, older adults living in environments with at least 5 out of the 8 dimensions have higher than 30% probability of engaging in walking to reach a destination, compared to environments with less than 3 environment dimensions or motivators where older adults have less than 10% probability of walking for transportation.

Table 3: Predicted probability of walking for transportation among older adults in socio-material environments (10 highest and 10 lowest)

Environment dimensions N	Path & Trails	Sidewalk	Transit Stops	Shops & Markets	Parks, place to relax	Library, Cinema, Church	Neighbors offer help	Trust Neighbors	Walking pred. prob
8	Y	Y	Y	Y	Y	Y	Y	Y	0.410
7	Y	Y	Y	Y	Y	Y	N	Y	0.397
6	Y	Y	Y	Y	Y	Y	N	N	0.375
7	Y	N	Y	Y	Y	Y	Y	Y	0.367
6	Y	N	N	Y	Y	Y	Y	Y	0.359
6	Y	Y	Y	Y	Y	N	N	Y	0.355
7	N	Y	Y	Y	Y	Y	Y	Y	0.351
6	Y	N	Y	Y	Y	Y	N	Y	0.330
5	Y	N	N	Y	Y	Y	N	Y	0.329
5	N	Y	Y	Y	Y	Y	N	N	0.328
1	N	N	N	N	N	N	Y	N	0.103
3	Y	N	Y	N	N	N	Y	N	0.095
1	N	Y	N	N	N	N	N	N	0.095
2	N	N	N	N	N	N	Y	Y	0.094
2	Y	N	N	N	N	N	Y	N	0.094
1	N	N	Y	N	N	N	N	N	0.093
1	N	N	N	N	N	Y	N	N	0.093
2	N	Y	N	N	N	N	N	Y	0.092
1	Y	N	N	N	N	N	N	N	0.088
0	N	N	N	N	N	N	N	N	0.057

Y=Yes, N=No. Predictions are expressed as probability. Shading: green = higher probably of walking, red = lower probability of walking.

4. Discussion

Although the built environment and walking in later life have been studied extensively, very little is known about the role of the social environment and the extent to which socio-material environmental interactions shape older adults' walking activity. The present study, employing a novel and innovative modeling technique to quantitatively examine environmental interactions with respect to older adults' walking for transportation, moves beyond the conventional multivariate approach by situating individuals in intersectional "environments" created based on cross-classified environment dimensions to quantitatively examine the role of socio-material environments in shaping older adults' walking behavior.

Drawing from the ecological theory framework of place (Moore, 2014), which posits that living environments are *concurrently* "physically constructed" and "socially shaped", this study looks at the extent to which *intersectional* environment dimensions *combine* to predict the behavior of walking. In particular, I investigated the extent to which disparities in walking for transportation were explained by intersectional environment dimensions that encompass material structures, social infrastructure, and social capital, and which dimensions had the strongest predictive power for walking. I found that social infrastructure had the strongest predictive power for walking for transportation, followed by material structures and social capital, which had relatively lower predictive power for walking. I also found that the additive effect of all dimensions explained 94.5% of the between-environment variance, leaving 5.5% of the between-environment variance unexplained but captured by the interaction effect, suggesting that unique combinations of socio-material environment dimensions interacted to shape walking. Given that the NHIS survey asked respondents whether they can access some places in the material environment, the items of access may be influenced by normative aspects related to walking. Potential endogeneity from these self-reported measures of walking should be noted. The correlations table (Annex 1) shows that access to all environmental dimensions are positively correlated with walking and that aspects of social infrastructure are positively correlated with the material environment. It should also be noted that the interactive effect captured was small portion of the total between-environment variance, but nonetheless non-trivial.

Few studies have jointly investigated the social and material environment dimensions relating to walking in later life, making it difficult to compare the results from this study to that in prior literature. Nonetheless, a couple of existing studies on late-life physical activity incorporating the social and built environment reached similar conclusions. First, the present finding that the social environment, including social capital and especially social infrastructure, motivate walking in later life concur with qualitative evidence using “walk-along interviews” near the Belgian cities of Ghent, Antwerp, and Halle (Van Cauwenberg et al., 2012), which found that older adults were encouraged to walk by opportunities for social contacts, in addition to access to shops and services, and well-maintained sidewalks. The present finding on the socio-material environmental interactions for walking corroborate quantitative evidence from the U.S. cities of Baltimore and Seattle, which found that the psychosocial and built environment dimensions interacted to incentivize walking in later life (Carlson et al., 2012).

Importantly, the study identifies not only the environmental dimensions that have the highest predictive power for walking for transportation, but also the specific intersectional socio-material environments where older adults are most likely to engage in walking, offering evidence for more targeted community-based interventions to promote physical activity in later life. While it is not surprising that an environment with all socio-material dimensions that include material structures, social infrastructure, and social capital show the highest probability of its older residents engaging in walking for transportation, what is particularly informative for urban planners and policymakers is the finding that environments with at least five out of the eight socio-material dimensions show a reasonably high probability of their older residents engaging in walking, and, crucially, almost all these five dimensions include social infrastructure. Social infrastructure refers to places where people interact (e.g., libraries) through face-to-face exchanges that form the foundations of a social life (Klinenberg, 2018). The opportunities for social contact in these social places is particularly valued by older adults who have reduced social contact after retirement (Mercado & Páez, 2009; Nathan et al., 2012).

A few limitations merit discussion. Given data limitations, the dimensions used to construct intersectional environments were limited to material structures, social infrastructure, and social capital. Future research should examine the role of other dimensions, for example, the digital environment as it intersects with the socio-material environment in predicting late-life physical activity within an ecological framework (Satariano & Scharlach, 2014). The environmental attributes in this study were self-reported, perceived conditions for walking, and may not always objectively reflect the actual environmental conditions. Given data limitations, measures of social capital were restricted to neighborly support and trust, and did not capture aspects such as social network. Where data permit, future research should examine other aspects of social capital and use objectively measured environmental conditions to investigate the role of socio-material environment interactions in explaining the disparities in late-life walking for transportation. No causal interpretations should be made from this cross-sectional study.

Despite these limitations, the present study, conceptually grounded in the ecological framework of place, establishes the extent to which intersectional socio-material environment dimensions predict late-life walking for transportation, and identifies which dimensions of the socio-material environment have higher predictive power for walking. Given the multitude of health benefits associated with walking and the high levels of physical inactivity among U.S. older adults, and against the backdrop of growing effort to promote physical activity by identifying amendable attributes in the environment to incentivize walking for older adults, this research offers evidence for targeted and multilevel interventions to promote walking in the community. Finally, this research represents a methodological contribution to the study on intersectional environment and physical activity by capturing the ecological connections between individuals and the intersectional environmental contexts within which they are embedded.

5. Conclusion

Understanding the role of socio-material environment interactions in predicting late-life walking activity helps to develop synergistic and multilevel interventions to promote physical activity in older populations. Programs that are designed to enhance the material structures related to walking (e.g., pavements, trails) may be more effective for older populations in social settings that motivate physical activity, including not only proximity to social infrastructure (e.g., libraries, churches) but also good social capital (e.g., trust). Equally, walking-promotion through fostering social connections and exchanges may be more effective where efforts are made to enhance the material structures of the environment, including safe and well-maintained sidewalks and pavements, as well as bus and transit stops that are accessible by foot.

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Annex 1. Correlations among survey variables

Measure	1	2	3	4	5	6	7	8	9
1. Walking for transportation	--								
2. Path and trails	0.13	--							
3. Transit stops	0.17	0.33	--						
4. Sidewalk	0.15	0.48	0.52	--					
5. Parks, place to relax	0.19	0.39	0.28	0.28	--				
6. Shops and markets	0.20	0.34	0.57	0.48	0.36	--			
7. Library, cinema, church	0.19	0.29	0.47	0.41	0.36	0.61	--		
8. Trust neighbors	0.04	0.11	-0.06	-0.01	0.13	-0.02	0.00	--	
9. Neighbors offer help	0.04	0.11	-0.02	0.01	0.12	0.00	0.02	0.59	--