

Associations between perceived proximity to neighborhood resources, disability, and social participation among community-dwelling older adults: Results from the VoisiNuAge Study

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Abstract

Objective—To examine the associations between perceived proximity to neighborhood resources, disability and social participation, and the potential moderating effect of perceived proximity to neighborhood resources on the association between disability and social participation among community-dwelling older women and men.

Design—Cross-sectional.

Setting—Community.

Participants—Older adults (296 women; 258 men).

Interventions—Not applicable.

Main outcome measures—Data on age, education, depressive symptoms, frequency of participation in community activities, perceived proximity to neighborhood resources (services and amenities), and functional autonomy in daily activities (disability) were collected by interviewer-administered questionnaire.

Results—Greater perceived proximity to resources and lower level of disability were associated with greater social participation for both women ($R^2=0.10$; $p<0.001$) and men ($R^2=0.05$; $p<0.01$). The association between disability and social participation did not vary as a function of perceived

proximity to neighborhood resources among women (no moderating effect; $p=0.15$). Among men, however, greater perceived proximity to neighborhood resources enhanced social participation ($p=0.01$), but only among those with minor or no disability.

Conclusions—Future studies should investigate why perceived proximity to services and amenities is associated with social participation among older men with minor or no disabilities and with women overall but has no association among men with moderate disabilities.

Keywords

neighborhood environment; moderator; gender; community participation

Social participation is a key modifiable dimension of successful aging¹ and a determinant of favorable health outcomes.^{2,3} Defined as the person's involvement in social activities² that provide social interactions within the community or society,⁴ social participation results from the interaction between personal and environmental factors.⁵ Social participation declines as a function of the 'normal' aging process⁶ and differs across women and men.^{6,7} Disability, defined as any disturbance resulting from an impairment in the capacity to perform a physical or mental activity considered normal for a human being,⁵ is one of the most powerful determinants of social participation.⁸⁻¹¹ As an intrinsic dimension of the person, disability reflects the execution of an activity by the individual without considering the impact of the environment.^{5,12}

Environmental factors are also important¹³ since interventions targeting the environment may have a greater impact on an individual's social participation than those targeting individual factors.¹⁴ The environment is defined by the physical and social environment in which people live, a concept difficult to operationalize and investigate empirically.¹⁵ Examining neighborhood living conditions can be useful in narrowing the spatial focus on the environment.¹⁶ Understanding the role of subjective perceptions is of particular importance for rehabilitation professionals who consider clients' perceptions and knowledge about resources when working on improving or maintaining social participation.

As they influence the degree of person-environment fit,¹⁶ neighborhood environments may have differential influences on social participation among individuals with and without disability. Environmental buoying (facilitators from the environment, such as resource availability, engagement opportunities, and social support) can support personal competencies which can, in turn, enable greater social participation.^{14,16} In contrast, environmental pressures (obstacles in the environment, such as physical barriers and resource inadequacy) can challenge and exceed personal competencies, resulting in the restriction of social participation. Support from the social environment¹⁶ and resource accessibility in the physical environment¹² may be seen as imperatives to help individuals with disabilities living in the community.¹⁶

Among supportive neighborhood characteristics, living in close proximity to services,¹⁷ including access to food shopping, health services, banking and social/sports clubs, has been shown to be important in performing activities to meet daily needs. The presence of local resources may have an impact on the likelihood of initiating and maintaining social links

with community members.¹⁷ For someone with diminished physical endurance or ability to walk far, walking distance, or perceived walking distance between the home and resources might be critical. To our knowledge, the direct association of both perceived proximity to neighborhood resources and disability with social participation and the moderating effect of perceived resource proximity on the well-established association between disability and social participation have not been investigated.

Two propositions can be formulated with regard to associations between perceived proximity to neighborhood resources, disability, and social participation. First, there might be a main effect of closer perceived proximity to neighborhood resources. Indeed, environment^{8, 9, 18, 19} or, more specifically, closer perceived proximity to neighborhood resources, and disability can jointly and additively explain greater social participation. Previous research shows that older adults living in affluent areas were less likely to have low levels of social functioning independently of individual demographic and socioeconomic characteristics.²⁰ Individuals' perceptions of the area as neighborly and having good facilities were also independently associated with a higher likelihood of social activities²⁰ and well-being.²¹ As already mentioned, disability is a powerful determinant of social participation.⁸⁻¹¹

Second, closer perceived proximity to neighborhood resources might also moderate the association between disability and social participation. In other words, closer perceived proximity to neighborhood resources might encourage a person with physical disabilities to get out of the house and attend social events whereas less perceived proximity might serve as a further deterrent to an already high level of disability and thus become an insurmountable barrier to social participation. As a result, disability may further restrict social participation but only among those who perceive themselves as being far from neighborhood resources and not among those who perceive themselves as living close to resources. This second proposition is consistent with Glass and Balfour's model of neighborhood effects on aging,¹⁶ but has limited empirical support.

Since a better understanding of the processes by which neighborhood, and specifically perceived proximity to neighborhood resources, are related to social participation²¹ could improve the crafting of rehabilitation interventions, the main objectives of this study were to examine: 1) the association between neighborhood environment, specifically perceived proximity to neighborhood resources, and social participation above and beyond disability, and 2) the moderating effect of this neighborhood variable on the association between disability and social participation among older women and men living in an urban area. Since social participation differs across women and men^{6, 7} and moderating influences might also be gender-specific, analyses were performed separately for men and women.

Two research hypotheses were formulated: 1) greater perceived proximity to resources in neighborhood environments and a lower level of disability would be associated with greater levels of social participation, and 2) the negative association between disability and social participation would be weaker among persons with closer perceived proximity to neighborhood resources and stronger among persons with less perceived proximity to neighborhood resources (moderating effect).

Methods

Participants and data collection procedures

This cross-sectional study was conducted within the VoisiNuAge research initiative which merges the NuAge (Nutrition as a determinant of successful aging: the Quebec longitudinal study)²² databank with data from a geographic information system named MEGAPHONE.²³ The present investigation was based on participants still in the cohort at year 3 of follow-up who resided in the Montreal metropolitan area. Montreal is the largest urban area in Québec which provides high accessibility to diverse resources and has a high proportion (15.2% vs. 14.3%) of older adults and immigrants (30.8 vs. 11.5%) in comparison to the rest of Québec.²⁴ Participants included in this study had various levels of physical disabilities but good cognitive function. All participants signed an informed consent (approved by the Ethics Committees of the University Institutes of Geriatrics in Montréal [IUGM] and in Sherbrooke [IUGS]).

Variables and measurement tools

Social participation—The social portion of the “Elderly Activity Inventory Questionnaire”²⁵ and Statistics Canada’s Participation and Activity Limitation Survey²⁶ were adapted to assess social participation. Two questions were added to Statistics Canada’s Participation and Activity Limitation Survey and the response option ‘at least once a year’ was changed to ‘less than once a month’. The resulting 10-item scale addressed the frequency of involvement in social activities inside and outside the neighborhood: visiting family members/friends, engaging in a hobby outside your home, attending activities at a community/leisure center, shopping, going to the restaurant/pub/café, participating in a self-help or discussion group, going to a public library or cultural center, attending sports or cultural events, taking courses and volunteering.¹⁹ Response options were: ‘almost every day’, ‘at least once a week’, ‘at least once a month’, ‘less than once a month’ and ‘never’. These categories were converted into days per month (‘almost every day’: 20, ‘at least once a week’: 6, ‘at least once a month’: 2, ‘less than once a month’: 1, and ‘never’: 0). The total score represents the numbers of activity*days per month (sum of each item). The internal consistency of the scale as established through application of the principles of item-response theory was high (0.85).¹⁹

Perceived proximity to neighborhood resources—A series of questions developed elsewhere¹⁹ tapped into neighborhood living conditions and measured seniors’ perception of the proximity to neighborhood services and amenities (resources). Specifically, the proportion of services and amenities located within a five-minute walk of the participant’s residence was derived from a series of items assessing perceived walking time (in minutes) between the respondent’s residence and the nearest of 12 resources: grocery/food store, convenience/corner store, bank, pharmacy, community/leisure center, sports center, restaurant/bistro/café, library/cultural center, store/shopping center, church/place of worship, local health and social services clinic (CLSC)/medical clinic, and park. The reliability coefficient (Cronbach’s alpha) was previously reported to be 0.94¹⁹ and was 0.82 in this study.

Disability—The Functional Autonomy Measurement System (SMAF),²⁷ which is well known and used in the gerontology literature,²⁸ was used to estimate disability level. Based on epidemiological and clinical criteria,²⁹ a score of 15 is used to distinguish minor from moderate and severe disabilities. A difference of 5 points is considered clinically significant.³⁰ The scale shows high intraclass correlation coefficients (ICC) for test-retest (0.95) and interrater (0.75) reliability and good discriminant validity.³¹

Sociodemographic and clinical characteristics—Sociodemographic characteristics were assessed using a series of self-reported questions related to age, gender, education, marital status, living arrangement, housing situation, family income and perception of the extent to which income meets needs. History of past and current physical health was also considered (e.g. arthritis, circulatory problems and Parkinson's). Depressive symptoms were estimated with the Geriatric Depression Scale (GDS).³² In line with previous studies,³³ age, education, and depressive symptoms were used as control variables.

Analysis

The assumption of normality of all continuous variables was visually verified with histograms and statistically with the Wilk-Shapiro test. Since the distribution of social participation was positively skewed, it was square-root transformed. Although skewed, perceived proximity to neighborhood resources was not transformed since transformation did not improve its distribution. As a standard procedure in testing effect moderation,³⁴ perceived proximity to neighborhood resources and disability were centered around their gender-specific means. The potential moderating effect was tested by adding an interaction term to the model which was constructed through multiplication of the two main effects. All variables added in the model were continuous. Using SPSS Statistics 17.0, multiple regression analyses were performed in four steps separately for men and women: 1) testing the main effect of perceived proximity to neighborhood resources; 2) testing the main effect of disability level; 3) testing the moderating effect by adding the interaction term ; and 4) controlling for potential confounding effects (age, education and depressive symptoms). To improve interpretation,³⁵ results were presented with adjustments for potential confounding variables (Tables 3 and 4). Statistical adjustments were also performed for other series of covariates, and results were consistent with the current conclusions (Appendix 1 and 2). In addition to regression coefficients, p values and R² estimates, were reported to allow for assessment of the relative direction and magnitude of associations with each independent variable. The sign of the coefficient indicates the direction of the association whereas standardized regression coefficients allow for comparisons of the strength of associations across predictor variables. To allow for interpretation of interactions, graphic illustration of results was provided. Illustrations were constructed using regression formulae and representative values of both independent variables. No collinearity problem between the variables was observed using variance inflation factors and a residual analysis was performed to verify the adequacy of the regression assumptions.

Results

Participant characteristics

The sociodemographic characteristics of participants appear in Table 1. Women had a similar mean age to men. The majority of participants owned their dwelling, had between 2 and 4 diseases, and did not present depressive symptoms as estimated with the GDS. Compared to the women, the men were more likely to be married, have a higher level of education, and live with others while women were more likely to be widowed, have a lower level of education and live alone.

Social participation, perceived proximity to neighborhood resources, and disability

Women and men had similar levels of social participation (mean = 25.0 activity*days per month, SD = 14.4, min = 0 and max = 96 for women; mean = 24.0 activity*days per month, SD = 13.2, min = 3 and max = 74 for men) although the range was somewhat smaller for men. Women took more lessons or courses, but this was the only significant gender difference in activities ($p = 0.02$; data not shown). More than a quarter of services and amenities were perceived to be located within a five-minute walk of the participants' homes (women: range = 0–100%; men: range = 0–92%) and, except for parks ($p = 0.02$; data not shown), the results did not differ significantly according to gender. Finally, the participants' mean disability scores indicated minor disabilities with men having a higher mean level (mean = 7.1; SD = 4.5; range: 0–28; median = 7.0) than women (mean = 5.8; SD = 4.6; range: 0–37.5; median = 4.5). Although statistically significant, this difference was not clinically significant. About 4% of women and 7% of men had moderate disability levels.

Main effects of perceived proximity to neighborhood resources and disability

As shown in Tables 3 and 4, a higher perceived proportion of services and amenities available within 5 minutes' walk from home was associated with greater social participation. Specifically, for each five-unit increase in perceived proportion of services and amenities available within five minutes' walk from home, with other variables held fixed, social participation of women and men was, on average, greater by 5.0 and 3.1 activity*days per month, respectively. A lower level of disability was also associated with greater social participation in women but not men. Accordingly, for each five-unit increase in disability level (significant clinical change), with other variables held fixed, social participation of women was, on average, lower by 5.2 activity*days per month.

Moderating effect of perceived proximity to neighborhood resources

After controlling for age, gender and depressive symptoms, an additional significant moderating effect of perceived proximity to neighborhood resources on the association between disability and social participation was observed for men ($p = 0.01$; Table 4) but not for women ($p = 0.15$; Table 3). In other words, regardless of perceived proximity to neighborhood resources, disability bore the same association with social participation among women (Figure 1). For men, when neighborhood resources were perceived to be closer, greater disability was associated with less social participation (Figure 2). However, when men perceived that they were further from neighborhood resources, there was no association

between disability and social participation since social participation was systematically lower. In other words, perceived proximity to neighborhood resources was associated with greater social participation among men without disability and women overall, but not among men having moderate disabilities, who appeared to disengage from social participation.

Discussion

Results of this study show that closer perceived proximity to neighborhood resources was associated with greater social participation among men without disability and among women overall. Perceived proximity to neighborhood resources was however not associated with social participation among men with moderate levels of disability.

Disability level and perceived proximity to neighborhood resources as correlates of social participation

Results are consistent with previous reports^{8-11,17}. In a study with individuals who suffered a stroke,⁹ age, level of impairment, and disability explained a substantial part (53%) of the variance in social participation. A study³⁶ of individuals with spinal cord injury had similar findings. Other studies^{8, 9, 18-20} also support associations between environmental factors and social participation. For example, Richard and colleagues¹⁹ showed that, controlling for marital status and education, frequent walking episodes, higher vitality and general health, greater perceived proximity to key resources, and younger age were associated with greater social participation.

A positive influence of perceived proximity to resources appears plausible since social activities that were most frequently reported were visiting family members/friends, going shopping, going to the restaurant, pub or café, and practising a hobby outside the home. Walking to resources increases or maintains older adults' physical capacities and health, which might in turn increase the likelihood of social participation. However, disability level and perceived proximity to neighborhood resources only explained small percentages of the variance in social participation for women, and even smaller percentages for men. Reasons for the limited variance explained might include 1) small range of variation in disability scores, and 2) lack of consideration of a broad array of personal and environmental variables that extend beyond disability and neighborhood resources.

Although associations between these concepts have been identified, selected issues remain. For example, in the current study, substantial gender differences did not exist in frequency of engagement in social activities. Moreover, there are important differences in the operationalization of social participation³⁷ and the environment: some tools emphasize home participation or mobility assistive technologies and environmental modifications,¹⁸ while others, as in the present investigation, focus exclusively on community participation and resources available in the neighborhood.

Finally, the impact of study sample and design on results has been highlighted in previous literature³⁸ and requires further investigation. For example, fewer associations between environment and participation may be found when individuals are studied over time, i.e. a

specific study design, reflecting the fact that people may adapt to, or modify, their environment.¹⁸

Perceived proximity to neighborhood resources as a moderator for men but not for women

To our knowledge, this is the first report to present evidence of a moderating effect of perceived proximity to neighborhood resources on the association between disability and social participation for men but not for women. These results are not wholly consistent with theoretical models that propose a potentially buoying effect of user-friendly environments for seniors experiencing disability. Two explanations are plausible. First, it is possible that differing moderating effects might exist because of higher, although not clinically significant, disability levels observed for men in this study (greater statistical variation). Moreover, as perceived proximity to neighborhood resources and disability explain less of the variance in social participation, a moderating effect might be easier to observe for men than women.

A second explanation concerns differential engagement in social activities or relevance of environmental factors. As supported by previous³⁹ studies and compared to woman, older men without disability might engage in more informal social participation (e.g. interactions with friends rather than taking courses and volunteering), which is more strongly associated with the use of nearby resources. Men with moderate disabilities might use fewer resources in their neighborhood resulting in weaker effects. One longitudinal study showed that, unlike men, the frequency of women's involvement in leisure activities was less affected by decreased health.⁴⁰ Such differences might be explained by prior social participation habits,⁴¹ meaning of social activities⁴², different obligations and relevance of environmental factors. In the present study, more women lived alone and were single or widowed, they might have more social obligations (e.g. caring for and nurturing others⁴³) associated with perceived proximity to neighborhood resources than men and regardless of disability.

Implications for practice and research

Implications can be drawn from these results. First, public policy decisions affect land use and community design⁴⁴ which can influence access to local services, social participation,⁴⁵ and health.⁴⁶ To foster social participation among older adults, current trends that encourage the creation of large supermarkets far from people's homes requires rethinking. Second, important questions are raised including whether or not increasing proximity to resources or residential relocation closer to resources contribute to improving social participation of men and women? Finally, the following types of studies are warranted: 1) replication of differential main and moderating gender effects, and 2) exploration of other personal and environmental factors that might enhance social participation. Longitudinal designs as well as quasi-experimental designs would be of interest.

Study strengths and limitations

This study was carried out with a sample that may not be fully representative of older adults living in urban areas⁴⁷ since they had a more limited range of disability: Measures used in this study were self-reported. Other measures of the environment such as a geographic information system (GIS) might be useful. Finally, it is important to verify if: 1) the

associations found would differ according to geographic area (participants in this study lived in urban not rural areas, where accessibility to resources within a five-minute walk would differ greatly), and 2) community design interventions improving perceived proximity of neighborhood resources can increase the social participation of women and men.

Conclusions

These results show that perceived proximity to neighborhood resources moderates the association between disability and social participation among older men but not women. The association between disability and social participation of women did not vary as a function of perceived proximity to neighborhood resources. For men, greater perceived proximity to neighborhood resources enhanced social participation, but only in men with minor or no disabilities. Given the potential of understanding associations between neighborhood resources, disability, and social participation and the complex pattern of findings observed in this study, future research replicating and extending findings are warranted.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1

Participant characteristics

Characteristics	Women (n = 296)	Men (n = 258)	Differences
Continuous variables	<u>Mean (SD)</u>	<u>Mean (SD)</u>	<u>P-value</u>
Age	75.1 (4.2)	74.5 (4.0)	0.09
Geriatric Depression Scale	5.3 (4.7)	4.5 (3.9)	0.02
Categorical variables	<u>n (%)</u>	<u>n (%)</u>	<u>P-value</u>
Marital status			
Married/Common-law	109 (36.8)	185 (71.7)	< 0.001
Single (never married)	48 (16.2)	16 (6.2)	< 0.001
Divorced/Separated	21 (7.1)	23 (8.9)	0.43
Widowed	118 (39.9)	32 (12.4)	< 0.001
<i>Missing</i>		2 (0.8)	
Education			
2–11 years	131 (44.3)	93 (36.0)	0.06
12–13 years	56 (18.9)	39 (15.1)	0.26
14 or more years	109 (36.8)	126 (48.8)	< 0.01
Income < Low-income-cut-off (Yes)	75 (25.3)	33 (12.8)	< 0.001
<i>Missing</i>		2 (0.8)	
Living arrangement (alone)	145 (49.0)	50 (19.4)	< 0.001
<i>Missing</i>		2 (0.8)	
Housing situation			
Owner	171 (57.8)	174 (67.4)	0.01
Tenant	125 (42.2)	82 (31.8)	0.01
Other	27 (9.1)	14 (5.4)	0.11
Conventional residence (without services)	269 (90.9)	242 (93.8)	0.11
<i>Missing</i>		2 (0.8)	
Number of diseases			
0–1	45 (15.2)	53 (20.5)	0.10
2–4	156 (52.7)	141 (54.7)	0.61
5 or more	95 (32.1)	62 (24.0)	0.047
<i>Missing</i>		2 (0.8)	
Extent to which income meets needs			
Very well	137 (46.3)	140 (54.3)	0.07
Adequately	97 (32.8)	90 (34.9)	0.65
Not very well	11 (3.7)	9 (3.5)	1.0
Not at all	1 (0.3)	1 (0.4)	1.0

Table 2

Raw scores of main variables

Main variables	Women (n = 296)	Men (n = 258)	Difference
<u>Continuous variables</u>	<u>Mean (SD)</u>	<u>Mean (SD)</u>	<u>P-value</u>
Social participation (number of activity*days/month)	24.9 (14.1)	23.9 (13.2)	0.39
Perceived proximity to neighborhood resources (proportion of services and amenities within a 5 minute walk; %)	29.0 (23.1)	30.3 (24.5)	0.52
Disability [Functional Autonomy Measurement System (SMAF);/87]	5.8 (4.6)	7.1 (4.5)	0.001

Table 3

Unstandardized and standardized regression coefficients in the multivariate model estimating main and moderating effects of perceived proximity to neighborhood resources on the association between disability and social participation in women (n = 296)

Variable	Model 1			Model 2			Model 3			Model 4		
	Unstandardized β (standard error)	Standardized β	P-value	Unstandardized β (standard error)	Standardized β	P-value	Unstandardized β (standard error)	Standardized β	P-value	Unstandardized β (standard error)	Standardized β	P-value
Constant	4.79 (0.08)		< 0.001	4.79 (0.08)		< 0.001	4.80 (0.08)		< 0.001	6.17 (1.48)		< 0.001
Perceived proximity to resources	0.16 (0.03)	0.26	< 0.001	0.15 (0.03)	0.25	< 0.001	0.15 (0.03)	0.25	< 0.001	0.15 (0.03)	0.25	< 0.001
Disability (SMAF)				-0.06 (0.02)	-0.19	0.001	-0.05 (0.02)	-0.17	< 0.01	-0.04 (0.19)	-0.13	0.04
Interaction term (proximity to resources* disability)							0.01 (0.01)	0.08	0.19	0.01 (0.01)	0.08	0.15
Age										-0.02 (0.02)	-0.07	0.26
Education										0.04 (0.02)	0.10	0.07
Depressive symptoms (GDS)										-0.03 (0.02)	-0.11	0.05

SMAF: Functional Autonomy Measurement System

GDS: Geriatric Depression Scale

Model 1: Multivariate model testing the main effect of perceived proximity to neighborhood resources on social participation; $R^2 = 0.07$; F (1, 294) = 21.7 (p < 0.001)

Model 2: Previous model (1) but controlling for disability; $R^2 = 0.10$; F (1, 293) = 11.17 (p = 0.001)

Model 3: Multivariate model estimating the moderating effect of perceived proximity to neighborhood resources on the association between social participation and disability; $R^2 = 0.11$; F (1, 292) = 1.73 (p = 0.19)

Model 4: Previous model (3) but controlling for age, education and depressive symptoms; $R^2 = 0.13$; F (3, 289) = 2.87 (p = 0.04)

Table 4

Unstandardized and standardized regression coefficients in the multivariate model estimating main and moderating effects of perceived proximity to neighborhood resources on the association between disability and social participation in men (n = 258)

Variable	Model 1			Model 2			Model 3			Model 4		
	Unstandardized β (standard error)	Standardized β	P-value	Unstandardized β (standard error)	Standardized β	P-value	Unstandardized β (standard error)	Standardized β	P-value	Unstandardized β (standard error)	Standardized β	P-value
Constant	4.71 (0.08)		< 0.001	4.71 (0.08)		< 0.001	4.70 (0.08)		< 0.001	1.90 (1.62)		0.24
Perceived proximity to resources	0.09 (0.03)	0.17	< 0.01	0.09 (0.03)	0.17	< 0.01	0.01 (0.03)	0.18	< 0.01	0.10 (0.03)	0.19	< 0.01
Disability (SMAF)				-0.02 (0.02)	-0.07	0.29	-0.02 (0.02)	-0.08	0.22	-0.02 (0.02)	-0.07	0.30
Interaction term (proximity to resources* disability)							-0.01 (0.01)	-0.13	0.04	-0.02 (0.01)	-0.16	0.01
Age										0.03 (0.02)	0.10	0.12
Education										0.03 (0.02)	0.12	0.045
Depressive symptoms (GDS)										-0.04 (0.02)	-0.10	0.11

SMAF: Functional Autonomy Measurement System

GDS: Geriatric Depression Scale

Model 1: Multivariate model testing the main effect of perceived proximity to neighborhood resources on social participation; $R^2 = 0.03$; F (1, 256) = 7.61 (p < 0.01)

Model 2: Previous model (1) but controlling for disability; $R^2 = 0.03$; F (1, 255) = 1.11 (p = 0.29)

Model 3: Multivariate model estimating the moderating effect of perceived proximity to neighborhood resources on the association between social participation and disability; $R^2 = 0.05$; F (1, 254) = 4.26 (p = 0.04)

Model 4: Previous model (3) but controlling for age, education and depressive symptoms; $R^2 = 0.08$; F (3, 251) = 2.66 (p = 0.049)