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Social Integration of Older Adults in the Periphery of Israel in Two Settlement Types

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Abstract

The objective of the study is to examine which variables are connected to social integration of older people in their living settlement and whether the type of settlement is connected to the social integration of older adults, and to examine what variables function as mediators in the connection between the settlement type and social integration.

A convenience sample of 279 older adults aged 65 and over from urban and rural settlements have participated. Using bootstrap (moderation) method, we tested which variables moderate the relationship between settlement type and social integration.

The findings show that older adults who resided in rural settlements were more socially integrated into their living settlements compared to their counterparts who resided in urban settlements. The moderation analysis revealed that the effect of the settlement type on social integration was significant when there was no problem with outdoor mobility, but not when outdoor mobility was a problem, in both areas—rural and urban.

Social integration of older adults into their living settlements is highly connected to a number of living settlement attributes: a sense of belonging to the living settlements, familiarity with the physical settlement, and settlement characteristics (urban versus rural, a percentage of older adults, and amount of green spaces).

Keywords: rural settlements; social integration; older adults

1.0 Introduction

As life expectancy and lifespan increase steadily worldwide, older people live longer in their communities and settlements. As such, there has been increasing interest in environmental gerontology dealing with aging in place in the last decade (Wahl & Weisman, 2003), including the social integration of older adults in their settlements. One of the earliest works conducted in this field (Rowles, 1978) found that social integration of older people was affected by a variety of factors, including the characteristics of the geographic environment (e.g., residence settlement), how long they have lived in their settlement, their sense of belonging to the place where they live and their self-image. These factors still affect older adults' social integration (Vitman- Schorr, Iecovich, Alfasi & Shamaï, 2016).

Social integration is a key issue in old age (Levy & Langer, 1994, Vitman- Schorr, Iecovich & Alfasi, 2013) since one of the major problems for older adults is loneliness. Social integration can alleviate the devastating sense of loneliness and improve the quality of life of older adults (Cattan, White, Bond & Learmouth, 2005; Iecovich & Biderman, 2012). As Rosow (1967) has said: "The most significant problems of older people . . . are intrinsically social. The basic issue is that of their social integration" (p. 8). Marginalization of older adults is prevalent in many western countries and derives from negative attitudes and stereotypes against them (Comer, Britain & Bond, 2007; Matarese, Lommi, Pedone, Rosaria Alvaro & De Marinis, 2012) which may hinder their social integration in society. Social integration is an important factor for successful aging (Lehning, Smith, & Dunkle, 2015) and the well-being of older adults. In order to create an age-friendly environment/settlement (Davey, de Joux, Genesh, & Arcus, 2004; Gitlin, 2003; Kendig, 2003) where older adults have the opportunity to age in place, the social and the physical environment of the living settlement must be addressed. This notion is based on the ecological approach, whereby the socio-physical environment/settlement affects aging in place and quality of life (Byrnes, Lichtenberg, & Lysack, 2006; Vitman- Schorr, Iecovich, Alfasi & Shamai, 2016). In order to age in place, it is necessary to develop an appropriate physical infrastructure that includes accessible services and transportation to meet the special needs of older people (Alley, Liebig, Pynoos, Banerjee, & Choi, 2007), as well as to provide opportunities for social involvement (Lehning, Scharlach, & Dal Santo, 2010). Based on these ideas, the World Health Organization's (World Health Organization [WHO], 2007) has developed the age-friendly cities project whereby older people are actively involved in their environments. The project has already been implemented in over 500 of cities and communities across countries and is based on the removal of environmental barriers to enable independent living, safe environments/ settlements and social integration for older people in their communities.

The goals of this study were twofold: (1) to examine which variables are connected to the social integration of older people in their living settlement and whether the type of settlement is connected to the social integration of older adults; (2) to examine what variables function as mediators in the connection between settlement type and social integration. Specifically, it is hypothesized that in small rural settlements where social cohesion seems to be stronger, older adults will report higher social integration compared to urban settlements.

1.1 Social Integration in Old Age

The term 'integration' is commonly related to concepts such as "inclusion," "incorporation," and "combining" (Farlex Inc., 2010). Durkheim (1997) conceived of integration as interdependence or solidarity, where all parts of society work for a common goal. The term "social integration" is often used interchangeably with social support, social networks, social contacts, social inclusion or social segregation and isolation (Vitman- Schorr et al., 2016). "Social integration" implies reciprocities between individuals and refers to "the extent to which an individual participates in a broad range of social relationships" (Brissette, Cohen, & Seeman, 2000: 54) with others, whether family, social network, or community (Hooyman & Kiyak, 2008), and has a sense of belonging (Toepoel, 2011). Cornwell, Laumann & Schumm (2008) argue that through community involvement, people establish social networks within the community, which are crucial for social integration. They identified four dimensions of integration in the community: (1) frequency of neighborly socializing,

(2) religious participation, (3) volunteering, and (4) organized group involvement. Having close relationships with neighbors and participating in organized activities can facilitate social integration within the community. They found that the oldest adults were frequently involved in neighborly socializing, religious services attendance, and volunteering. However, various factors such as poor health and functional status as well as living settlement type (Vitman- Schoor et al., 2016) could challenge their social integration. In the field of gerontology, the social integration of older people in society, in the labor market, in the family, and in social networks has been the focus of many studies (De Jong Gierveld & Hagestad, 2006; Dykstra & Hagestad, 2007). Yet the social integration of older people in different living settlement types has been insufficiently addressed.

"Social integration" and "sense of belonging" are often used interchangeably (Berkman, Glass, Brissette, & Seeman, 2000; Cavalli, Bickel, & Lalive d'Epina, 2007). Positive interpersonal relationships can increase individual members' sense of belonging to a particular group (Hurtado, Meader, Ziskin, Kamimura, & Greene, 2002), which in turn contributes to people's feelings of being loved, valued, and part of a reciprocal network (Steinkamp & Kelly, 1987). The term "sense of belonging", used by sociologists and gerontologists, is close to the geographical terms "sense of place" as defined by the pioneers of that field Relph (1976) and Tuan (1977) and "attachment to place", which relates to the emotional bond between people and places (Burholt, 2006). People tend to get out of their houses if they have a positive image of their environment/settlement (Richard et al., 2008). In geography, "sense of place" encapsulates both spatial and social entities. It refers to high familiarity with the physical environment/ settlement, strong feelings of belonging to a place, and being part of its social and cultural life (Shamai, 1991). A sense of place or a sense of belonging is also reflected in social relationships with friends and family, participation in cultural and leisure activities, civic engagement, and utilization of services (Barnes, Blom, Cox, Lessof, & Walker, 2006; Cavalli et al., 2007; Toepoel, 2011). For older and retired people, coincidental meetings with neighbors and friends in the living area play a crucial role and have a positive impact on their social lives (Kuo, Sullivan, Coley, & Brunson, 1998; Kweon, Sullivan, & Wiley, 1998). Positive interpersonal relationships can increase individual members' sense of belonging to a particular group (Hurtado et al., 2002). Such meetings and interpersonal relationships are influenced by spatial characteristics of the environment/settlement such as the walkability of an area (Sugiyama & Thompson, 2007), the number of services and commercial hubs within walking distance from residential areas (Leyden, 2003), and the "greenness" of the built urbanized environment (e.g., trees and open spaces) (Shendell et al., 2011; WHO, 2007). Based on her study of older adults living in rural places, Burholt (2006) proposed a four-domain conceptual scheme of attachment to place that takes into account the interrelationship between physical, social, temporal, and psychological factors. Thus, social integration relates to spaces that provide security, stability, identity, sense of belonging, psychological sense of community, and affective connection with the territory. She found that in rural environments, social integration and social support were strong and asserted that smaller communities in rural areas facilitated a greater degree of interaction with friends and neighbors and promoted a stronger sense of belonging to the living settlement.

Rowles (1978, 1980, 1986), one of the earliest inaugurators of geographic gerontology, found that the characteristics of the geographic environment (including settlement type) and duration of living in that environment/ settlement, had profound

effects on older people's social integration. He asserted that the person-environment relationships incorporate social, psychological, and physical dimensions. Therefore, improvement or change in the older adults' residential environment can change and improve their quality of life and well-being (Costa-Font, 2013; Domanski, Ostrowska, Przybysz, & Romaniuk, 2006; O'Brien, 2014).

Researchers (Chiu, Chen, Huangm, & Mau, 2005; Evans, 2009) found differences between the quantity and quality of coincidental meetings in the countryside (rural settlements) compared to urban areas; older adults in the countryside usually enjoy more social support and social interactions because of the more intense relationships among its inhabitants than their counterparts who live in urban areas. In contrast, the urban environment is characterized by numerous impersonal interactions, transitory contacts, and anonymity (Evans, 2009). The living settlement is the everyday life space where people interact and establish neighborhood relations. Sharing everyday life spaces enables contact, interaction, and living in a community among people of different age-groups. Thus, older adults in the countryside maintain more social relations than those who live in urban areas; they feel they can trust people, and feel closer to their social support networks compared to their peers living in urban environments (Vitman-Schorr, Ayalon & Khalaila, 2017). Contradictory findings concerning rural life from the research of Bondi (2009) point out that in rural areas people develop a "boundaried relationship" with less social proximity and trust. In another study the results show that social participation did not differ across settlement type (metropolitan areas, urban areas and rural areas) and higher social participation was associated with greater proximity to neighborhood resources and having a driver's license. In rural areas children living in the area and more years lived in the current dwelling was also associated with social integration (Levasseur, Cohen, Dubois, Généreux & Payette, 2015).

That aspect of integration has been barely examined in regard to older people living in different residential environments. Manifold determinants can influence social integration, including a combination of individual and environmental/ residential factors: age, which was found to be related to social participation and network size (Cornwell et al., 2008); health and functional status (House, Umberson, & Landis, 1988; Lättman, Friman, & Olsson, 2016; WHO, 2007); outdoor mobility, which may change with increasing age, since many older adults lose some of their abilities, become less mobile and need help or devices to overcome their limitations (Lawton, 1990), and as a result, perceived accessibility of the living environment decreases (Webster, Gow, Gilhooly, Hamilton, O'Neill, & Edgerton 2002; Musselwhite & Haddad, 2010) and every obstacle can limit the older adults' abilities (Wennberg, Stahl, & Hyden, 2009); and finally, length of residence (Brown, Geertsen, & Krannich, 1989; Rowles, Oswald, & Hunter, 2004), because it takes time to become familiar with neighbors and build social ties (Keene, Bader, & Ailshire, 2013); and type of settlement (Panagiotakos, Chrysohoou, Siasos, Zisimos, Skoumas, Pitsavos, & Stefanadis, 2011). However, social integration of older adults by type of residential settlement, i.e., rural/ urban environments, has barely been examined (Herrero & Gracia, 2004; Vitman-Schorr et al., 2016).

2.0 Research Design and Methods

2.1 Population and Sample

This study was conducted in the north of Israel in six rural (kibbutzim) and two urban-mid-sized cities. The different settlements reflect diverse residential environments in terms of lifestyles, the percentage of older adults, and the amount of green open spaces in the settlement.

The urban-rural settlements which were selected differed in their characteristics as follows: The urban settlements have between 12.4-12.8 percent of older adults, while the rural settlements have 13.3 percent (Central Bureau of Statistics, 2017). Concerning green open spaces, observations and electronic maps of the settlements indicate that the rural settlements are much greener (about 70-80 percent of the settlement) compared to the urban settlements (about 25-50 percent). Since rural settlements received higher scores in both measures (percentage of older adults and amount of open spaces), the settlement types were coded 1=urban, 2=rural.

Inclusion criteria were age 65 and over, not having a disability that precluded walking, proficiency in Hebrew, without known cognitive impairments and living in the place for at least three months. A convenience sample of 263 participants aged 65 and over were selected from rural and urban places in the north of Israel. The sample was composed of 97 participants from the six rural (kibbutzim) settlements and 166 participants from two urban mid-sized cities.

2.2 Measures

The questionnaire was based on previous studies (Vitman Schorr et al., 2013; Vitman Schorr et al., 2016). Prior to data collection, a pre-test was conducted with ten older adults who were asked to complete the questionnaire. The questionnaire was modified based on their feedback. *Data collection* was performed on different days of the week and at different hours of the day to capture as many diverse respondents as possible and lasted from December 2012 to April 2013. Recruitment of participants was made by two methods: (1) In the rural settlements lists of all people aged 65 and over were provided to the researchers by the settlements' secretaries. A research assistant phoned each person on the lists, explained the goals of the study, and asked for consent to complete a self-administered questionnaire. Appointments were made only with those who consented to participate in the study. They were given the questionnaire and were asked to complete it on the spot. (2) In the urban sites, an experienced research assistant approached older people on the streets and in public spaces (shopping centers, public gardens, etc.). They were told about the study goals and were asked two questions: (1) their age and (2) their place of residence. If they said that they were 65 or over and inhabitants of that place, they were asked to participate in the study; if they consented they were asked to complete the questionnaire on the spot. It should be noted that the selection methods used in this study do not guarantee representativeness of the sample.

2.3 Dependent Variable

The outcome variable was social integration and was examined using two measures that reflect different aspects of social integration:

Neighbor Recognition. Townshend's (1996) scale, which examined the urban geography of older people in Canada and examined individual recognition of

neighbors as a dimension of community integration, was used. The scale includes six items and relates to urban areas. In this study, four items were used (Example items: How many neighbors do you know by first name? How many neighbors do you visit at least once a month? How many neighbors do you consider close personal friends?). Two items were excluded because they were irrelevant to rural settlements ("Imagine those of your neighbors living in the 20 houses nearest to your own. How many people from these 20 nearest houses would you say you personally sometimes talk to in the street/recognize on the street?"). Scores for each item ranged from 1 (nobody) to 6 (more than 15) on a Likert-type scale. Scores were summed and ranged from 4 to 24, with higher scores indicating higher neighbor recognition. Internal consistency (Cronbach's alpha) in this study was $\alpha=.81$.

Frequency of participation in activities in the settlement. This included participation in a variety of activities of which four were drawn from Townsend's (1996) measure that relates to social interaction in the community (e.g., going to the library, voluntary work, walking/staying in the park), and six were drawn from House, Robbins, and Metzner (1982) that examined social interaction and activities. Example items included: "On the average, how often have you done each of these things in your living settlement: (a) visiting with friends, neighbors; (b) visiting with relatives; (c) going to the movies, concerts, plays, (e) attending meetings; (h) going to classes or lectures." We added three items that related to how often respondents visited a senior citizen's club, made use of health services and participated in wellness sports activities for older people in their settlements. Scores for each item ranged from 1 (never) to 5 (at least once a week). Scores were summed and ranged from 13 to 65 with higher scores indicating higher levels of participation in the settlement. Internal consistency (Cronbach alpha) for this dimension was moderate ($\alpha=.66$).

A composite score for total socio-spatial integration was calculated that included the sum of scores for the two measures; scores ranged from 17 to 89. Internal consistency for the whole measure (Cronbach's alpha) was $\alpha=.77$.

2.4 Independent Variables

Environment/ settlement characteristics. Three types of environments were measured: the percentage of older adults in the settlement, the type of settlement, and the amount of open "green" space. The settlement type was coded (urban=1; rural=2).

Self-rated health. The respondents were asked "How is your health?" with scores ranging from 1 (very poor) to 5 (very good).

Outdoor mobility. Respondents were asked one question: "Do you have difficulties going out of your home?" Scores ranged from 1=I go out very seldom because of mobility difficulties, to 5=I have no problems with outdoor mobility (recoded: 1=no difficulties and 0=have difficulties).

Connection to the living area. This was evaluated by five items taken from the tool of Young, Russell, and Powers (2004). The items we used include, "I have a lot in common with people in my living settlement", "I am good friends with many people in this living settlement", "I like living where I live", "My neighbors treat me with respect", "People in my living settlement are very willing to help each other out". Likert-type scores ranged between 1 (strongly disagree) and 5 (strongly agree) with higher scores indicating greater connection to the living settlement. Scores ranged

between 5 and 25. Internal consistency for the whole measure (Cronbach's alpha) was $\alpha=.92$.

Familiarity with the living area. This measured one's familiarity with the streets and location of services. It was evaluated using a single item from Townshend's (1996) questionnaire ("Without looking at a street map how easy would it be for you to locate the nearest bus stop"). This was followed by two additional items ("locate the nearest community center, and locate the houses of people you usually visit. Likert-type scores for each item ranged between 1 (very hard) and 5 (very easy) with higher scores indicating greater familiarity with the living area. Scores ranged between 3 and 15. Internal consistency for the whole measure was $\alpha=.82$.

Perceived safety of the living area. The variable is composed of one item taken from Townshend's (1996) questionnaire ("I feel safe walking alone in my living settlement after dark"). Likert-type scores ranged between 1 (strongly disagree) and 5 (strongly agree), with higher scores indicating greater feelings of safety of the living settlement. Scores ranged between 1 and 5.

Covariates. The socio-demographic characteristics of the respondents were examined, and these included gender, age, marital status (recoded: 1=single/divorced/ separated, 2=widowed, 3=married), education (in number of years), and length of time living in the current place (in years).

3.0 Statistical Analyses

Data were processed using the SPSS software package version 21. In the first stage, univariate analyses were performed to describe the socio-demographic characteristics of each of the two groups of respondents. In addition, internal consistency (Cronbach alpha) of the scales were calculated. Next, bivariate analyses were performed to examine differences between settlements (One way ANOVA) and connections between the independent and dependent variables (Pearson correlation coefficient and X^2). Finally, a regression analysis was performed to examine the factors that best explain social integration. To examine the contribution of each group of variables to the variance in the outcome variable, the independent variables were entered in 3 steps: first, socio-demographic characteristics; second, perceived health and mobility; and third, settlement characteristics, including familiarity with the physical environment, sense of belonging to the living settlement and perceived safety of the living settlement. In an additional analysis, we examined potential interactions between type of environment/settlement (urban/rural) and various predictors of social integration (education, gender, age, outdoor mobility, length of residence, and self-rated health). The moderation hypotheses were then tested using the bootstrap moderation method as described by Hayes (2012).

4.0 Results

Table 1 presents the socio-demographic characteristics of the sample respondents by settlement types. The findings show that there were no significant differences between the respondents in the two settlement types in terms of gender, years of education, marital status, and living arrangements, but there were significant differences in age, length of residence in the settlement, self-rated health and outdoor mobility: Those who lived in rural settlements were older, they had been living in their settlements longer, their self-rated health was better, and they had fewer outdoor mobility problems compared to those reported by the urban residents.

Table 1: *Sociodemographic Characteristics of Respondents by Settlement Type*

Variable	Rural			Urban			F/X ²
	%	M	SD	%	M	SD	
N	97			168			
Gender							
Women	56.36			65.68			3.33
Age		76.02	7.25		73.32	6.47	10.58**
Education (years)		13.18	3.93		12.71	5.72	0.57
Marital status							
Married	65.0			64.48			0.83
Widowed	23.75			26.17			
Single/divorced	11.25			9.35			
Living arrangement							
Alone	40.91			29.59			3.99
Length of residence in settlement							
		56.31	15.15		34.78	20.37	90.34***
Self-rated health							
Good	51.43			39.29			11.63**
Moderate	40.95			32.93			
Poor	7.62			27.78			
Outdoor mobility							
No mobility problems	88.46			71.51			10.58**

** $p < .01$, *** $p < .001$

Table 2 presents the mean scores of the independent and dependent variables and the differences between them by settlement type. The findings show that significant differences were found between settlement types with regard to the level of familiarity with the physical environment, perceived safety of the living area and social integration. Rural settlements had significantly higher levels of familiarity with the physical environment and perceived safety of the living area. Overall, social integration ranged from 0 to 57.0 scores with a mean of 35.72 (SD=11.14), suggesting an overall moderate level of social integration. Social integration varied significantly by settlement type; the lowest level of social integration was found in urban settlements with a mean score of 33.09 (SD=11.50) compared to rural settlements with a mean score of 39.75 (SD=9.27).

Table 2: *One-way ANOVA Analyses of Independent and Dependent Variables, by Type of Residential Environment*

Variable	Rural		Urban		F
	M	SD	M	SD	
N	97		168		
Sense of belonging to the living settlement	18.07	5.13	16.93	7.85	1.83
Familiarity with the physical environment	11.14	3.89	9.87	4.49	5.90*
Perceived safety of the living area	3.86	1.51	3.44	1.66	4.58*
Social integration	39.75	9.27	33.09	11.50	25.86***

** $p < .01$, *** $p < .001$

Table 3 presents the regression analysis of factors explaining the social integration of the older people in their settlements. The findings show that in the first step, age and education were significant in explaining social integration. This suggests that those who are younger and more educated were more socially integrated into their settlement. The variables in this step explained 9% of the variance in the outcome variable. In the second step, education and self-rated health and were significant in explaining social integration. Self-rated health together with outdoor mobility added 10% to the variance in the dependent variable. This suggests that higher education and better health were significantly connected with higher levels of social integration. Finally, in the third step age, a sense of belonging to the living settlement, familiarity with the physical environment and environment characteristics were significant in explaining social integration. Sense of belonging to the living settlement, familiarity with the physical environment and environment/settlement characteristics added 40% to the outcome variable. This suggests that younger age, a high sense of belonging to the living settlement, high familiarity with the physical environment, and living in a rural settlement was connected with higher levels of social integration. Altogether the variables included in the equation explained 59% of the variance in social integration.

To examine the differential relationship between social integration and potential moderators based on settlement type, we examined several interaction effects, including: settlement type* gender: Coeff=3.15, SE=2.43, $p=.19$; settlement type* age: Coeff=0.10, SE=.19, $p=0.60$; settlement type* self-rated health : Coeff= -2.52, SE=1.81, $p=.17$; settlement type* length of residence: Coeff=0.04, SE=0.08, $p=0.62$; settlement type*perceived safety feelings: Coeff=0.12, SE=0.81, $p=0.88$; settlement type* outdoor mobility problems: Coeff=9.98, SE=3.53, $p=0.00$. From these interaction terms, only settlement type* outdoor mobility problems was significant.

The moderation analysis with 1,000 bootstrapping was performed to assess whether out mobility difficulty interacts with settlement type to predict social integration, controlling for the participant's gender, age and education. The overall regression

was statistically significant [$F(262)=18.92$, $p<0.001$] with 18% of the social integration variance being explained. The result showed that social integration was not significantly related to out mobility difficulty [$B=4.66$, $t(262)= -1.24$, $p>0.22$], and was not significantly related to settlement type [$B=3.53$, $t(262)=-0.83$, $p>0.40$], but was significantly related to outdoor mobility difficulty – settlement type interaction [$B=3.24$, $t(262)=2.83$, $p<0.01$].

Table 3. Factors explaining social integration of older adults in two settlement type.

Variable	Model 1			Model 2			Model 3		
	B	SE	β	B	SE	β	B	SE	β
Age	-0.29	0.10	-0.18**	-0.18	0.11	-0.12	-0.35	0.08	-0.22***
Gender	-1.43	1.24	-0.07	-1.14	1.27	-0.05	0.03	0.92	0.001
Education	0.50	0.14	0.23***	0.40	0.13	0.19**	0.03	0.10	0.02
Marital status	-0.51	1.00	-0.03	-0.22	0.96	-0.01	-0.60	0.70	-0.04
Length of residence	0.04	0.03	0.08	0.03	0.03	0.06	-0.001	0.03	0.003
Self-rated health				3.58	1.02	0.24**	0.90	0.78	0.06
Outdoor mobility ¹				2.88	1.92	0.11	0.07	1.42	0.003
Sense of belonging to the living settlement							0.62	0.09	0.38***
Familiarity with the physical environment							0.83	0.14	0.32***
Perceived safety of the living area							0.11	0.34	0.02
Environment/ settlement characteristics ²							7.92	1.19	0.35***
R ²	0.09			0.19			0.59		
F	4.93***			7.99***			30.95***		

** $p < .01$, *** $p < .001$

This analysis revealed that the effect of settlement type on social integration was significant when there was no problem with outdoor mobility, but not when outdoor mobility was a problem, in both areas—rural and urban. Meaning, there is no difference in social integration between older adults living in rural or urban areas when the participant has difficulties with outdoor mobility ($p>0.40$), but there is a

¹ 0= have mobility difficulties, 1= don't have mobility problems

² 1= urban, 2= rural

difference when the participants do not have difficulties with outdoor mobility ($p < 0.001$). However, the participants living in the rural area rated their social integration (Mean = 37.04, S.D = 11.02) as higher than those living in the urban area (Mean = 36.12, S.D = 10.90) when there were no difficulties with out-mobility ($P < 0.01$). The insignificant variables have similar associations with social integration in rural and urban settlements.

5.0 Discussion

The purpose of this study was to explore the social integration of older adults in two settlement types (with different environmental/ residential characteristics) located in the periphery of Israel. In other words, the main aim of the research was to find out which variables were connected to social integration of older adults in their living settlement (two settlement types) and to determine whether there were moderator variables which changed the connection between settlement type and social integration.

The research results showed that social integration varied by settlement type with different environment/residential characteristics. Furthermore, the regression analysis showed that a combination of personal and environment/settlement characteristics were significant in explaining the social integration of older adults in their living settlement, that is, older age together with poorer health can hinder social integration. This is consistent with previous studies that have shown that poor health and functional status were connected with poor social relations and social integration (Avlund et al., 2004; Avlund, Lund, Holstein, & Due, 2004; Brown et al., 2009; Christensen, 2010; Lang et al., 2008).

The findings also showed that environment/settlement characteristics, including the settlement type, the percentage of older adults in the settlement, and the amount of open "green" spaces, were found to play a role with regard to social integration. A higher percentage of older adults in their settlement can generate more options for social interaction with their peer age-group and thus increase social integration. These findings are in line with the ecological approach (Iwarsson, 2005; Lawton 1980; Lawton & Nahemov, 1973; Kahana, Lovegreen, Kahana, & Kahana, 2003). In addition, a higher percentage of green open spaces in the settlement and living in rural environment/settlement may generate more options for outside meetings, and thus can promote the social integration, that is in consistence with other studies which found a connection between open green spaces to stronger and healthier relationships between older adults (Sugiyama & Thompson, 2007). Moreover, it was found that there is a connection between green open spaces and the amount of time people spend outside the home and—as a result—can meet people and establish social relationships (WHO, 2007 ;Shendell et al., 2011). Neighbors also facilitate more social relationships when the common areas are greener and characterized by many trees (Kuo et al., 1998). Both additional "settlement characteristics" variables were higher in the rural settlements, this might be part of the reasons for higher social integration in these settlements.

With regard to the other variables which were found to be connected to social integration, sense of belonging to the living settlement and familiarity with the physical environment were found to play a role with regard to social integration. A higher sense of belonging to the living settlement implies a higher sense of place and a stronger connection to the place: People who feel connected and belong to their living settlement tend to see their settlement as better than it is, concerning all

aspects of life—social and physical (Husband, 2001; MacKendrick & Parkins, 2004), and for that reason, they are also more socially integrated. Surprisingly, no difference was found concerning a sense of belonging in rural and urban settlements, and in both settlement types feelings of belonging were similar.

Concerning familiarity with the physical environment, high familiarity was found to be connected to high social integration. This can be explained by the connection found between staying outside the home and higher social integration (Shendell et al., 2011; Sugiyama & Thompson, 2007; WHO, 2007). People with high familiarity with their physical environment tend to spend more time outside their homes, and as a result, they have the chance to meet more people and to be more socially integrated (Christensen, 2010; Sugiyama, Thompson, & Alves, 2009). In rural settlements, familiarity with the physical environment was higher. The difference between rural and urban settlements can be explained by the difference in length of residence, self-rated health and outdoor mobility difficulties.

One moderator—“out-mobility difficulty”—was found and assessed for the interaction between settlement type and social integration. The analysis revealed that the effect of the settlement type on social integration was significant when there was no problem with out-mobility, but not when the out-mobility was a problem. This proved true for both rural and urban settlements, which means that older adults living in rural settlements rated their social integration as higher than those living in urban settlements when there were no difficulties with out-mobility. When there was a difficulty, no difference was found. A possible explanation is that—as has been found—there is a connection between spending time outside the home and being socially integrated. In rural settlements, there are more possibilities to go outside, and the social integration is higher. Older adults who have out-mobility problems spend less time outside and thus, are less socially integrated. Since out-mobility problems influence both rural and urban older adults’ ability to leave the home, a connection between settlement type and social integration was found only when there were no out-mobility problems, but when there are no out-mobility problems, the situation stays the same—rural older adults are more socially integrated.

To conclude, with regard to social integration in the living area, there are several interesting findings which add information to literature and practice. Social integration of older adults in their living settlements is highly connected to a number of living settlement attributes: a sense of belonging to the living settlements, familiarity with the physical environment, and settlement characteristics (urban/rural, the percentage of older adults and amount of green spaces). This indicates that environmental-spatial features are greatly linked to social integration. Social integration of older adults should be explored considering the notion that the living settlement is part of the total ability of older adults to be socially integrated. The research stresses the importance of green open spaces and its connection to social integration of older adults. It has been found that where there are more open green spaces, people tend to spend more time outside, and as a result, their social integration is higher and their social network is wider—the degree of importance of that finding is important and novel. These findings are in line with the ecological approach (Iwarsson, 2005; Lawton 1980; Lawton & Nahemov, 1973; Kahana et al., 2003), according to which social integration is dependent not only on the functional and health limitations of the older adults, but also on the spatial environment where they live. These are also pre-conditions to create age-friendly environments to

integrate older people into the mainstream of the social life (Alley et al., 2007; WHO, 2007).

The results of the study stressed the essential need for multidisciplinary collaborations in order to understand the complex variables that are connected to social integration. For this reason, more collaboration is needed between geographers, city planners, gerontologists, and sociologists. In addition, the study shed light on the role of small rural communities and their special characteristics which enable social integration. Therefore, more investigation is called for to examine characteristics such as quality of life, intergenerational relationship, and longevity.

As for practice and policies, the study opens a venue to investigate social integration in the living settlement and the factors that influence it in order to enable active ageing in general and ageing in place in urban communities (since most older adults live in cities). There is need to make these urban areas a bit more “rural-like” in factors such as familiarity with the physical environment, feelings of safety, and creating more green open spaces. It is important to promote understanding of the notion that the living settlement characteristics, the sense of belonging, and the familiarity with the place have great influence on social integration (which influences aging in place and the wellbeing of older adults).

6.0 Limitations

There are several limitations to this study: First, the study is cross-sectional, so that a causal relationship between environmental/residential characteristics and social integration cannot be established. Further investigation and evaluation studies should be longitudinal and follow respondents, as well as using quasi-experimental designs to examine differences in levels of environmental/residential characteristics and social integration. Studies should also identify and examine additional factors that can promote social integration of older adults in their residential environments. Second, a generalization of the findings is limited because the sample and the sampling procedure do not guarantee representativeness of all the older inhabitants in each settlement type. This is because the sample included people who were present in specific places outside their homes when data were collected. Those who were homebound due to severe mobility difficulties are not represented in this study. The percentages of women were significantly higher than those of men. All these may have biased the results of the study.

Despite these limitations, the study provides new insights into the interaction between urban/rural characteristics and social integration of older people in their communities. The study invites further research regarding geographic characteristics and their contribution to aging in place and active aging.

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