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**Social isolation's measurements in the ageing population**

***Supervisor***

**Professor Cicolletta Sabrina**

***Candidate:*** Guerreschi Francesca

***Student ID number:*** 1223570

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## **Abstract**

Social isolation has been found to be a detrimental factor in the lives of people. This is especially true for older adults, who, by ageing, encounter also other issues, both physical and psychological. For this reason tools able to measure social isolation must be developed and used in order to identify it and allow social workers to direct possible solutions to those suffering. Several instruments have been used as assessment tools for screening for social isolation, such as the Lubben Social Network Scale, the Multidimensional Scale of Perceived Social Support and the Friendship Scale. Nevertheless the instrument chosen by researchers must be considered carefully for the specific purpose of the study, since they include items which may differ from one to the other.

## **Keywords**

Social isolation; Older adults OR Older people; Lubben Social Network Scale; Multidisciplinary Scale of Perceived Social Support; Friendship Scale;

## **Introduction**

Social isolation has been defined in a variety of ways throughout the many years of research. Nicholson (2009) describes it as “a state in which the individual lacks a sense of belonging socially, lacks engagement with others, has a minimal number of social contacts and they are deficient in fulfilling and quality relationships” (p. 1346); Holt-Lunstad et al. (2015) also state that “living alone, having few social network ties, and having infrequent social contact are all markers of social isolation” (p. 227) , adding that “the common thread across these is an objective quantitative approach to establish a dearth of social contact and network size” (p. 227). On the other hand Joyce et al. (2021) decided to use an even more specific description, taken from the LSNS-R: “social isolation was defined as engaging in community activities

less than once per month and having contact with four or fewer relatives and close friends in a month” (p. 2). Moreover Ha et al. (2019) provide another definition for their study: “the lack of access to social networks that can provide support in times of need” (p. 2). Considering all these various interpretations of the concept, although fairly similar to one another, it could be easy to misinterpret it with another concept, very closely linked to the one of interest, that is loneliness. The latter is believed to play a more subjective role in the lives of people, as a matter of fact it is described as “a subjective emotional state” (p. 228), continuing with the statement that “Loneliness is the perception of social isolation, or the subjective experience of being lonely, and thus involves necessarily subjective measurement” (Holt-Lunstad et al., 2015, p. 228). Having understood this difference, it can be deducted that having an inconsistent definition of social isolation, to begin with, makes it more complex for researchers to establish and develop tools and ways to assess this critical condition, given the fact that it can be evaluated differently based on the chosen definition (Evans et al., 2018). Some may prefer a standardised measure such as the Lubben Social Network Scale; meanwhile others may take into consideration different indicators or features of isolation (Evans et al., 2018). Shankar et al. (2013) indicate that between 5% and 17% are socially isolated (cited by Barbosa Neves et al., 2019). Veazie et al. (2019) reports results from a survey conducted by DeJulio et al. (2018), stating that “one in five Americans report feeling socially isolated or lonely” (p. 1), as well as other data by Daniel et al. (2018) and Galea et al. (2011) showing that “162,000 deaths each year in the United States are attributable to low social support; that is more than the number of deaths due to lung cancer” (p. 1). Holt-Lunstad (2015) also observed that measuring social isolation subjectively or objectively, does not result in a different outcome: in both cases isolation leads to a higher probability of mortality. More specifically “the increased likelihood of death was 26% for reported loneliness, 29% for social isolation, and 32% for living alone”(p. 233), and those participants already in one of

these conditions at the beginning of the study, were more likely to be dead at the time of the follow-up, even when considering a variety of possible covariates (Holt-Lunstad, et al., 2015). In this same article, researchers provide information from two previous works by Holt-Lunstad et al. (2010) and Thorsteinsson & James, (1999), in which they had discovered the buffering effect of social relationships in the face of stress, which highlights the importance of having people around to support you. Similarly, Herbolsheimer et al. (2018) addressed the impact social relations have on physical activity, taking into account the role of social isolation. Their results were of great interest: indoor and outdoor physical activity are affected by perceived social isolation. Still regarding physical health, del Pozo Cruz et al. (2021) discovered that social isolation also affects physical functioning as a function of age, meaning that, if people are socially isolated, as they get older, their physical functioning worsens and deteriorates. Similarly, when considering social disconnectedness and perceived isolation, findings show older people who are supported and socially connected to others “have a nearly 70 percent chance of reporting very good or excellent health” (Cornwell & Waite, 2009, p. 40). Social isolation has a detrimental effect on cognitive health as well, but interestingly, cognitive reserve may act as a moderator, reflecting “the importance of being engaged throughout the lifespan in order to build reserve to protect against poor cognitive function in later life” (Evans et al., 2018, p. 10). What is more, Cho et al. (2019) discovered an association between social isolation and depression, sleep disturbances and fatigue, but it specifically concerned the concept’s most subjective component. Also, feelings of extreme isolation give people only one fourth of chance of perceiving excellent mental health (Cho et al., 2019).

This review is structured into chapters, each of which will address a specific matter. The first one will present more in depth information regarding social isolation in the older population,

meanwhile the second will focus on the measuring tools that have been developed and used so far by researchers.

## **CHAPTER 1. SOCIAL ISOLATION AMONG THE AGEING POPULATION**

As already mentioned in the introduction, it is apparent that social isolation can have a negative impact on the lives of those affected. Also, considering the pattern at which the worldwide population is ageing, it is easily predictable that, in the near future, social isolation may grow to be more widespread and intrusive for the older people (del Pozo Cruz et al., 2021). This is also true in face of the current situation around the world, due to the Covid-19 pandemic, which forced people to stay in their houses, and to, therefore, avoid close contact with others for a prolonged period of time (del Pozo Cruz et al., 2021). Since this final dissertation has its focus on the older population, there are some environments and situations that must be considered. Studies in this field, for the most part, are conducted with community-dwelling older adults, meanwhile settings such as those of long-term care are not approached as much (Boamah et al., 2021). One more experience of great interest refers to hospitalization, and how it could influence the overall functioning of the population examined. In this chapter, the aforementioned situations will be explored more in depth, starting with the most common one, community-dwelling, followed by the long-term care setting and finishing with the least explored by researchers, regarding hospitalization.

### **1.1 Social isolation among community-dwelling older adults**

Community-dwelling older people have been found to be at great risk of social isolation: in a study conducted by Merchant et al. (2020) nearly half the participants were at risk (45.5%). Since researchers found those results to be similar to other previous studies on the matter (Merchant et al., 2020), concern should be rightfully directed to this situation. Moreover, it is

undeniable that as people grow, they experience an increased number of changes in their environment, such as poor health, losses and variations in the social domain (Moreno-Tamayo et al., 2020). For example, a significant association between social isolation and speed gait has been proved to exist (Merchant et al., 2020), and according to Robins et al. (2018a) a diagnosis of congestive heart failure is associated with a higher likelihood of being isolated. In their study, Moreno-Tamayo et al. (2020) hypothesised that older adults' quality of life could worsen as a function of social isolation. Figure 1 shows the socio-demographic and health characteristics of participants, also differentiating for sex.

VARIABLES	SEX						P VALUE <sup>d</sup>
	ALL N = 1252		MEN N = 502		WOMEN N = 750		
Aged ≥ 80 years, <i>n</i> (%)	119	(9.5)	40	(8.0)	79	(10.5)	0.129
Engaged in paid work, <i>n</i> (%)	381	(30.4)	211	(42.0)	170	(22.7)	<0.001
Married or in union, <i>n</i> (%)	744	(59.4)	397	(79.1)	347	(46.3)	<0.001
Schooling, <i>n</i> (%)							
<6 years	207	(16.5)	68	(13.5)	139	(18.5)	
6 years	318	(25.4)	129	(25.7)	189	(25.2)	
≥ 7 years	727	(58.1)	305	(60.8)	422	(56.3)	0.061
Depressive symptoms, <i>n</i> (%)	166	(13.3)	45	(9.0)	121	(16.1)	<0.001
Anxiety, <i>n</i> (%)	164	(13.1)	38	(7.6)	126	(16.8)	<0.001
Cognitive impairment, <i>n</i> (%)	286	(22.8)	90	(17.9)	196	(26.1)	<0.001
BADL dependence <sup>a</sup> , <i>n</i> (%)	237	(18.9)	68	(13.6)	169	(22.5)	<0.001
IADL dependence <sup>b</sup> , <i>n</i> (%)	437	(34.9)	131	(26.1)	306	(40.8)	0.001
Two or more chronic illnesses, <i>n</i> (%)	123	(9.8)	45	(9.0)	78	(10.4)	0.403
Social isolation <sup>c</sup> , <i>n</i> (%)							
Low	399	(31.9)	178	(35.5)	221	(29.5)	
Medium	427	(34.1)	169	(33.7)	258	(34.4)	
High	426	(34.0)	155	(30.9)	271	(36.1)	0.053

“Figure 1. Characteristics of the study sample by sex, by Moreno-Tamayo et al., 2020.”

What was observed was that, even though men and women differed in many aspects, as shown in Figure 1, the proportion of social isolation among participants did not suggest a difference between the two sexes (Moreno-Tamayo et al., 2020). Similar results were found by Robins et al. (2018a), in whose study gender did not reflect a link with social isolation. Data regarding quality of life indicated that those people who were more socially isolated had the lowest scores in each domain of the scale, as shown in Figure 2, indicating a poorer quality of life (Moreno-Tamayo et al., 2020).

DOMAINS OF WHOQOL-OLD	SOCIAL ISOLATION <sup>a</sup>								P VALUE <sup>b</sup>
	ALL N = 1252		LOW N = 399		MEDIUM N = 427		HIGH N = 426		
	MEAN	(SD)	MEAN	(SD)	MEAN	(SD)	MEAN	(SD)	
Sensory capacity	70.1	(19.4)	74.9	(17.4)	70.3	(19.9)	65.4	(19.6)	<0.001
Autonomy	65.3	(18.2)	71.6	(17.2)	66.1	(16.7)	58.7	(18.3)	<0.001
Past, present, and future activities	70.8	(16.9)	75.5	(15.1)	71.7	(15.3)	65.6	(18.5)	<0.001
Satisfaction with social participation	69.6	(16.9)	73.5	(15.6)	70.4	(16.5)	65.2	(17.5)	<0.001
Perception of death and dying	72.5	(25.0)	75.5	(24.5)	73.5	(24.3)	68.6	(25.7)	<0.001
Intimacy	62.6	(23.8)	68.7	(23.3)	63.6	(23.2)	56.1	(23.4)	<0.001
Global	68.5	(12.8)	73.3	(11.8)	69.2	(11.9)	63.3	(12.8)	<0.001

“Figure 2. WHOQOL-Old scores by degree of social isolation, by Moreno-Tamayo et al., 2020.”

Interestingly, these results did not differ after the consideration of socio-demographic and health aspects of participants, thus showing how “a lack of significant contact [...] with family and friends” could so deeply impact their quality of life (Moreno-Tamayo et al., 2020, p. 5). Albeit the significant findings, generalisation to all older adults must be dwelled upon, since they specifically regard the situation of older adults covered by IMSS (Moreno-Tamayo et al., 2020). They, nonetheless, provide an idea for future research and enriched the literature on this matter.

Another interesting study focused on the influence of physical activity in the association of social isolation with depressive symptoms (Herbolsheimer et al., 2018). Researchers believed that social relationships could be useful to withstand stress and alarming situations, by preventing depressive symptoms from occurring (Herbolsheimer et al., 2018). Considering four groups of a specific network type (restricted, family-centered, friend-centered, diverse), the hypothesis they worked on was in line with previous studies from the literature in this field, and it suggested that a difference exists among those individuals with a friend-centered network and a family-centered one (Herbolsheimer et al., 2018). For example, in a previous study conducted by Herbolsheimer et al. (2017), results indicated that those individuals isolated from family showed lower indoor activities, meanwhile older people with no close contact with friends and neighbours performed an increased amount of outdoor activity.



Going back to the study by Herbolsheimer et al. (2018), the friend-centered network was found to be characterized by increased physical activity and restricted depressive symptoms; meanwhile the family-centered network did not display such a pattern. This research highlighted the fact that “the characteristics of one’s network might not directly affect depressive symptoms, but they were indirectly associated with behaviours (such as physical activity) that were related to depressive symptoms” (Herbolsheimer et al., 2018, p. 6). The same did not apply for indoor physical activity, demonstrating that an indirect connection exists only between social relationships linked with out-of-home physical activity and depressive symptoms (Herbolsheimer et al., 2018). Therefore, no association was found between isolation from the family and out-of-home physical activity (Herbolsheimer et al., 2018). The conduction of this study shed light on the close ties physical and mental health share, regardless of the absence of a direct connection.

Having these ideas in mind, it is also important to address that high levels of household physical activity have been discovered to be associated with a decrease in social isolation, possibly because older adults taking part in these actions may be more likely to invite people over at their house to spend time together (Robins et al., 2018a).

Finally, having considered these pieces of information, it is also crucial to point out possible ways and solutions from the literature to improve the lives of those suffering. Papageorgiou et al. (2016) conducted a review in which they identified 14 articles on occupational therapy, and they highlighted activities that could help older people in the community become more socially connected. They included, among many, driving, community mobility, engaging with the community and in education, leisure participation and exploration, and volunteer work (Papageorgiou et al., 2016).

## **1.2 Social isolation among older adults in long-term care settings**

As Boamah et al. (2021) highlight, scarce evidence of the effects of social isolation on residents of long-term care settings exist in the literature, nonetheless it is appropriate to report some data to give a first general overview on the environment considered. Almeida & Rodrigues (2008) conducted a study in nursing homes in Portugal and found 51.6% of their ageing participants to have a good quality of life, especially males, but this percentage was observed to decrease with age, given the increase in overall health issues. Another research conducted in Malaysia by Nikmat et al. (2015) assessed that more than 80% of aged residents with cognitive impairments in nursing homes experienced social isolation and reported having major depression. This especially high proportion is due to the population examined, who shared a similar value (81%) regarding experiences of being very socially isolated (Nikmat et al., 2015). Moreover, a scoping review was conducted by Boamah et al. (2021) in order to examine more closely the gap in the literature regarding this topic. The work focuses on the risk factors encountered by aged residents when living in a long-term care (LTC) setting, which are associated with social isolation (Boamah et al., 2021). Both individual and system factors, respectively factors stemming from the individuals themselves and those related to the structures of LTC, were examined and considered (Boamah et al., 2021). The former involve, for example, issues of communication and disturbances in cognition (Boamah et al., 2021). The presence of either one of these were found to prevent residents from connecting with other individuals, thus increasing the possibility of developing and experiencing social isolation, specifically for those suffering from dementia or Alzheimer's disease (Boamah et al., 2021). This is concerning, especially because social networks in the nursing home have been reported to influence depression and loneliness in aged residents, more than visits from relatives and friends (Fessman & Lester, 2000). Regarding system factors, they include aspects such as the location of the LTC facility, thus whether the establishment was near or far

away from where the individual used to live, or the services provided by the staff, as well as the relationship between the latter and residents (Boamah et al., 2021). In general, those residents with a small number of social ties became more dependent on the staff and nurses, participated in fewer outdoor activities, resulting in more isolation and a deteriorating quality of life (Boamah et al., 2021). One more specific finding regarded older adults from the LGBTQ2S+ community, who felt discriminated against and, therefore, experienced isolation (Boamah et al., 2021). To further this matter, Barbosa Neves et al. (2019) also conducted a study with twenty-two frail residents, aged between 65 and 95, regarding their experiences of social isolation and loneliness. Participants were identified on the basis of the definition given by Lally & Crome (2007) for frailty, that comprehended both biomedical and psychosocial factors, and they described social isolation as something out of their control, that regardless of their desire to be with others, it was not possible to achieve such interaction (Barbosa Neves et al., 2019). Findings comprised negative and positive elements concerning the living arrangements in aged-care settings (Barbosa Neves et al., 2019). “Routinization, alienation from other residents (othering, being ‘alone together’), individualization (even in social activities), and not sharing and processing negative feelings seemed to represent loneliness and isolation risks. Staff’s engagement, human touch and presence, and residents who acted as social ‘bridges’ seemed important protective and coping strategies for loneliness and social isolation” (Barbosa Neves et al., 2019, p. 82). Moreover, establishing meaningful social relationships and avoiding the stigmatization of social isolation and loneliness seem to represent a protective factor from these concerns (Barbosa Neves et al., 2019).

With regards to the previous group presented, a specific difference of older adults living in LTC, as opposed to community-dwelling older people, is that in the first situation the loss of independence plays a unique and significant role, as well as relocating into a LTC structure, which may be situated far from their home (Boamah et al., 2021). For this reason, measuring

tools and assessment regulations must take into consideration these differences when used with this specific population (Boamah et al., 2021). Having gained this knowledge, it appears essential the promotion of activities and initiatives able to help older adults not to feel scared of becoming old in LTC settings. On this matter, Meyer et al. (2011) assessed the use of telecommunication in rural nursing homes, specifically webcams. 82% of residents and 81% of family members were interested in adopting this tool as a new mean to communicate, which is understandable if we consider that communication with family members was not as satisfactory for almost half of the patients (Meyer et al., 2011).

### **1.3 Social isolation in the older population linked with hospitalization**

This last topic is, compared with the previous two, the least examined, and for this reason only few studies have been conducted. First of all, Ha et al. (2019) conducted a research on the availability of friends, family and neighbours for older adults upon hospitalization and its association with social isolation, which was defined as “the lack of access to social networks that can provide support in times of need” (p. 2). As will be further discussed in the next chapter, the only version of the Lubben Social Network Scale considering these three groups is the LSNS-18, which would take quite a long time to complete, therefore Ha et al. (2019) developed a 9-item LSNS, which contained questions on neighbours. Results from the LSNS-6 suggested that the percentage of individuals suffering from this conditions was of 30%, meanwhile, when looking at the data from the LSNS-9, which included neighbours as capable of providing support, the proportion increased to 46.8%, also due to the fact that most of the participants did not have neighbours to ask for help. (Ha et al., 2019). Even though gender was not an influential factor, age and race were: the oldest and non-Whites reflected the highest risk for social isolation (Ha et al., 2019). For each network, specific factors influenced the presence of social isolation: being male, older, not married were associated

with a smaller number of relatives to ask for help; being older, less educated and having more functional constraints was linked to having fewer friends; being functionally limited was related to lower availability of neighbours, as opposed to having a college or higher education (Ha et al., 2019). For the first two networks hospitalization appeared to have a positive effect, since results showed that in this case participants were accompanied by a greater number of members of their social networks (Ha et al., 2019). Interestingly, and unfortunately, results suggested that “about one in three older patients had less than two people to call on for help” (p. 5) and that participants in this study were twice more likely to suffer from social isolation than community-dwelling older adults (Ha et al., 2019). It is also of paramount importance to address the possible situation in which older patients with cognitive difficulties may be unable to make and participate in medical decisions, thus underlining the necessity and advantage of having a support system close to you to help and to counteract social isolation (Ha et al., 2019). Another interesting study conducted by Robins et al. (2018b) focused on the relationships between physical activity, specifically household-based and recreational, physical capacity and social isolation among older adults who had just returned to the community after a hospitalization for a time longer than two weeks. Two hypotheses were suggested: the first one dealt with the idea that physical activity and capacity would improve over six months after being discharged from the hospital; while the second related said improvement to a decrease in social isolation, since a return to indoor and outdoor activities was expected (Robins et al., 2018b). Researchers decided to use the Friendship Scale to assess social isolation and include two items from the 6-item LSNS to measure social network size of participants, even though no available data is able to support the reliability and validity of this circumstance (Robins et al., 2018b). Results showed that as social isolation decreases, both physical capacity and activity improve after hospitalization; however a distinction was observed between recreational and household-based physical activity: the first did not reflect

an association with social isolation, while the second did, reflecting how its increase also positively affected contacts with members of the family, growing in number (Robins et al., 2018b). Physical capacity, on the other hand, was found to be specifically correlated with perceived social isolation, meaning that improving the former may not lead to an objective and numerical increase of social contacts, but to better and more comfortable experiences (Robins et al., 2018b).

It is clear that more information must be collected on this aspect in order to allow social workers to implement possible solutions to help those involved.

The next chapter will dive into the main interest of this review, that is the measuring tools developed to measure and assess social isolation, with a focus on the ageing population.

## **CHAPTER 2. THE MEASUREMENTS OF SOCIAL ISOLATION**

In the introduction and the first chapter, the concept of social isolation has been widely explored; now, in this second chapter the main topic of this final dissertation is presented and discussed.

As already mentioned in the introduction, having various definitions of certain concepts may cause some troubles to researchers. Specifically, Valtorta et al. (2016) underline the importance of terminology and how the use of different terms may be damaging to research studies, since the measurement tool used may not be appropriately chosen for the outcome of interest. In their systematic review, different instruments assessing social relationships, social isolation and loneliness were presented (Valtorta et al., 2016), and starting from this work, articles regarding these tools were searched through the combination of their names and other keywords such as "social isolation", "older people OR older adults". Now, each method found to be specifically related to the subject of this dissertation will be explored more in depth.

## **Lubben Social Network Scale**

The Lubben Social Network Scale is a 10-item measurement that was developed by Lubben in order to assess social networks in the older population, since other tools were difficult to find for the same purpose, and the times researchers tried to do so, they would end up using only a single item, thus reducing and minimising the concept to one factor (Lubben, 1988). For this reason, Lubben refined the Berkman-Syme Social Network Index (BSNI), which monitored the general adult population, and created a new instrument capable of determining social networks among older people (Lubben, 1988). Differently from the BSNI, the LSNS focuses on family and friends relationships, and its scoring algorithm is far less complicated (Lubben, 1988). An equally weighted sum of the ten items present in the scale produces the final score, which can range from 0 to 50, since each item is given a value between 0 and 5 (Lubben, 1988). In case the final score is lower than 20, researchers can imply the presence of a limited social network for that individual (Lubben, 1988).

In Figure 3 in the Appendix it is possible to observe all the items included in the scale.

This tool shows a suitable internal consistency (Cronbach Alpha = 0.70), it is easy to implement, as it does not take longer than ten minutes to administer and it is also possible to find some of the items in other testing procedures addressed to older adults, simplifying the process of adding the excluded ones to one of these tests (Lubben, 1988).

In 2002 Lubben et al. published a revised version on the LSNS, the LSNS-R, which included 12 items, because they wanted to better outline family and friendship's social networks, change items which showed small statistical variance, as well as change "double-barreled" questions, referring to those items containing not one, but two questions, and develop a tool capable of being used in studies without causing time loss for its administration (Lubben et al., 2002).

With respect to the original scale, in this version the item L9 and L10 (see Figure 3) were removed since their presence did not give a more helpful insight into the difference between family and friends' networks (Lubben et al., 2002). Concerning the aforementioned "double-barreled" questions, two were identified as such: L3 and L4 (see Figure 3), which were then divided to gain four items, L3, L4, L9 and L10 (see Figure 4 in the Appendix) (Lubben et al., 2002). Finally, the last step of the revision regarded the questions about confidant relationships in the original scale, that is L7 and L8 (see Figure 3), which were replicated in this version, but specified for the two groups (see L5, L6, L11 and L12 in Figure 4) (Lubben et al., 2002). This scale was also found to be reliable and valid in assessing social networks among Turkish older people living in nursing homes (Kuru Alici & Kalanlar, 2021).

An abbreviated version of the scale has also been developed by Lubben & Gironda: the LSNS-6. They decided to revise the original scale since there was a need for a shorter version to screen for social isolation, and due to the ongoing development of "inconsistent shortened versions" (p. 330) of the original scale (Lubben & Gironda, 2003). The LSNS-6 focuses on the groups of family and friends, each group encompassing three items, resulting in a total of six, thus the name LSNS-6. Each item can range between 0 and 5, so the final score can be any value between 0 and 30, and the cut off point was established at 12, suggesting that any score lower than this number may represent a risk for social isolation among older adults (Lubben et al., 2006). Figure 5 in the Appendix shows the items from the LSNS-6.

Moreover, Gray et al. (2016) conducted a Rasch analysis, which "provides detailed information on how well instrument items can measure a trait and is useful in detailing the positive, as well as less desirable, elements of this instrument" (p. 521). As pointed out by Myagmarjav et al. (2019), the LSNS-6 is especially suitable for the older population since little time is needed to be completed, as well as the non-inclusion of the neighbourhood items, whose questions may be confusing to some individuals. Even though the analysis suggested



an overall positive framework, the scale also seemed to involve some flaws: items 1 and 4 were found to be less fit than the others, and reducing the items from six to four proved to be an improvement for the scale, suggesting a possible starting point for future research.

Importantly, this version has also been translated in various languages, among which Japanese (Kurimoto et al., 2011); Korean, which was slightly modified to include forms of politeness unique to the language and the cut-off point indicating social isolation must be studied further, since results indicated a score lower than 12, differently from results by Lubben et al. (2006) (Hong et al., 2011); Spanish, where modifications concerning labelling were applied during the translation process to match the culture and be better understood (Vilar-Compte et al., 2018). A study conducted in Mongolia also suggested that the LSNS-6 is applicable both for urban and rural populations (Myagmarjav et al., 2019). The scale has also been translated into Italian, for which good internal consistency was observed (.82) (Fiordelli et al., 2020).

The Lubben Social Network Scale has also been modified to include 18 items in order to deepen the difference between non-kin social networks: friends and neighbours (Lubben & Gironda, 2003). As shown in Figure 6 in the Appendix, the items regarding family are the same as in the LSNS-R, meanwhile those of friends and neighbours are taken from the friends category of the same scale and changed accordingly to reflect this version (Lubben & Gironda, 2003).

This version showed the highest internal consistency in comparison with the others (Lubben & Gironda, 2003). The LSNS-18 has also been translated for a study in Mongolia and results showed it to be reliable (0.89) and sufficiently valid to be used in the measurement of social isolation in the Mongolian older population (Burnette and Myagmarjav, 2013).

Numerous researchers have implemented these scales, and a number of findings have been

already presented throughout this work (Herbolsheimer et al., 2018), (Merchant et al., 2020), (Ha et al., 2019), (Moreno-Tamayo et al., 2020), (Evans et al., 2018), (Robins et al., 2018b).

### **The Multidimensional Scale of Perceived Social Support**

Moving to another instrument of interest, the MSPSS was firstly developed to be used with the general population and not specifically for older adults (Zimet et al., 1988). The scale contains 12 items, four for each group (family, friends and significant other) which are assigned a value that can range from 0 to 7 (Zimet et al., 1988). The whole scale has a good reliability (0.88), as well as the three subscales (significant other 0.91, family 0.87, friends 0.85), and it is also psychometrically sound (Zimet et al., 1988). A later study showed that the scale also has a good internal reliability, no matter the group considered (Zimet et al., 1990). A confirmatory study conducted by Dahlem et al. (1991) tried to validate the results obtained by the previous researches as well as explore a number of issues that had been pointed out as possible disadvantages to the functioning of the scale (Dahlem et al., 1991). Results supported the already available data on the scale from the previous studies, but they also indicated how the categories regarding “Friends” and “Significant other” are more intercorrelated with one another than with the “Family” one, which appears to be more independent (Dahlem et al., 1991). Researchers were also able to assess that social desirability did not have any effect on participants’ responses (Dahlem et al., 1991).

A decade later, the scale was examined with an older population, divided in two samples of older adults: one formed by individuals suffering from generalized anxiety disorder (GAD), and a control group, constituted by people without any apparent medical diagnosis (Stanley et al., 1998). Luckily, results provided a positive outcome since it was proved that the MSPSS was reliable, with a strong internal consistency, suggesting its possible use to assess the state of social networks among older adults (Stanley et al., 1998).

Since then, several new discoveries have been reported via the use of this instrument: decline in antibody titers to previous exposure to a strain of influenza is influenced by social support (Moynihan et al., 2004), older adults with higher income and who are more independent report higher scores of social support and quality of life (Naz et al., 2014), perceived social support was discovered to be a predictor of suicidal ideation among older adults receiving home-care, especially support from family (Park et al., 2014), similarly, perceived support from family members was positively associated with mental HRQoL of patients and caregivers (De Maria et al., 2020), meanwhile in HIV older patients, support from friends was found to be protective for food insecurities (Muhammad et al., 2019), what is more, social support was found to be mediating the relationship between social capital and depression (Cao et al., 2015), and Saffari et al. (2019) found social support to mediate the impact of religiosity on adherence to medication and HRQoL. Older adults who have suffered from abuse throughout their life report lower levels of perceived social support (Eslami et al., 2017); fear of falling was found not to be associated with perceived social support (Todd et al., 2021); also, actively using social media to connect with an increased number of people is associated with an increase in cognitive functioning (Yildirim and Ogel-Balaban, 2021), and the association between support from family, friends and a significant other with addictive use of social media (AUSM) was found to be negative (Ozbek and Karas, 2022). Furthermore, social support was not found to be a predictor of quality of life in a sample of older adults with depressive symptoms, probably due to the fact depression and stress are so severe to cover its potential influence (Wongprommate et al., 2021); independent older adults living in assisted residences presented a positive association between perceived social support and positive affect as well as with high frequency heart rate variability (HF-HRV), and a negative relation between perceived social support and negative affect (Pinto et al., 2022). Both Roh et al. (2015) and Burnette et al. (2017) conducted studies with a sample of American Indians and

Alaska Native and discovered, respectively, social support to be negatively associated with depressive symptoms, as well as to be helpful in increasing resilience among this group of older adults, and no racial differences were observed for social support and depressive symptoms. Interestingly, after 12 weeks of participating in a Tai Chi exercise program, perceived social support increased, as reported by participants (Taylor-Piliae et al., 2006).

As already seen with the LSNS, the MSPSS has also been translated in various languages and Dambi et al. (2018) conducted a systematic review assessing the psychometric properties of all the non-English translations of the MSPSS. In figure 6, 7 and 8 the findings are summarised.

Version -Country	Internal consistency	Criterion validity	Construct validity – convergent	Construct validity- divergent	Reproducibility- agreement	Reproducibility- reliability
Arabic women (MSPSS-AW)- USA	Moderate (—)		Limited (—)	Limited (—)		
Arabic Generic – Lebanon	Limited (—)		Unknown (?)	Unknown (?)		
Chichewa- Malawi	Strong (+++)			Limited (—)		
Chinese (Simplified) – Malaysia	Strong (+++)	Unknown (?)		Unknown (?)		Unknown (?)
Chinese (Traditional) – Hong Kong, China	Conflicting (—)	Unknown (?)	Moderate (—)	Moderate (—)		Limited (+)
Chiyao - Malawi	Strong (+++)			Limited (—)		
Creole- USA (Haiti)	Unknown (?)		Unknown (?)			Unknown (?)
French - France	Limited (+)			Limited (—)		Limited (—)
Hausa – Nigeria	Strong (+++)			Limited (—)		Limited (—)
Korean-Korea	Strong (+++)		Limited (—)	Limited (—)		
Luganda - Uganda	Limited (—)					
Malay – Malaysia	Unknown (?)	Unknown (?)		Unknown (?)		Unknown (?)
Persian – Iran	Limited (—)		Unknown (?)			Limited (—)
Polish – Poland	Strong (+++)		Moderate (—)	Moderate (—)		
Portuguese – Portugal	Strong (+++)		Limited (—)	Limited (+)	Limited (—)	
Spanish – *USA, ** Spain	Limited (+)	Moderate (—)	Moderate (—)			
Swedish – Sweden	Moderate (++)		Limited (—)			Limited (+)
Tamil – Malaysia	Limited (—)	Unknown (?)	Unknown (?)	Unknown (?)		
Thai – Thailand	Moderate (++)		Unknown (?)			Limited (+)
Turkish (Original) - Turkey	Moderate (++)		Conflicting (—)	Conflicting (+)		
Turkish (Revised) – Turkey	Conflicting (—)		Unknown (?)	Unknown (?)		Unknown (?)
Urdu – Pakistan	? (unknown)		Limited (—)	Moderate (—)		

\* and \*\* denotes findings from the USA and Spain respectively

“Figure 6. Best evidence synthesis of the psychometric properties, by Dambi et al., 2018”

Version -Country	Crosscultural validity	Structural validity	Internal consistency	Reliability	Hypothesis testing/construct validity		Criterion validity
					Divergent validity	Convergent validity	
Arabic women – USA	Poor [5]	Fair [5]	Fair [5]	Fair	[5, 47]	Fair [5]	
Arabic Generic – Lebanon	Poor [27]	Poor [27]	Fair [27]	Fair [27]	Fair [27]		
Chichewa- Malawi	Fair [26]	Excellent [26]	Excellent [26]	Fair [26, 36]			
Chinese (Simplified) – Malaysia	Poor [12]	Poor [12]	Fair [12]	Poor [12]	Poor [12]		Poor [12]
Chinese (Traditional) – Hong Kong, China	Poor [17]	Poor [17] Fair [64, 65]	Excellent [17] Fair [64, 80]	Fair [64]	Poor [17], [73, 76] Fair [64, 75–78, 80–84]	Poor [73, 84] Fair [74, 76, 78–82, 84]	Fair [17]
Chiyao – Malawi	Fair [26]	Excellent [26]	Excellent [26]	Fair [26]			
Creole- Haiti(USA)	Poor [6]		Poor [6]	Fair [6]	Fair [6]		
French – France	Poor [9]	Fair [9]	Fair [9]	Fair [9]	Fair [9]		
Hausa – Nigeria	Good [7, 14]	Excellent [14]	Excellent [14]	Fair [14]	Fair [85]		
Korean-Korea	Poor [87]	Poor [87]	Excellent [87]	Fair [87]	Fair [87]		
Luganda – Uganda	Fair [13]	Poor [13]	Fair [13]				
Malay – Malaysia	Poor [11]	Poor [11, 88]	Fair [11, 88]	Poor [11]	Poor [11, 88]: Fair [89]	Poor [11]	Poor [11]
Persian – Iran	Poor [18]	Poor [18]	Fair [18]	Fair [18]	Poor [90, 91]		
Polish – Poland	Good [92]	Excellent [92]	Excellent [92]		Fair [92, 93], Good [94]	Fair [79, 92, 93], Good [94]	
Portuguese – Portugal	Fair [32]	Excellent [32]	Excellent [32]	Fair [32]	Fair [96, 97], Good [32]	Fair [96]	
Spanish – *USA, ** Spain	Poor ** [99]	Poor * [101], Fair ** [99]	Fair * [101]		Fair ** [34, 98, 99]	Fair ** [34, 98, 99]	
Swedish – Sweden	Good [3]	Poor [3]	Good [3]	Fair [3]		Good [3], Fair [102]	
Tamil – Malaysia	Poor [87]	Poor [87]	Fair [87]		Poor [87]	Poor [87]	Poor [87]
Thai – Thailand	Poor [44]	Good [43, 44]	Good [43, 44]	Fair [44]	Fair [28, 43, 44]	Fair [28, 43, 44]	
Turkish (Original)– Turkey	Poor [39]	Poor [39, 41]	Fair [39, 41]		Poor [41, 42], Fair [39, 40]	Poor [41, 42] Fair [40]	
Turkish (Revised) – Turkey		Fair [29, 104]	Fair [29]	Poor [29]	Fair [29]	Poor [29]	
Urdu – Pakistan	Poor [49]	Poor [49] Fair [47]	Poor [49]		Fair [45–48]	Fair [47]	

\* and \*\* denotes findings from the USA and Spain respectively

“Figure 7. Methodological ratings of retrieved studies, by Dambi et al., 2018”

Version –Country	Cross-cultural validity	Structural validity	Internal consistency	Reliability	Construct validity	Criterion validity
Arabic women - USA	? [5]	- [5]	+ [5]		? [63]	
Arabic Generic – Lebanon	? [27]	? [27]	+ [27]		? [27]	
Chichewa- Malawi	- [26]	+ [26]	+ [26]		? [26, 36]	
Chinese (Simplified) – Malaysia	? [12]	? [12]	+ [12]	? [12]	? [12]	? [12]
Chinese (Traditional) – Hong Kong, China	? [17]	? [17], – [64, 80]	? [17], + [64],- [80]	? [17], + [64]	? [17, 64–84]	? [17]
Chiyao – Malawi	- [26]	+ [26]	+ [26]		? [26, 36]	
Creole- Haiti(USA)	? [6]	? [6]	? [6]	? [6]		
French – France	? [9]	- [9]	+ [9]	? [9]	? [9]	
Hausa – Nigeria	- [7, 14]	+ [14]	+ [14]	? [14]	? [85]	
Korean-Korea	? [87]	? [87]	+ [87]		? [87]	
Luganda – Uganda	- [13]	? [13]	? [13]			
Malay – Malaysia	? [11]	? [11, 88]	- [11, 88]	? [11]	? [11, 88], – [89]	? [11]
Persian – Iran	? [18]	? [18]	? [18]	? [18]	? [90, 91]	
Polish – Poland	- [92]	+ [92]	+ [92]		? [92–94]	
Portuguese – Portugal	- [32]	+ [32]	+ [32]	? [32]	? [32, 96, 97]	
Spanish – *USA, ** Spain	? [99] **	? [85] *, – [99] **	+ [85] *, + [99] **		? [34, 84, 99]**, + [98]	
Swedish – Sweden	- [3]	? [3]	+ [3]	+ [3]	+ [3]? [102]	
Tamil – Malaysia	? [103]	? [103]	? [103]		? [103]	? [103]
Thai – Thailand	? [44]	- [43, 44]	+ [43, 44]		? [28, 43, 44]	
Turkish (Original)- Turkey	? [39]	? [39, 41]	+ [39, 41]		? [39–42]	
Turkish (Revised) – Turkey		- [29, 104]	+ [29];? [104]		? [29]	
Urdu – Pakistan	? [49]	? [49], – [47]	? [49]		? [45–48]	

\* and \*\* denotes findings from the USA and Spain respectively

“Figure 8. Ratings of quality of psychometric properties, by Dambi et al., 2018”

Other studies have been conducted with these translated versions: in Thailand older adults living in care homes have been found to experience depressive symptoms, which are associated with social support (Tosangwan et al., 2018), and perceived social support also moderated the relationship between depression and suicidal ideation (Oon-arom et al., 2020), meanwhile social support was not found to be correlated with comorbid anxiety disorders among psychiatric older patients (Suradom et al., 2019). In a study conducted in Jordan, social support was discovered to be a negative predictor of fatigue among older adults (Malak et al., 2021), meanwhile in Nigeria, depression and low levels of social support were found to be associated (Olagunju et al., 2015).

## The Duke Social Support Index

The Duke Social Support Index (DSSI) was firstly developed by Landerman et al. (1989) and it was composed of 35 items, including 5 main categories, highlighted by George et al.

(1989): “satisfaction with social support (4 items), perceived social support (7 items), frequency of social interaction (4 items), size of the social network (4 items), and instrumental support (13 items)” (Landerman et al., p. 629, 1989).

In 1993, Koenig et al. decided to modulate the DSSI in a way that would facilitate its implementation with older adults. Therefore they created two abbreviated versions, one formed by 23 items, and the other by 11 (Koenig et al., 1993). In both versions, the subscale concerning social network was disregarded since the lack of proof linking it to any type of psychological symptom, and through factor analysis researchers included only the most relevant items in the perceived social support subscale (Koenig et al., 1993). The difference between the 23-item version from the 11-item one lies in the fact that the first includes the instrumental subscale, as it is the only objective one among all, with the exclusion of just one item with respect to the original (Koenig et al., 1993). Both versions performed similarly to the original scale, demonstrating their possible use with older adults, and based on the specific group of interest, one between the two can be selected for the study (Koenig et al., 1993).

Powers et al. (2004) implemented the 11-item DSSI to measure social support among a sample of community-dwelling older Australian women, and supported the appropriateness of this scale for the ageing population since the completion rate was observed to be very high, as well as proved both a strong reliability and validity. On the other hand, Kotwal et al. (2021a) used a modified 6-item DSSI to assess social isolation in a sample of older adults during the COVID-19 pandemic. 40% of participants reported being socially isolated and they were unable to find help for their functional needs, such as bathing (Kotwal et al., 2021a).

Furthermore this tool has been used in other studies with the ageing population, discovering how subjective social support could be a strong predictor of life satisfaction in a sample of rural and urban older adults (Evans, 2009), or how it was more impaired for older patients with anxiety depression (Jeste et al., 2006), as well as the way social support was perceived as

inadequate by older adults suffering from bipolar disorder (Beyer et al., 2003) or how, for this same group, having close social interactions and support are able to limit the duration of an episode before treatment (Beyer et al., 2014). It was also identified that social support was related to suicidal ideation among older people suffering from depression (Manning et al., 2021), but perceived social support was also demonstrated to be linked to lower levels of suicidal ideation (Rushing et al., 2013). What is more, McLaughlin et al. (2011) found that social support was not protective of mortality for unhealthy older adults, and older people who neglect themselves report support services to be inadequate (Dyer et al., 2007).

Interestingly, Freak-Poli et al. (2021) found social support to be independently associated with Health Related Quality of Life (HRQoL), meanwhile it was positively correlated with Extraversion, Agreeableness and Conscientiousness (Cukrowicz et al., 2008). Moreover, the DSSI has been found to be reliable and valid in the assessment of social support among older suicides in China (Pan et al., 2020). Finally, a number of possible interventions have been suggested: community-dwelling older adults who participated in one evidence-based program (EBP) reported an increase in social connectedness both after six weeks and six months (Mays et al., 2021); another research conducted with adult Australian women discovered that having social contact through a telephone can help decreasing psychological distress in people unable to be physically socially active (Page et al., 2021), while a restorative care to improve home care services was proved to improve HRQoL, but not other measures, such as social support (King et al., 2012). Choi et al. (2020) also discovered that a “videoconferenced, lay-coach facilitated, short-term behavioral activation (Tele-BA)” may be implemented to counteract against social disconnectedness among homebound older adults, and Kotwal et al. (2021b) discovered that peer intervention reduced social isolation in a sample of community-dwelling older adults with a low income.



## **Interpersonal Support Evaluation List (ISEL)**

The ISEL is a tool that contains 48 statements, where half have a positive connotation and the other half a negative one, which examine the perceived availability of four different functions of social support: tangible, appraisal, self-esteem and belonging, thus creating four 12-item subscales (Cohen & Hoberman, 1983). This version of the instrument is nonetheless specific to a sample of college students, meanwhile, for the general population, the ISEL is formed by 40 statements, with the same division as indicated before, and each of the four domains contains 10 items, instead of 12 (Cohen et al., 1985). Despite these small variations, both versions have been recognised to be valid and reliable (0.77 - 0.86 among students and 0.88 - 0.90 among the general population) (Cohen et al., 1985). Ghesquiere et al. (2017) investigated the performance of the 40-item ISEL with a sample of older adults with Complicated Grief, and found it to be both reliable (0.95) and moderately valid. Nevertheless, these results cannot be generalised to the whole ageing population, but further research is needed (Ghesquiere et al., 2017). Another interesting study examined the relationship between different functions of social support and cognitive functioning, hypothesising a positive relation, but found the opposite: “several functions of social support showed significant inverse relations with cognitive function, such that greater perceived social support was associated with poorer performance” (Sims et al., 2014, p. 52). Sacco et al. (2010) explored how the ISEL-12 worked with older people from different races. Results showed that eight items were associated with negative Differential Item Functioning (DIF), thus suggesting how Blacks, Hispanics and Asians reported lower levels of social support for these items (Sacco et al., 2010). Similarly, Menkin et al. (2017) were interested in assessing ageing expectations among different races: African American, Korean, Latino, Chinese. Their results showed that AA were the ones with the lowest expectations of cognitive decline, meanwhile Chinese American reported the opposite, in particular the former group showed similar results of Latino when education was

accounted for (Menkin et al., 2017). The ISEL was also used to examine the relationship between social support and social integration with inflammation, and findings showed that in the sample of older adults no significant relation was found to exist, whether the interaction was believed to be positive or negative (Bajaj et al., 2016).

### **Personal Resource Questionnaire (PRQ)**

The PRQ was first developed by Brendt and Weinert (1981) to assess social support, and it was later modified to the PRQ-82 and through other systematic revisions the PRQ-85 was established (Weinert, 1987). Later on, Weinert developed an updated version of the questionnaire, the PRQ-2000, which includes 15 items, whose score can range from 1 to 7, for a total score that can vary from 15 to 105 (Weinert, 2003). The instrument demonstrated high internal consistency (0.87 - 0.93) (Weinert, 2003). A systematic review conducted by Tawalbeh and Ahmad (2013) identified 3 studies in which PRQ was used to assess social support in a sample of older adults, and specifically, two implemented the PRQ-2000, thus suggesting its potential use with the ageing population.

### **Medical Outcomes Study (MOS) Social Support Survey**

The MOS Social Support Survey is a 19-item tool, whose score may range from 19 to 95, since each item is given a value between 1 and 5, it is easy to administer and structured into five, later modified to four, domains of functional social support: emotional, informational, tangible, affectionate and positive (Sherbourne & Stewart, 1991). The survey has been since used in a variety of settings, such as to assess whether social support would have an impact on depressive symptoms observed among individuals who do not drive anymore, finding a positive effect (Stinchcombe et al., 2021), but also to prove how social support has an influence on older adults' morale (Loke et al., 2011), as well as to establish the relationship

between social support and cognitive impairment among older people, which according to Pillemer et al. (2019) “higher levels of perceived social support (tangible, affectionate, positive social interaction, and overall) were associated with increased risk of incident cognitive impairment in fully adjusted models” (p. 3). Moreover, a study conducted with older American Indians, suggested that the oldest age group ( $> 75$ ) was the one to receive the highest level of social support, probably due to specific cultural aspects (Conte et al., 2015); meanwhile Hilari & Northcott (2016) found that healthy older adults are more socially supported than older patients with aphasia or who had experienced a stroke. Moreover, an abbreviated version has been developed to include 8 items, the mMOS-SSS, which has been tested with three populations of older women, two of which had a history of breast cancer, and researchers found this version to have good psychometric properties and suggested its potential use in the future with other older populations (Moser et al., 2012).

Regarding translations, in a study conducted in Malaysia with community-dwelling older adults, the survey was found to be reliable and valid (Din et al., 2020). Concerning the Portuguese language, in Brazil a study established validity and reliability ( $\alpha = 0.94$ ) for the MOS-SSS in the four-factor structure with a sample of older people who use the primary healthcare system (Zucoloto et al., 2019). Similarly, Zanini & Peixoto (2016) conducted a research in Brazil to evaluate whether validity would still be appropriate when using IRT (Item Response Theory), and obtained positive results. Another study conducted in Spain provided evidence of good psychometric properties of the MOS-SSS in the older population, specifically a five-factor model (Dumitrache et al., 2021). Yu et al. (2004) evaluated the psychometric properties of the Chinese version of the survey and found a high reliability (.98) as well as a good validity. Meanwhile, a study conducted in Iran explored the validity and reliability of the translated version of the 5-item MOS-SSS in a sample of older people, and found positive results: Cronbach’s alpha was 0.78. (Bakhshandeh et al., 2021). Finally, a

study in Japan, with a sample of people aged between 25 and 75 demonstrated the possible use of the 8-item version of the MOS-SSS, even though further research should focus on people older than 75 years (Togari & Yokoyama, 2016).

### **The Friendship Scale**

Hawthorne (2006) created a new tool to measure social isolation starting from data from the World Health Organization Quality of Life Group's (WHOQOL Group) WHO QOL-OLD study, because he believed that all the existing instruments to assess social isolation would either take too long to administer, have items negatively described or only present in other testing procedures. The FS comprises 6 items and it is characterised by both high validity and reliability (0.76), even though further research is certainly required, especially for populations other than the ageing one (Hawthorne, 2006). This scale has also been translated in Danish and adapted to appropriately match the culture (Kent et al., 2015). The psychometric properties of this version show similarities with the original one ( $\alpha = 0.82$  for the Low Back Pain cohort, and  $\alpha = 0.70$  for the General Population Sample) and it appears to be well understood by the local people (Kent et al., 2015).

### **Other instruments**

Other measurements have been developed for specific studies, among which LaVeist et al. (1997) assessed extreme social isolation in a sample of African American older women on the basis of two characteristics: living alone and lack of contact with friends and family for the two weeks prior to the interview.

Moreover, Cornwell & Waite (2009) created a measure assessing social isolation for their study starting with data from the National Social Life, Health, and Aging Project (NSHAP).

The scale was structured into two subscales, one regarding social disconnectedness, with eight

items, and the other addressing perceived isolation, with nine items, with the possibility of reducing them to seven in case the individual does not have a spouse or partner (Cornwell & Waite, 2009). The subscales were chosen as such to be able to represent, respectively, an objective and a subjective component of social isolation.

Similarly, Wister et al. (2019) developed a Composite Social Isolation Index on the basis of the Canadian Longitudinal Study on Aging (CLSA), called CLSA-SII, starting from the aforementioned work by Valtorta et al. (2016). The index is structured into five domains: community or social participation (eight items), network size (eight items), frequency of contact (five items), living arrangement (dichotomous answer) and marital status (dichotomous answer) (Wister et al., 2019). Furthermore, the CLSA-SII included functional, objective items, taken from the MOS Social Support Survey: “emotional/informational support, affectionate support, tangible support, and positive social interaction” (p. 187); as well as two functional, subjective items: the first contained in the Center for Epidemiological Studies Depression Scale (CES-D), which asks how often the participant felt lonely over the week previous to the interview; and the second wonders whether participants desire to take part into more activities (Wister et al., 2019).

Finally, as suggested by Wigfield & Alden (2018), a qualitative sense check is of paramount importance when indices to examine social isolation are being developed, so that accurate solutions may be addressed to the correct individuals.

## **CONCLUSIONS**

This final dissertation had the purpose of discussing the measurement tools used by researchers to screen and examine social isolation among older adults. Firstly, different findings have been presented regarding the negative consequences social isolation may cause to the older population, engulfing both physical and psychological aspects. Secondly, specific

environments and situations were presented as a reference to better comprehend which conditions older people may live in. Finally the main subject of this thesis was presented by discussing the instruments that have been implemented by researchers in their study to assess social isolation in the ageing population. These involve the LSNS, the MSPSS, the DSSI, the ISEL, the PRQ-2000, the MOS-SSS and the Friendship Scale. The LSNS is the instrument that has been modified the most in order to specifically assess social isolation, and three new versions were born: the LSNS-R to improve the original version (Lubben et al., 2002), the LSNS-6 to have an abbreviated version capable of screening for social isolation (Lubben et al., 2006) and the LSNS-18 to better outline differences between non-kin social ties, thus differences between the friendship and neighbour network (Lubben & Gironde, 2003). With respect to the other tools presented, this scale was specifically developed to examine social isolation among older adults. The MSPSS is the only scale which specifically highlights the importance of having someone besides you to receive support by including the “significant other” category, and it also showed a higher reliability (0.88) with respect to the LSNS (0.70) (Zimet et al., 1988) (Lubben, 1988). The DSSI was modified by Koenig et al. (1993) to examine social support in the older population, thus underlining how the characteristics of certain tools must reflect the needs of the sample taken into consideration. Therefore the index was modified to include 23 and 11 items, in which the first included the instrumental subscale, characterized by a more objective nature. The ISEL is the longest instrument, containing 40 statements, divided in 10 items, meanwhile the PRQ-2000 is the tool which has been used the least with the ageing population: only two studies implemented it. On the other hand the MOS-SSS has been used in a variety of studies. This instrument in particular contains 19 items and focuses on functional domains of social support, not categories, as seen with the LSNS and MSPSS, which are emotional, tangible, informational, positive and affectionate (Sherbourne & Stewart, 1991). The Friendship Scale is the most recent

measurement tool that has been developed to examine social isolation, structured with 6 items. This item also demonstrated good reliability (0.76) (Hawthorne, 2006), proving its potential use in the older population.

What is clear from examining all these tools is that when it comes to this specific population, the scales must reflect its needs, such as little time required to be completed and a clear description of the requests (Hawthorne, 2006). Future research may implement any of these listed instruments to examine social isolation among older adults on the basis of what their study purpose is, or create a specific measure starting from one of these tools, with a careful examination of all possible mistakes or disadvantages and a check for validity and reliability.

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## APPENDIX

### Family networks

- Q1. How many relatives do you see or hear from at least once a month?  
(NOTE: Include in-laws with relatives.) Q1 \_\_\_\_\_
- |          |                   |
|----------|-------------------|
| 0 = zero | 3 = three or four |
| 1 = one  | 4 = five to eight |
| 2 = two  | 5 = nine or more  |
- Q2. Tell me about the relative with whom you have the most contact. How often do you see or hear from that person? Q2 \_\_\_\_\_
- |                         |                        |
|-------------------------|------------------------|
| 0 = < monthly           | 3 = weekly             |
| 1 = monthly             | 4 = a few times a week |
| 2 = a few times a month | 5 = daily              |
- Q3. How many relatives do you feel close to? That is, how many of them do you feel at ease with, can talk to about private matters, or can call on for help? Q3 \_\_\_\_\_
- |          |                   |
|----------|-------------------|
| 0 = zero | 3 = three or four |
| 1 = one  | 4 = five to eight |
| 2 = two  | 5 = nine or more  |

### Friends networks

- Q4. Do you have any close friends? That is, do you have any friends with whom you feel at ease, can talk to about private matters, or can call on for help? If so, how many? Q4 \_\_\_\_\_
- |          |                   |
|----------|-------------------|
| 0 = zero | 3 = three or four |
| 1 = one  | 4 = five to eight |
| 2 = two  | 5 = nine or more  |
- Q5. How many of these friends do you see or hear from at least once a month? Q5 \_\_\_\_\_
- |          |                   |
|----------|-------------------|
| 0 = zero | 3 = three or four |
| 1 = one  | 4 = five to eight |
| 2 = two  | 5 = nine or more  |
- Q6. Tell me about the friend with whom you have the most contact. How often do you see or hear from that person? Q6 \_\_\_\_\_
- |                         |                        |
|-------------------------|------------------------|
| 0 = < monthly           | 3 = weekly             |
| 1 = monthly             | 4 = a few times a week |
| 2 = a few times a month | 5 = daily              |

Confidant relationships

Q7. When you have an important decision to make, do you have someone you can talk to about it? Q7 \_\_\_\_\_

	Very				
Always	Often	Often	Sometimes	Seldom	Never
5	4	3	2	1	0

Q8. When other people you know have an important decision to make, do they talk to you about it? Q8 \_\_\_\_\_

	Very				
Always	Often	Often	Sometimes	Seldom	Never
5	4	3	2	1	0

Helping others

Q9a. Does anybody rely on you to do something for them each day? For example: shopping, cooking dinner, doing repairs, cleaning house, providing child care, etc.

NO—if no, go on to Q9b. YES—if yes, Q9 is scored “5” and skip to Q10

Q9b. Do you help anybody with things like shopping, filling out forms, doing repairs, providing child care, etc.? Q9 \_\_\_\_\_

	Very				
Often	Often	Sometimes	Seldom	Never	
4	3	2	1	0	

Living arrangements

Q10. Do you live alone or with other people? (NOTE: Include in-laws with relatives.) Q10 \_\_\_\_\_

5 Live with spouse  
4 Live with other relatives or friends  
1 Live with other unrelated individuals (e.g., paid help)  
0 live alone

TOTAL LSNS SCORE: \_\_\_\_\_

SCORING:

The total LSNS score is obtained by adding up scores from each of the ten individual items. Thus, total LSNS scores can range from 0 to 50. Scores on each item were anchored between 0 and 5 in order to permit equal weighting of the ten items.

“Figure 3. Lubben Social Network Scale, by Lubben, 1988.”

**FAMILY:** *Considering the people to whom you are related by birth, marriage, adoption, etc...*

1. How many relatives do you see or hear from at least once a month?  
0 = none    1 = one    2 = two    3 = three or four    4 = five thru eight    5 = nine or more
2. How often do you see or hear from the relative with whom you have the most contact?  
0 = less than monthly    1 = monthly    2 = few times a month    3 = weekly    4 = few times a week  
5 = daily
3. How many relatives do you feel at ease with that you can talk about private matters?  
0 = none    1 = one    2 = two    3 = three or four    4 = five thru eight    5 = nine or more
4. How many relatives do you feel close to such that you could call on them for help?  
0 = none    1 = one    2 = two    3 = three or four    4 = five thru eight    5 = nine or more
5. When one of your relatives has an important decision to make, how often do they talk to you about it?  
0 = never    1 = seldom    2 = sometimes    3 = often    4 = very often    5 = always
6. How often is one of your relatives available for you to talk to when you have an important decision to make?  
0 = never    1 = seldom    2 = sometimes    3 = often    4 = very often    5 = always

**FRIENDSHIPS:** *Considering all of your friends including those who live in your neighborhood...*

7. How many of your friends do you see or hear from at least once a month?  
0 = none    1 = one    2 = two    3 = three or four    4 = five thru eight    5 = nine or more
8. How often do you see or hear from the friend with whom you have the most contact?  
0 = less than monthly    1 = monthly    2 = few times a month    3 = weekly    4 = few times a week  
5 = daily
9. How many friends do you feel at ease with that you can talk about private matters?  
0 = none    1 = one    2 = two    3 = three or four    4 = five thru eight    5 = nine or more
10. How many friends do you feel close to such that you could call on them for help?  
0 = none    1 = one    2 = two    3 = three or four    4 = five thru eight    5 = nine or more
11. When one of your friends has an important decision to make, how often do they talk to you about it?  
0 = never    1 = seldom    2 = sometimes    3 = often    4 = very often    5 = always
12. How often is one of your friends available for you to talk to when you have an important decision to make?  
0 = never    1 = seldom    2 = sometimes    3 = often    4 = very often    5 = always

*LSNS-R total score is an equally weighted sum of these twelve items. Scores range from 0 to 60.*

“Figure 4. Lubben Social Network Scale-Revised (LSNS-R), by Lubben et al., 2002.”

**FAMILY:** *Considering the people to whom you are related by birth, marriage, adoption, etc...*

1. How many relatives do you see or hear from at least once a month?

0 = none    1 = one    2 = two    3 = three or four    4 = five thru eight    5 = nine or more

2. How many relatives do you feel at ease with that you can talk about private matters?

0 = none    1 = one    2 = two    3 = three or four    4 = five thru eight    5 = nine or more

3. How many relatives do you feel close to such that you could call on them for help?

0 = none    1 = one    2 = two    3 = three or four    4 = five thru eight    5 = nine or more

**FRIENDSHIPS:** *Considering all of your friends including those who live in your neighborhood*

4. How many of your friends do you see or hear from at least once a month?

0 = none    1 = one    2 = two    3 = three or four    4 = five thru eight    5 = nine or more

5. How many friends do you feel at ease with that you can talk about private matters?

0 = none    1 = one    2 = two    3 = three or four    4 = five thru eight    5 = nine or more

6. How many friends do you feel close to such that you could call on them for help?

0 = none    1 = one    2 = two    3 = three or four    4 = five thru eight    5 = nine or more

*LSNS-6 total score is an equally weighted sum of these six items. Scores range from 0 to 30*

“Figure 5. Lubben Social Network Scale 6-Item Version by Lubben et al., 2006.”

**FAMILY:** *Considering the people to whom you are related by birth, marriage, adoption, etc...*

1. How many relatives do you see or hear from at least once a month?  
0 = none    1 = one    2 = two    3 = three or four    4 = five thru eight    5 = nine or more
2. How often do you see or hear from relative with whom you have the most contact?  
0 = less than monthly    1 = monthly    2 = few times a month    3 = weekly    4 = few times a week  
5 = daily
3. How many relatives do you feel at ease with that you can talk about private matters?  
0 = none    1 = one    2 = two    3 = three or four    4 = five thru eight    5 = nine or more
4. How many relatives do you feel close to such that you could call on them for help?  
0 = none    1 = one    2 = two    3 = three or four    4 = five thru eight    5 = nine or more
5. When one of your relatives has an important decision to make, how often do they talk to you about it?  
0 = never    1 = seldom    2 = sometimes    3 = often    4 = very often    5 = always
6. How often is one of your relatives available for you to talk to when you have an important decision to make?  
0 = never    1 = seldom    2 = sometimes    3 = often    4 = very often    5 = always

**NEIGHBORS:** *Considering those people who live in your neighborhood...*

7. How many of your neighbors do you see or hear from at least once a month?  
0 = none    1 = one    2 = two    3 = three or four    4 = five thru eight    5 = nine or more
8. How often do you see or hear from the neighbor with whom you have the most contact?  
0 = less than monthly    1 = monthly    2 = few times a month    3 = weekly    4 = few times a week  
5 = daily
9. How many neighbors do you feel at ease with that you can talk about private matters?  
0 = none    1 = one    2 = two    3 = three or four    4 = five thru eight    5 = nine or more
10. How many neighbors do you feel close to such that you could call on them for help?  
0 = none    1 = one    2 = two    3 = three or four    4 = five thru eight    5 = nine or more
11. When one of your neighbors has an important decision to make, how often do they talk to you about it?  
0 = never    1 = seldom    2 = sometimes    3 = often    4 = very often    5 = always
12. How often is one of your neighbors available for you to talk to when you have an important decision to make?  
0 = never    1 = seldom    2 = sometimes    3 = often    4 = very often    5 = always

**FRIENDSHIPS:** *Considering your friends who do not live in your neighborhood...*

13. How many of your friends do you see or hear from at least once a month?  
0 = none    1 = one    2 = two    3 = three or four    4 = five thru eight    5 = nine or more
14. How often do you see or hear from the friend with whom you have the most contact?  
0 = less than monthly    1 = monthly    2 = few times a month    3 = weekly    4 = few times a week  
5 = daily
15. How many friends do you feel at ease with that you can talk about private matters?  
0 = none    1 = one    2 = two    3 = three or four    4 = five thru eight    5 = nine or more
16. How many friends do you feel close to such that you could call on them for help?  
0 = none    1 = one    2 = two    3 = three or four    4 = five thru eight    5 = nine or more
17. When one of your friends has an important decision to make, how often do they talk to you about it?  
0 = never    1 = seldom    2 = sometimes    3 = often    4 = very often    5 = always
18. How often is one of your friends available for you to talk to when you have an important decision to make?  
0 = never    1 = seldom    2 = sometimes    3 = often    4 = very often    5 = always

*LSNS-R total score is an equally weighted sum of these twelve items. Scores range from 0 to 90*

“Figure 6. Lubben Social Network Scale-18, by Lubben & Girona, 2003.”

MSPSS Items	M	SD
1. There is a special person who is around when I am in need.	5.55	1.37
2. There is a special person with whom I can share my joys and sorrows.	5.83	1.43
3. My family really tries to help me.	6.22	1.07
4. I get the emotional help and support I need from my family.	5.62	1.49
5. I have a special person who is a real source of comfort to me.	5.70	1.51
6. My friends really try to help me.	5.78	1.02
7. I can count on my friends when things go wrong.	5.77	1.22
8. I can talk about my problems with my family.	5.38	1.59
9. I have friends with whom I can share my joys and sorrows.	6.01	1.01
10. There is a special person in my life who cares about my feelings.	5.90	1.34
11. My family is willing to help me make decisions.	5.98	1.20
12. I can talk about my problems with my friends.	5.85	1.17
<b>MSPSS Subscales</b>	<b>M</b>	<b>SD</b>
Significant Other	5.74	1.25
Family	5.80	1.12
Friends	5.85	.94
Total	5.80	.86

“Multidimensional Scale of Perceived Social Support Item and Subscale Means and Standard Deviations, by Zimet et al., 1988.”

<p style="text-align: center;"><b>Social Interaction Subscale</b></p> <p>4. Number of family members within 1 hour that subject can depend on or feel close to.</p> <p>5. Number of times past week spent time with someone not living with.</p> <p>6. Number of times past week talked with friends/relatives on telephone.</p> <p>7. Number of times past week attended meetings of clubs, religious groups, or other groups that you belong to (other than at work).</p> <p style="text-align: center;"><b>Subjective Support Subscale</b></p> <p>11. Do family and friends understand you?</p> <p>13. Do you feel useful to family and friends?</p> <p>14. Do you know what's happening with family and friends?</p> <p>15. Do you feel listened to by family and friends?</p> <p>16. Do you feel you have a definite role in family and among friends?</p> <p>18. Can you talk about your deepest problem?</p>	<p>19. How satisfied are you with relationships with family and friends?</p> <p style="text-align: center;"><b>Instrumental Support Subscale (dropped in 11-item scale)</b></p> <p>Does family or friends ever help in any of the following ways:</p> <p>20. Help out when you are sick?</p> <p>21. Shop or run errands for you?</p> <p>22. Give you gifts (presents)?</p> <p>23. Help you out with money?</p> <p>24. Fix things around your house?</p> <p>25. Keep house for you or do household chores?</p> <p>26. Give you advice on business or financial matters?</p> <p>27. Provide companionship to you?</p> <p>28. Listen to your problems?</p> <p>29. Give you advice on dealing with life's problems?</p> <p>30. Provide transportation for you?</p> <p>31. Prepare or provide meals for you?</p> <p>32. Do you need help with small children? (not included)</p>
---	---

“Abbreviated Duke Social Support Index (23-item and 11-item versions), by Koenig et al., 1993.”



For clarity, each subscale is listed separately. The scale presented to subjects consists of all 40 items listed in random order. T or F indicates response coded as social support.

### Instructions

This scale is made up of a list of statements each of which may or may not be true about you. For each statement we would like you to circle probably TRUE (T) if the statement is true about you or probably FALSE if the statement is not true about you.

You may find that many of the statements are neither clearly true nor clearly false. In these cases, try to decide quickly whether probably TRUE (T) or probably FALSE (F) is most descriptive of you. Although some questions will be difficult to answer, it is important that you pick one alternative or the other. Remember to circle only one of the alternatives for each statement.

Please read each item quickly but carefully before responding. Remember that this is not a test and there are no right or wrong answers.

### Appraisal

- T 1. There is at least one person I know whose advice I really trust.
- F 2. There is really no one I can trust to give me good financial advice.
- F 3. There is really no one who can give me objective feedback about how I'm handling my problems.
- T 4. When I need suggestions for how to deal with a personal problem I know there is someone I can turn to.
- T 5. There is someone who I feel comfortable going to for advice about sexual problems.
- T 6. There is someone I can turn to for advice about handling hassles over household responsibilities.
- F 7. I feel that there is no one with whom I can share my most private worries and fears.
- F 8. If a family crisis arose few of my friends would be able to give me good advice about handling it.
- F 9. There are very few people I trust to help solve my problems.
- T 10. There is someone I could turn to for advice about changing my job or finding a new one.

### Belonging

- T 1. If I decide on a Friday afternoon that I would like to go to a movie that evening, I could find someone to go with me.
- F 2. No one I know would throw a birthday party for me.
- T 3. There are several different people with whom I enjoy spending time.
- F 4. I don't often get invited to do things with others.
- T 5. If I wanted to have lunch with someone, I could easily find someone to join me.
- F 6. Most people I know don't enjoy the same things that I do.
- T 7. When I feel lonely, there are several people I could call and talk to.
- T 8. I regularly meet or talk with members of my family or friends.
- F 9. I feel that I'm on the fringe in my circle of friends.
- F 10. If I wanted to go out of town (e.g., to the coast) for the day I would have a hard time finding someone to go with me.

### Tangible

- T 1. If for some reason I were put in jail, there is someone I could call who would bail me out.
- T 2. If I had to go out of town for a few weeks, someone I know would look after my home (the plants, pets, yard, etc.)
- F 3. If I were sick and needed someone to drive me to the doctor, I would have trouble finding someone.
- F 4. There is no one I could call on if I needed to borrow a car for a few hours.
- T 5. If I needed a quick emergency loan of \$100, there is someone I could get it from.
- F 6. If I needed some help in moving to a new home, I would have a hard time finding someone to help me.
- F 7. If I were sick, there would be almost no one I could find to help me with my daily chores.
- T 8. If I got stranded 10 miles out of town, there is someone I could call to come get me.
- T 9. If I had to mail an important letter at the post office by 5:00 and couldn't make it, there is someone who could do it for me.
- F 10. If I needed a ride to the airport very early in the morning, I would have a hard time finding anyone to take me.

### Self-Esteem

- F 1. In general, people don't have much confidence in me.
- T 2. I have someone who takes pride in my accomplishments.
- F 3. Most of my friends are more successful at making changes in their lives than I am.
- T 4. Most people I know think highly of me.
- F 5. Most of my friends are more interesting than I am.
- T 6. I am more satisfied with my life than most people are with theirs.
- F 7. I have a hard time keeping pace with my friends.
- F 8. I think that my friends feel that I'm not very good at helping them solve problems.
- T 9. I am closer to my friends than most other people.
- T 10. I am able to do things as well as most other people.

“The General Population Form of the ISEL, by Cohen et al., 1985.”

Below are some statements with which some people agree and others disagree. Please read each statement and **CIRCLE** the response most appropriate for you. There is no *right* or *wrong* answer.

	1	2	3	4	5	6	7
	1 STRONGLY DISAGREE						
	2 DISAGREE						
	3 SOMEWHAT DISAGREE						
	4 NEUTRAL						
	5 SOMEWHAT AGREE						
	6 AGREE						
	7 STRONGLY AGREE						
Q-1. There is someone I feel close to who makes me feel secure	1	2	3	4	5	6	7
Q-2. I belong to a group in which I feel important	1	2	3	4	5	6	7
Q-3. People let me know that I do well at my work (job, homemaking)	1	2	3	4	5	6	7
Q-4. I have enough contact with the person who makes me feel special	1	2	3	4	5	6	7
Q-5. I spend time with others who have the same interests that I do	1	2	3	4	5	6	7
Q-6. Others let me know that they enjoy working with me (job, committees, projects)	1	2	3	4	5	6	7
Q-7. There are people who are available if I need help over an extended period of time	1	2	3	4	5	6	7
Q-8. Among my group of friends we do favors for each other	1	2	3	4	5	6	7
Q-9. I have the opportunity to encourage others to develop their interests and skills	1	2	3	4	5	6	7
Q-10. I have relatives or friends who will help me out even if I can't pay them back	1	2	3	4	5	6	7
Q-11. When I am upset, there is someone I can be with who lets me be myself	1	2	3	4	5	6	7
Q-12. I know that others appreciate me as a person	1	2	3	4	5	6	7
Q-13. There is someone who loves and cares about me	1	2	3	4	5	6	7
Q-14. I have people to share social events and fun activities with	1	2	3	4	5	6	7
Q-15. I have a sense of being needed by another person	1	2	3	4	5	6	7

“Personal Resource Questionnaire (PRQ2000), by Weinert, 2003.”

Next are some questions about the support that is available to you.

1. About how many close friends and close relatives do you have (people you feel at ease with and can talk to about what is on your mind)?

Write in number of close friends and close relatives:

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People sometimes look to others for companionship, assistance, or other types of support. How often is each of the following kinds of support available to you if you need it?

(Circle One Number On Each Line)

	None of the Time	A Little of the Time	Some of the Time	Most of the Time	All of the Time
2. Someone to help you if you were confined to bed.....	1	2	3	4	5
3. Someone you can count on to listen to you when you need to talk .....	1	2	3	4	5
4. Someone to give you good advice about a crisis.....	1	2	3	4	5
5. Someone to take you to the doctor if you needed it	1	2	3	4	5
6. Someone who shows you love and affection .....	1	2	3	4	5
7. Someone to have a good time with .....	1	2	3	4	5
8. Someone to give you information to help you understand a situation.....	1	2	3	4	5
9. Someone to confide in or talk to about yourself or your problems .....	1	2	3	4	5
10. Someone who hugs you .....	1	2	3	4	5
11. Someone to get together with for relaxation .....	1	2	3	4	5
12. Someone to prepare your meals if you were unable to do it yourself .....	1	2	3	4	5
13. Someone whose advice you really want.....	1	2	3	4	5
14. Someone to do things with to help you get your mind off things .....	1	2	3	4	5
15. Someone to help with daily chores if you were sick	1	2	3	4	5
16. Someone to share your most private worries and fears with.....	1	2	3	4	5
17. Someone to turn to for suggestions about how to deal with a personal problem .....	1	2	3	4	5
18. Someone to do something enjoyable with .....	1	2	3	4	5
19. Someone who understands your problems .....	1	2	3	4	5
20. Someone to love and make you feel wanted.....	1	2	3	4	5

“MOS Social Support Survey, by Sherbourne & Stewart, 1991.”

During the past four weeks:

\*1. It has been easy to relate to others:

- Almost always
- Most of the time
- About half the time
- Occasionally
- Not at all

\*3. I had someone to share my feelings with:

- Almost always
- Most of the time
- About half the time
- Occasionally
- Not at all

2. I felt isolated from other people:

- Almost always
- Most of the time
- About half the time
- Occasionally
- Not at all

\*4. I found it easy to get in touch with others when I needed to:

- Almost always
- Most of the time
- About half the time
- Occasionally
- Not at all

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During the past four weeks:

5. When with other people,

I felt separate from them:

Almost always

Most of the time

About half the time

Occasionally

Not at all

\*These items reversed prior to scoring

6. I felt alone and friendless:

Almost always

Most of the time

About half the time

Occasionally

Not at all

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“The Friendship Scale, by Hawthorne, 2006.”