GEORGIA HEALTH POLICY CENTER

EVIDENCE-INFORMED APPROACHES TO MEASURE SOCIAL ISOLATION AMONG OLDER ADULTS

Georgia Department of Human Services, Division of Aging Services

August 2020

Georgia
Health Policy
Center

Georgia State University | ANDREW YOUNG SCHOOL OF POLICY STUDIES

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The Georgia Department of Human Services, Division on Aging Services (DAS) recently received funding through the Coronavirus Aid, Relief, and Economic Security (CARES) Act that will support the Division in the response to issues that have been brought on or further exacerbated by the COVID-19 pandemic, including social disconnection among older adults. In an effort to address these issues, DAS contracted with the Georgia Health Policy Center to identify existing, empirically supported measurement tools for assessing social disconnection, isolation, and loneliness in their service populations. The intent is to use this tool in conjunction with DAS' current assessment processes.

This report provides an overview of the current literature on social disconnection; a comparison of tools validated to assess relevant constructs in older adult populations; and recommendations regarding tool selection, implementation, and potential avenues for intervention. The report also includes the results of a rapid environmental scan to provide information about related activities in other states and organizations. Key findings include:

Background

- A review of the literature indicates the need to shift from "social isolation" to the more holistic measurement construct of "social connection."

- Social connection is a multidimensional construct that represents the structural, functional, and qualitative aspects of social relationships.

- Constructs related to social connection are used somewhat interchangeably, and definitions and measurement approaches vary in both the literature and in practice.

- Findings suggest measurement approaches should assess multiple aspects of social disconnection to provide a complete understanding of the problem and accurately inform intervention strategies.

- Research shows a relationship between social connection and health outcomes in older adults. Social connection can influence risk of premature mortality, depression, cognitive decline, dementia, and coronary artery disease and stroke in older adults. The effects of social disconnection can accumulate over the life course.

- A large proportion of older adults experience social disconnection and certain subgroups — such as those with low incomes, sensory impairment, and advanced age — are at higher risk.

Methods

- Emerging literature supports a two-phase process that combines screening with a more comprehensive assessment process.

- Phase I assessment is intended for broad use as a screening tool, while Phase II assessment aims to provide a deeper understanding of the problem and identify

intervention options through person-centered planning.

- A literature review was completed using several academic databases and search terms relevant to "social isolation," "loneliness," and "older adults." Articles were included in the search if they met the following inclusion criteria:
    - measured dimension(s) of social connection,
    - available in the public domain,
    - designed for or tested with older adults,
    - had strong reliability and validity,
    - produced a score, and
    - brief to administer.

- An additional scan of the literature was completed to collect documents on relevant interventions that have been evaluated for use in addressing social disconnection in older adults.

- The environmental scan involved the review of recent reports, press releases, and relevant policies and regulations available on the websites of federal agencies; national membership organizations; and state, regional, and local-level entities.

Tools

- Out of the 70+ tools identified, four met the full inclusion criteria: Berkman-Syme Social Network Index, De Jong Gierveld Loneliness Scale, Three-Item UCLA Loneliness Scale, and the abbreviated Lubben Social Network Scale (LSNS-6).

- Based on the available evidence, the authors concluded that the LSNS-6 is the strongest candidate for use as a Phase I screening tool.

- The LSNS was designed to assess social integration and screen for social isolation among older adults, and the selected version contains six items (LSNS-6).

- Benefits of the LSNS-6 include:
    - Strong evidence of reliability and validity in both research and clinical settings with older adults
    - Testing and use in both large and small-scale studies in the United States and abroad
    - Validation in several languages and administration modes, including self-administration, phone administration, and in-person interview
    - Simple and brief to administer and score
    - An established clinical cut point to identify risk

- The authors recommend the Three-Item UCLA Loneliness Scale as part of the Phase II assessment process.

- Benefits of the Three-Item UCLA Loneliness Scale include:

- o Strong evidence of reliability and validity across diverse older adult populations
- o Recommendation by a National Academies of Science, Engineering, and Medicine (NASEM) committee for use in health care settings
- o Simple and brief to administer and score
- o Ongoing effort to integrate the scale into U.S. electronic health records systems

Interventions

- Research findings on the effectiveness of interventions provide limited guidance to practitioners, as large-scale reviews of existing interventions reveal that existing evidence is of poor quality.
- Researchers and practitioners argue that, while the evidence base is built, practical approaches involving screening, followed by person-centered counseling, and a menu of options for intervention should be pursued.
- Reviews reveal certain features of interventions appear to improve effectiveness, including having a sound theoretical basis; active participation from older adult participants, including in their design and implementation; involving productive engagement activities; and adaptability to local contexts.
- Interventions can be characterized by target population (e.g., general older adult population or vulnerable groups), intervention level (one-on-one, group, or community), and intervention type (those intentionally targeting behavior or skills, those that increase opportunities for engagement, and those that add resources).
- One-on-one interventions commonly involve therapeutic interventions, social support training, and peer companionship and mentoring.
- Group interventions include group physical activity interventions and educational or skill-building programs, among others.
- A rise in technology-based interventions has been observed recently and include training on computer use and peer support through virtual communities.
- Caution should be employed when implementing any intervention and routine follow-up should occur to promote positive outcomes and minimize the risk of harm.

Environmental Scan

- Issues of social disconnection among older adults have gained significant, recent attention nationally and internationally.
- Efforts to address social disconnection have been spearheaded by foundations, social service organizations, and health care organizations.
- The most significant international effort that is taking place to address social isolation in older adults is the Campaign to End Loneliness. The campaign is based in the United Kingdom and focuses on sharing information broadly on research and

knowledge on topics related to loneliness.

- The scan indicated that few aging- and disability-serving organizations in the United States have adopted evidence-based measurement tools to assess social connection in older adults.

- National initiatives include AARP's Foundation sponsorship of social isolation research, including the NASEM committee, which produced *Social Isolation and Loneliness in Older Adults: Opportunities for the Health Care System* (2020). AARP has also launched its *Connect2Affect* campaign and is working to establish a network of resources for socially isolated older adults.

- Other national initiatives to support social connection research and programming include those of the Juanita C. Grant Foundation, various insurance companies, such as Cigna, national aging and disability services membership organizations, and federal agencies, like the Administration for Community Living.

- A review of state initiatives responding to the coronavirus pandemic showed that many states are providing telephone reassurance and wellness checks, expanded meal delivery, and telephonic and virtual socialization opportunities and support groups to their service populations.

Though the evidence on effective assessment and interventions for social disconnection is still emerging, this review yields considerable support for the use of validated tools and person-centered assessments. The use of a validated screening tool, such as the LSNS-6, followed by the administration of a validated loneliness scale, like the Three-Item UCLA Loneliness Scale, paired with person-centered counseling is appropriate. This strategy is being adopted in various clinical settings and appears well suited for DAS' current No Wrong Door System processes and practices.

It is imperative that early monitoring of the assessment process, ideally through a pilot, occur to refine the process and identify any potential challenges that may occur related to referral and resource availability. When the assessment process is fully implemented, consistent data collection at multiple time points will be essential to promote responsive service delivery, continuing improvement of assessment and linkage, and to assess the impact of referral and intervention. The development of an efficient, sustainable approach to assessment, as well as building out effective intervention resources, can afford DAS the opportunity to meaningfully address the long-standing issue of social disconnection among older adults, both during and beyond the pandemic.

Introduction

Although deficits in social connection, such as social isolation and loneliness, are not universal among older adults, research suggests that increased age carries elevated risk for these conditions (de Jong Gierveld & Havens, 2004; Pinquart & Sörensen, 2001). Available evidence points to the loss of a partner, retirement, disability and declines in health status, and reduced financial resources as aging-related risk factors for loneliness and social isolation (Cornwell & Waite, 2009; Elder & Retrum, 2012). Research also indicates that social network size decreases with age, which may contribute to risk among older adults (Wrzus, Hänel, Wagner, & Neyer, 2012). In addition to increased risk for social disconnection, the associated harms to health and well-being are experienced at a greater magnitude in older age. Findings from longitudinal studies suggest the health effects of social disconnectedness accumulate over the life course and, consequently, manifest most intensely in older age (Hawkley & Cacioppo, 2007; Hawkley et al., 2008; Pinquart & Sörensen, 2001).

Given the nature of existing problems related to social disconnection among older adults, the coronavirus crisis and accompanying physical distancing measures could result in dangerous consequences for a large segment of the population. As evidence indicates older adults are among the most susceptible and at increased risk of developing severe illness from the virus, physical distancing guidelines for this population remain very strict and include recommendations to limit interactions with others as much as possible (Centers for Disease Control and Prevention, 2020). Though imperative to reducing the risk of exposure to the virus among older adults, physical distancing requirements have exacerbated risks associated with social disconnection. Fortunately, policymakers, practitioners, and the general public have recognized and started to respond to these challenges in ways that can meaningfully address social disconnection among older adults both during and beyond the public health emergency.

DAS recently received federal funding through the CARES Act to facilitate the adaptation of services, meet increases in demand, and respond to a host of other challenges brought on by the crisis, including social isolation. As an initial step in DAS's efforts to respond to social isolation threats among its service population, it contracted with the Georgia Health Policy Center to identify existing, empirically supported measurement tools for integration within DAS's current assessment process.

The authors initially intended to focus their research and recommendations on the construct of social isolation, but, upon reviewing the scientific literature, discovered extensive evidence that indicated a more holistic measure of social connection was warranted.

Constructs related to social connection and relationships are used somewhat interchangeably, and definitions and measurement approaches vary throughout the literature and in practice. Despite this variance, overall, findings suggest multiple aspects of social connection impact health, both independently and synergistically, and that measurement approaches that do not consider multiple dimensions cannot fully inform appropriate intervention (Holt-Lunstad, Robles, & Sbarra, 2017). Furthermore, evaluations of existing

measures have found that complex, multidimensional measures yield the strongest results (NASEM, 2020). Consequently, the authors felt it necessary to expand the scope of the review to include measures of other related constructs and focus heavily on evidence related to multifactorial measurement.

This report, therefore, provides an overview of the current literature on social disconnection; a comparison of tools validated to assess relevant constructs in older adult populations; and recommendations regarding tool selection, implementation, and potential avenues for intervention. The report also includes the results of a rapid environmental scan to provide information about related activities in other states and organizations.

Background

A body of interdisciplinary research reliably establishes that social connection plays a critical role in the maintenance of health and well-being across the life course (NASEM, 2020). Robust data indicate dimensions of social connection, the definitions for which vary throughout the literature, but include constructs such as loneliness, social isolation, and social support, substantially influence risk of premature mortality, along with specific health conditions (Holt-Lunstad, Smith, & Layton, 2010). Studies suggest social relationships are linked to both the risks for and prognosis of depression (Cacioppo & Cacioppo, 2014), cognitive decline (Shankar, Hamer, McMunn, & Steptoe, 2013), dementia (Kuiper et al., 2015; Penninkilampi, Casey, Singh, & Brodaty, 2018), and coronary artery disease and stroke (Valtorta, Kanaan, Gilbody, Ronzi, & Hanratty, 2016), among other conditions in older adults.

Current evidence suggests multiple factors mediate and moderate the relationship between social connection and health outcomes in older adults (NASEM, 2020). Findings support linkages between social connection and health-related behaviors, both positive and negative (e.g., physical activity engagement and smoking); sleep (Kent de Grey, Uchino, Trettevik, Cronan, & Hogan, 2018; Williams et al., 2016); and medical adherence (DiMatteo, 2004). Research also indicates social connection is tied to changes in cardiovascular, neuroendocrine, and immune function (Uchino, 2006). Emerging research is also beginning to explore the effects of social connection and disconnection on gene expression (Eisenberger & Cole, 2012; Irwin & Cole, 2011). Though researchers are continuing to explore these relationships and understand the observed effects in older adults, some evidence from longitudinal studies suggests that the negative effects of social disconnection accumulate over the life course, and that these are most pronounced in older adulthood due to greater cumulative exposure (Hawkley & Cacioppo, 2007; Hawkley et al., 2008; Pinquart & Sörensen, 2001). Irrespective of the mechanisms by which social connection affects health, the significant downstream effects of social disconnection on health outcomes among older adults have been widely observed.

In addition to evidence that links social disconnection to poor health outcomes among older adults, data indicate this problem is relatively common. Prevalence estimates for deficits in social connection, such as loneliness and social isolation, are imprecise and varied, as large-scale, systematic assessments are not regularly conducted (Holt-Lunstad, Smith, Baker, Harris, & Stephenson, 2015). Despite discrepancies and gaps in the research, the majority of

available studies suggest a large proportion of older adults frequently experience loneliness, social isolation, and other aspects of social disconnection (Franck, Molyneux, & Parkinson, 2016). For instance, the National Health and Aging Trends Study found that 24% of community-dwelling adults aged 65 and older in the United States were isolated, and of those, 4% met criteria for severe social isolation (Cudjoe et al., 2018). Other studies report that as many as 60% of older adults have experienced loneliness, with several reporting high frequency of loneliness among older adult respondents (Hawkley & Kocherginsky, 2018; MacLeod et al., 2018; Ong, Uchino, & Wethington, 2016). Furthermore, research suggests certain factors increase risk for specific subgroups, such as advanced age, low income, institutionalization, sensory impairment, frailty, lack of transportation, and the experience of a major life change, such as the loss of a spouse (Freedman & Nicolle, 2020). These findings are especially concerning in light of demographic shifts in the United States and other industrialized countries that are posited to increase risk (Holt-Lunstad et al., 2015). Demographic trends such as decreases in marriage rates, average household size, community involvement, and participation in religious and social groups may lead to reductions in natural supports for many. These trends, paired with current population aging trends suggest problems associated with social disconnection among older adults are likely to grow. These findings highlight the need for sustained measures to prevent and mitigate the effects of social disconnection among older adults beyond the current public health crisis.

Relatively extensive scientific evidence supports that social connection and health are linked in important ways, especially in older adulthood. However, the ways in which researchers engage in this work to define and measure aspects of social connection varies considerably, resulting in the development of numerous measurement tools and inconsistency in measurement approaches (Holt-Lunstad, 2018). This has not only created challenges for researchers and practitioners seeking to utilize an empirically-supported tool, but complicated the development of effective interventions, as which constructs to target and how remains unclear. Importantly, however, Holt-Lunstad's (2010) meta-analysis of studies that examined multiple constructs of relationships and health found that across definitions and approaches, studies consistently measure three components of relationships — structural, functional, and qualitative — and that each component contributes to risk and protective factors related to health. Holt-Lunstad suggests that rather than focusing on individual constructs, adopting and measuring a multifactorial construct that encompasses all of these features is the most appropriate solution (Holt-Lunstad et al., 2017). This concept is further supported by findings that studies with the strongest results used complex, multifactorial measures of social relationships (NASEM, 2020). Further, this measurement approach is best suited to inform interventions, as it yields information about the likely multiple dimensions that should be targeted.

While the literature highlights the complexity of measuring social connection, the authors of this report approached the selection and recommendation of tools using a framework that balances the scientific evidence with practical considerations for successful implementation in the field, including time to administer the tool; training requirements; and the utility of results given DAS' current service offerings. Given that a composite measure of social connection has yet to be developed, the authors also conducted the review and formulated

recommendations with a two-step assessment process in mind. The initial step would involve the use of a brief, multidimensional screening tool with strong psychometric properties. Although screening will involve the use of a complex measure, this will not yield results on multiple constructs. Thus, in the second phase of assessment, a more detailed process that employs measures of additional constructs is recommended. In total, the two-step assessment process is more likely to yield comprehensive results and more reliably inform intervention strategies.

Methods

Measurement Tool Review

As previously discussed, the authors examined available evidence with a two-step assessment process in mind. The initial, or Phase I, assessment is intended for broad administration as a screening tool that identifies need for additional evaluation. The Phase II assessment would then aim to elucidate additional aspects of disconnectedness experienced by the identified individual to inform intervention and support strategies.

The authors conducted a literature review and environmental scan to gather relevant information about measurement tools and strategies used in current research, as well as by practitioners in the field. For the literature review, Academic Search Complete, PubMed, and Google Scholar were searched using a combination of social connection and assessment descriptors. Data were extracted from each article and aggregated in a spreadsheet containing standardized categories related to publication details, study design, setting, and other relevant information until the authors reached saturation regarding established tools that could be used in this context. After single-item measures were removed, a total of 71 measurement tools were included in the analysis. Each measurement tool was screened independently by two researchers using predefined inclusion and exclusion criteria, which are described in detail below. Screening results were then discussed and discrepancies were resolved to produce a final list of potential measurement tools. The evidence regarding each of these tools was then closely examined to assess the level of empirical support and feasibility for use with DAS' client population, and a final recommendation was formulated based on the available evidence.

Inclusion and Exclusion Criteria

The inclusion and exclusion criteria applied during screening were derived from a combination of scientific evidence and DAS' requests. The final Phase I inclusion and exclusion criteria include the following:

- Inclusion criteria: 1) measures dimension(s) of social connection; 2) available in the public domain; 3) designed for or tested with older adults; 4) strong evidence of reliability and validity 5) produces a score; 6) brief to administer

- Exclusion criteria: 1) not public domain; 2) developed for a population with a specific disease or condition; 3) does not produce a score; 4) tool is a subscale designed for use in conjunction with other subscales to assess a global construct (i.e., not designed for standalone use); 5) developers recommend against use for screening purposes; 6)

little or no evidence of sound psychometric properties or existing evidence suggests weak psychometric properties

In addition to the formal inclusion and exclusion criteria, the authors weighed other factors when formulating the final recommendations. These included the strength of evidence available from evaluations of the tool; evidence of testing and use outside of research settings (i.e., use by practitioners); use and testing in the United States; validation for telephone administration; availability of validated, translated versions; and intended target population.

Environmental Scan

To conduct the environmental scan, the authors reviewed recent reports, press releases, policies and regulations, and other information from relevant federal agencies; national membership organizations; and state, regional, and local-level entities. For the purposes of this report, the scan was limited to aging and disability-serving or focused organizations. However, future investigations may benefit from a broader scope, as learnings from work with other populations may translate to older adults. The results of the scan were synthesized and pertinent information is presented in summary.

RESULTS

The authors identified six tools during the first stage of screening. Upon further scrutiny, two tools were excluded due to the inadequacy of evidence regarding psychometric testing and use with the target population. The four final tools (Table 1) each present a strong case for inclusion in the assessment process, but one in particular, the LSNS-6, was identified as the most appropriate for use as a screening tool during the first phase of assessment. Another scale included in the list of screening tools below, the Three-Item UCLA loneliness scale, was indicated and recommended for consideration to use during a second phase of assessment. Versions of the four measurement tools discussed can be found in the appendices.

Berkman-Syme Social Network Index

Berkman and Syme first published the Berkman-Syme Social Network Index in their seminal article on the connection between social ties and health in the Alameda County Study (Berkman & Syme, 1979). The scale was among the first used to directly assess the relationship between social connection and health outcomes, and has since formed the foundation for a number of measurement approaches, including the LSNS, which is discussed later in this section. The Berkman-Syme Social Network Index has been used primarily in research, mostly through self-administration, but also in-person interview, and assesses social integration versus isolation by examining four domains, including marital/partnership status; contacts with close friends and relatives; membership in a religious group; and membership in other types of groups (Berkman & Syme, 1979). Marital status, religious group membership, and membership in another type of organization are all dichotomous measures (yes/no), and social ties are measured using three items assessing the number and frequency

of contacts with close friends and relatives. The tool, therefore, takes the relative importance of different ties into account, and gives more weight to intimate ties compared to group affiliations (Eng, Rimm, Fitzmaurice, & Kawachi, 2002). The results are combined into a single, interval scale that allows for categorization into four levels: socially isolated; moderately isolated; moderately integrated; and socially integrated (Seeman, Kaplan, Knudsen, Cohen, & Guralnik, 1987). A four-item version has also been developed more recently and used to examine social integration in adults aged 25 years and older (Pantell et al., 2013). The four-item version assesses the frequency of phone and in-person contact with family and friends, and frequency of attendance at religious services and meetings of other types of organizations. Additionally, the scale incorporates marital status in the scoring, but does not assess it directly (the scale was initially used in a large survey that collected marital status elsewhere). See Appendix A for the full and short-version of the Berkman-Syme Social Network Index.

The Berkman-Syme Social Network Index has a number of strengths. The full and adapted indices are both considered multidimensional measures of social integration versus isolation, and have yielded strong results that have been replicated in numerous studies over time (Institute of Medicine, 2014). Notably, a multidisciplinary committee convened by the Institute of Medicine conducted an evaluation of several domains of social connection and, based on evidence and appropriateness, recommended the 4-item version of the scale for inclusion in electronic health records (NASEM, 2020). The index has also been used widely, including in large-scale studies like the third National Health and Nutrition Examination Survey. This study analyzed data from a nationally representative sample of 16,849 adults in the United States, and found the tool was predictive of mortality (Pantell et al., 2013). Furthermore, each of the items included in the scale has been found to be predictive of all-cause mortality and the composite measure has predicted specific causes of mortality, incidence, and course of diseases like cardiovascular disease (Institute of Medicine, 2014). Furthermore, the Institute of Medicine's (IOM's) convened committee rated the tool comparably high on readiness and priority for inclusion in electronic health records, as well as usefulness for clinical, research, and surveillance purposes, as other key measures, such as race/ethnicity, tobacco use, and physical activity (Institute of Medicine, 2014).

Table 1. Phase I Screening Tools

Tool	Citation	Setting	Target Construct	Definition(s)	Dimension(s) Measured	Items	Scoring	Mode of Administration	Validity/Reliability of Tool
Berkman-Syme Social Network Index (SNI)	Berkman, L., & Breslow. L. (1983). Health and Ways of Living: The Alameda County study.	Initially developed for adults (18-64 years) in the United States in a research setting.	Social integration versus social isolation	Social integration and isolation can be assessed by measuring the type, size, closeness, and frequency of an individual's social network.	Marital/partnership status, contacts with close friends and relatives, membership in a religious group, membership in other types of groups	4	Scores are summed with 0 or 1 indicating the most isolated category and 2, 3, and 4 indicating increasing social connectedness. **Score Range: 0-4**	Self-administered In-person interviews[1]	Validity and reliability have not been assessed for this tool. However, the widespread use of the tool shows some evidence of strong face validity.
De Jong Gierveld Short Scale	De Jong Gierveld, J., & Tilburg, T.V. (2006). A 6-item Scale for Overall, Emotional, and Social Loneliness: Confirmatory Tests on Survey Data.	Initially tested with older adults in the Netherlands in a research setting.	Emotional and social loneliness	Emotional loneliness is the feeling of missing an intimate relationship Social loneliness is missing a wider social network.	Sense of emptiness, missing people, sense of rejection, having people to rely on, having people to trust, feeling close to people	6	Emotional subscale scoring: 0=Not emotionally lonely 3=Intensely emotionally lonely Social subscale scoring: 0=Not socially lonely 3=Intensely socially lonely **Score Range: 0-6**	Self-administered	Reliable and valid measurement tool for overall, emotional, and social loneliness that is suitable for large surveys.
Lubben Social Network Scale	Lubben, J., Blozik, E., Gillman, G., Kruse, W., Beck, J.C., & Stuck, A.E. (2006). Performance of an Abbreviated Version of the Lubben Social Network Scale among Three European Community-dwelling Older Adult Populations	Initially tested with older adults in three European countries and developed for use in clinical settings.	Assesses social integration and screens for social isolation	Social integration and isolation can be assessed by measuring an individual's social network. Social network is a multidimensional construct, referring to a web of interpersonal relationships and its characteristics. See also Berkman-Syme Social Network Index.	Size of respondent's active social network, perceived support network, perceived confidant network	6	A score of less than 12 suggests a clinical cut-off point for identifying individuals at-risk for social isolation. **Score Range: 0-30**	Self-administered	The tool demonstrated high levels of internal consistency and proposed clinical cut-off points showed good convergent validity.
Three-Item UCLA Loneliness Scale	Hughes, M.E., Waite, L.J., Hawkley, L.C., & Cacioppo, J.T. (2008). A short Scale for Measuring Loneliness in Large Surveys: Results from Two Population-based Studies	Initially tested with older adults in the United States in a research setting.	Subjective social isolation and loneliness	The core experience of loneliness is being isolated socially and absent both relational and collective connectedness.	Lack of companionship, feeling left out, feeling isolated from others	3	Higher scores indicate greater loneliness. **Score Range: 3-9**	Telephone Interview Self-administered Online survey[1]	The internal consistency for the tool is good and indicates reliable measurement of loneliness in a telephone sample. Findings from the study show that the tool indicates discriminant and convergent validity.

[1]The tool has been administered in this format, but validity and reliability have not been specifically tested with this mode of administration.

A weakness of the Berkman-Syme Social Network Index presents in its lack of formal psychometric evaluation. Berkman indicates that the four domains present strong face validity for the index (Berkman, 1979), but the index has not been validated to date (Pohl, Cochrane, Schepp, & Woods, 2017). Despite this shortcoming, researchers have argued that evidence from its use in other studies support its reliability and validity. The aforementioned IOM expert committee, as well as others who have used the index, contend that the consistency of its results across a variety of populations establish its credibility as a measurement tool (Nicholson Jr, 2009). Another limitation of the tool is that it focuses only on the presence or absence of social ties, rather than the individual's subjective assessment of the nature and quality of their social ties (Berkman & Breslow, 1983). The authors note this is an important distinction, as some social ties can be sources of stress or ties can be of poor quality, so the scale can incorrectly categorize an individual with a large, poor quality network and vice versa (Berkman & Breslow, 1983; Franck et al., 2016).

De Jong Gierveld Loneliness Scale

The De Jong Gierveld Loneliness scale was developed to measure both emotional and social components of loneliness (de Jong Gierveld & van Tilburg, 2006; Weiss, 1973). De Jong Gierveld indicated that, at the time of development, although relatively substantial evidence on individual factors associated with loneliness was documented, a multidimensional model and corresponding measurement tool did not exist (de Jong Gierveld, 1987). Over the course of several studies, De Jong Gierveld and colleagues constructed a scale designed to assess multiple factors, namely the distinct aspects of emotional and social loneliness. They define emotional loneliness as the feeling of missing an intimate relationship, and social loneliness as missing a broader social network, which are assessed using two, three-item subscales (de Jong Gierveld & van Tilburg, 2006). They contend that the scale can be used to assess either dimension by scoring the subscales individually, or that it can be used to provide a global measure of loneliness by combining both subscales scores. The initial scale included 11-items, but a modified, 6-item version has since been developed and tested (de Jong Gierveld & van Tilburg, 2006). In the 6-item, De Jong Gierveld and colleagues retained the two subscales, but reduced the number of items to three per subscale. The scale is scored by summing neutral and positive answers for the emotional subscale, and the neutral and negative answers on the social subscale. The scores for each subscales place respondents on a spectrum of loneliness, ranging from not emotionally or socially lonely (score = 0) to intensely emotionally or socially lonely (score = 3). Similarly, the global score is obtained by summing the subscale scores to produce an overall loneliness score of least lonely (score = 0) to loneliest (score = 6) (Campaign to End Loneliness, 2020). See Appendix B for the 6-Item De Jong Gierveld Loneliness Scale.

Both the full and short versions of the De Jong Gierveld Loneliness scale have been found to be reliable and valid across diverse populations of older adults. The scale has been translated into multiple languages and tested in a number of countries using different modalities, including in the United Nations Generations and Gender Survey, which included samples from six European countries and Japan (de Jong Gierveld & Van Tilburg, 2010). The scale has been widely used in European studies, and has also been used and tested in Brazil, Canada, and a number of Asian countries (Coelho, da Fonseca, Gouveia, Wolf, & Vilar, 2018; Jaafar, Villiers-Tuthill, Lim, Ragunathan, & Morgan, 2020; Leung, de Jong Gierveld, & Lam, 2008;

Penning, Liu, & Chou, 2014).

Despite its support and adoption in research conducted abroad, the literature review failed to identify any studies in which the De Jong Gierveld Loneliness scale was used and tested in the United States. Studies in the United States have largely used versions of the UCLA Loneliness scale to assess loneliness, a tool that was developed prior to the De Jong Gierveld scales and was widely used at the time of the initial scale's development (de Jong Gierveld, 1987). Also, while evidence supports the use of the scale for the assessment of loneliness, including multiple dimensions of loneliness, it does not measure other aspects of social connection. Therefore, to provide a holistic assessment of an individual's level of social connection or disconnection, one would need to pair the scale with other measurement tools.

Three-Item UCLA Loneliness Scale

The Three-Item UCLA Loneliness Scale was derived from one of the most widely used and tested tools to assess loneliness, the revised UCLA Loneliness Scale (R-UCLA) (Hughes, Waite, Hawkley, & Cacioppo, 2004). The authors state that the tool was developed due to the prohibitive length of the 20-item R-UCLA for use in large-scale telephone surveys. The scale contains three items, which assess how often respondents feel they lack companionship, how often they feel left out, and how often they feel isolated from others (Hughes et al., 2004). The scale also uses simplified response categories of "hardly ever," "some of the time," and "often." A score is obtained by summing responses for each item, with higher scores indicating greater degrees of loneliness. See Appendix C for the Three-Item UCLA Loneliness Scale.

The Three-Item UCLA Loneliness Scale was first used and tested through phone administration in the Health and Retirement Study and in-person-self-administration in the Chicago Health, Aging, and Social Relations Study (Hughes et al., 2004). It has since been tested in other large-scale studies of older adults in the United States, including the National Social Life, Health, and Aging Project, as well as similarly-sized studies abroad (Abdellaoui et al., 2018; Liu et al., 2019; Sbarra, 2009). Further, it has been tested using several modes of administration, including online survey and in-person interviews (Igarashi, 2019; Robinson-Whelen, Taylor, Feltz, & Whelen, 2016). Findings indicate the scale is a reliable and valid measure of overall loneliness among older adults across different modes of administration, as well as across different languages and older adults residing in multiple countries. The scale has also been validated in specific populations, such as individuals with Spinal Cord Injuries (Robinson-Whelen et al., 2016).

Although brief to administer, the Three-Item UCLA Loneliness Scale only assesses loneliness, and does not address other aspects of social connection. In the Health and Retirement Study, Hughes and colleagues paired this scale, which is administered in the Loneliness Module, with social isolation indicators collected in the main portion of the survey to examine both constructs. Specifically, they constructed a social isolation index that included marital status; a six-category measurement tool of living arrangement; participation in volunteering;

respondent-reported provision of support to family members; and respondent-rated neighborhood safety (Hughes et al., 2004). Additionally, in the Chicago, Health, Aging, and Social Relations Study, they administered the scale in conjunction with the Berkman-Syme Social Network Index (Berkman & Syme, 1979), which, as described earlier, is designed to measure social integration versus isolation. Hughes et al. (2004) report that, overall, the relationship between the loneliness and social isolation scores was relatively modest, and highlight the importance of assessing multiple dimensions of social connection in older adults.

Lubben Social Network Scale – Short Version (LSNS-6)

The original LSNS was designed to assess social integration and screen for social isolation among older adults (Lubben et al., 2006). The full scale contains 10 items, but the authors have now developed and tested an abbreviated, 6-item version (LSNS-6). The authors describe the scale as being derived from the Berkman-Syme Social Network Index, but tailored specifically for use with older adults. Lubben indicated that he found marital status and participation in religious activities vary less in the older adult population, and, therefore, constructed the measurement tool to focus more heavily on the quality and frequency of the respondent's relationships with family and friends (Lubben & Gironda, 2003). Lubben further described the scale as a multidimensional measure of social networks that measures the size of the respondent's active social network; their perceived support network; and their perceived confidant network (Lubben et al., 2006). The 6-item version includes a three-item subscale that assesses kinship ties (LSNS-6 Family subscale), and a three-item subscale that evaluates non-kin ties (LSNS-6 Friend subscale). Respondents are asked to enumerate the relatives and friends they are in contact with monthly, they feel they could call for help, and that they feel at ease talking about private matters with. Response options for each item range on a scale of 0-5, with 0 assigned for "none," up to 5 assigned for 9 or more. The tool is scored by summing each item, resulting in scores that range from 0-30. See Appendix D for the LSNS-6.

The LSNS-6 presents a number of strengths. First, the scale has been tested in both research and clinical practice and found to be reliable and valid across settings. The majority of other measurement tools reviewed have been used and tested exclusively in research settings and, thus, may not translate to use in the field. Additionally, the scale has been widely used and tested in both large-scale and smaller studies conducted domestically, as well as in numerous studies outside of the United States, including those conducted in Nigeria, Japan, Lebanon, and multiple European countries (Ajayi, Fabiyi, & Bello, 2019; Boulos, Salameh, & Barberger-Gateau, 2017; Kurimoto et al., 2011; Lubben et al., 2006). Thus, a validated version of the scale is available in several languages. The scale has also been administered using several modes, including self and phone administration, and in-person interview (Boulos et al., 2017; Crooks, Lubben, Petitti, Little, & Chiu, 2008; Kurimoto et al., 2011). Also, though adapted from the Berkman-Syme Social Network Index, which does not tap into the quality of social ties within a respondent's network, the LSNS-6 assesses the proximity of ties in addition to social network size. This is important, as research indicates the quality, rather than the number of ties, is of greater significance with regard to social connectedness (Masi, Chen, Hawkley, & Cacioppo, 2011). While not a detailed assessment of the quality of social ties, this feature of the scale may increase the likelihood that individuals with many, poor-quality social

ties are identified as at-risk. Furthermore, the LSNS-6 was constructed and tested using older adult samples, unlike the majority of other scales used to measure social connection, which frequently used university students and other, younger samples for scale development and psychometric testing.

Another significant strength of the scale lies in the authors' development and subsequent validation of a clinical cut point to use for the identification and referral of individuals at risk of social isolation. Of the measurement tools reviewed, the LSNS-6 was the only tool with an established clinical cut point, which adds considerable strength to its case for adoption in practice settings. The ease and minimal skill required to make a determination of risk using the scale also make it attractive for large-scale implementation with relatively minimal training. Though the cut point is a highly attractive feature of the scale, the authors caution that the total score overlooks the possible variability across items, and recommend users look at the range of responses to gather information about potential deficits in types of support across different relationships (Lubben et al., 2006).

Phase II: Intensive Assessment

As previously mentioned, a composite measure of social connection has yet to be developed and, due to strong evidence supporting the assessment of multiple constructs that comprise social connection, an additional assessment process is recommended. Emerging literature supports a two-phase process that combines screening with a more comprehensive assessment, particularly regarding assessment in practice settings for the purpose of intervention (Freedman & Nicolle, 2020; Perissinotto, Holt-Lunstad, Periyakoil, & Covinsky, 2019). To facilitate the understanding of additional dimensions that may contribute to an individual's social connection challenges, the use of a second measurement tool, along with person-centered counseling, appears to be the most promising practice to inform effective intervention planning.

Regarding instrumentation for a second, more intensive assessment, another brief scale, the Three-Item UCLA Loneliness Scale, has strong evidence of validity and reliability across diverse samples of older adults, and testing indicates it is highly correlated with the full, 20-item scale (Hughes et al., 2004; Igarashi, 2019; Liu et al., 2019). Additionally, the committee convened by the National Academies of Science, Engineering, and Medicine concluded that the three-item version of the scale presented the best evidence for the measurement of loneliness in health care settings (NASEM, 2020). Perissinotto et al. (2019) also indicated that efforts are currently underway to integrate this screening tool into electronic health records in the United States. While health care settings differ from aging and disability service settings, users in both contexts share similar practical considerations, such as the need for a brief, easily administered, but valid assessment. The use of the Three-Item UCLA scale, along with results from the LSNS-6, could serve to illuminate the nature of the problem experienced by the individual receiving services.

Research also supports the use of person-centered counseling to inform intervention. Evidence on the effectiveness of different interventions in reducing specific aspects of social

disconnection is still emerging, thus, practitioners have limited information to guide the selection of a particular intervention based on screening results alone. What researchers have demonstrated, however, is that the experience of social disconnection varies by person and is tied to individuals' unique life circumstances (e.g., health status, financial resources, mobility), which suggests a person-centered approach to intervention is most appropriate (Freedman & Nicolle, 2020; Machielse, 2015; Waycott et al., 2016). Additionally, experts based in the United States and abroad have advocated for the use of a person-centered approach for individuals who screen positive for social disconnection (Campaign to End Loneliness, 2020; Perissinotto et al., 2019). In addition to the aforementioned two-step assessment process, reassessment is recommended for a number of reasons, including to measure change due to intervention participation, ensure interventions are having beneficial and not harmful effects, and to account for changes within in the individual (e.g., health decline) and their environment (e.g., loss of a spouse) (NASEM, 2020; Petersen et al., 2015; Waycott et al., 2016).

Therefore, as current evidence indicates a comprehensive, holistic approach to assessment and intervention is warranted, and also supports person-centered planning, it appears that the use of a validated screening tool, such as the LSNS-6, followed by the administration of a validated loneliness scale paired with person-centered counseling is appropriate. This strategy is being adopted in various clinical settings and appears well suited for DAS' current No Wrong Door System processes and practices.

Interventions

As previously discussed, at present, research findings on the effectiveness of interventions provide limited guidance to practitioners who are seeking to link affected individuals to appropriate resources. Large-scale reviews of existing interventions reveal that, to date, the evidence regarding the effectiveness of interventions targeting aspects of social disconnection is of poor quality (Dickens, Richards, Greaves, & Campbell, 2011; Findlay, 2003; Masi et al., 2011). Most published studies possess significant weaknesses in design. For instance, few studies include long-term follow up and adequate sample sizes; are randomized control trials or quasi-experiments; and use consistent measurement tools and outcome measures (NASEM, 2020; Retrum, 2017). Additionally, a rapid review conducted by the Agency for Healthcare Research and Quality (AHRQ) found limited evidence that existing interventions targeted at mitigating the health effects of social disconnection among older adults significantly affected health outcomes (Veazie, Gilbert, Winchell, Paynter, & Guise, 2019).

While efforts are underway to establish the evidence base for effective interventions, both researchers and practitioners have advocated for practical approaches to mitigate social disconnection among older adults (Freedman & Nicolle, 2020; Perissinotto et al., 2019). These practical approaches typically entail the use of screening, person-centered counseling, and offering a menu of options for intervention (Campaign to End Loneliness, 2020). Additionally, several large-scale reviews have identified features of interventions that appear to increase their likelihood of success. Retrum (2017) found that interventions appeared to be more effective if they had active participation from older adult participants and had a sound theoretical basis. These findings were replicated in several other reviews, which also found

interventions were most successful if they could be adapted to local contexts, were designed and implemented by the service users, and involved productive engagement activities (both for group and individual interventions) (Gardiner, Geldenhuys, & Gott, 2018). These findings may be important to consider as intervention resources are developed further.

Researchers and practitioners have taken varied approaches to intervening with socially disconnected individuals. In her review of existing interventions, Retrum (2017) suggests interventions can be characterized by their target population, intervention level, and intervention type. Interventions have largely been designed to target the general older adult population; those with a specific health issue or condition; vulnerable groups (e.g., low income, those with a recent life change (e.g., death of a spouse), racial/ethnic minority); or those with setting-specific risk (e.g., institutionalized individuals) (Retrum, 2017). She describes intervention levels as including one-on-one, group, and community-level designs, and intervention types as those that intentionally address behavior, cognition, and skills; aim to increase general opportunities for social engagement; and those that introduce environmental changes or resources (Retrum, 2017).

Over time, many one-on-one interventions have been developed to target socially disconnected individuals. A number of interventions have incorporated therapies, such as cognitive behavioral therapy, social support training, and peer companionship and mentoring (Dickens et al., 2011; Mead, Lester, Chew-Graham, Gask, & Bower, 2010; Retrum, 2017). Of note, Masi et al. (2011) found that interventions that addressed maladaptive social cognition through cognitive behavioral therapy or psychological reframing yielded greater effects compared to other intervention types and, thus, may be of promise.

Group-level interventions have also been attempted relatively frequently, and include group physical activity interventions, such as walking groups, and educational or skill-building groups, such as community-engaged arts programs (Poscia et al., 2018; Shvedko, Thompson, Greig, & Whittaker, 2018). As previously mentioned, reviews have found that interventions involving productive engagement of participants tend to be more effective, as well as those designed and implemented by the participants, all of which may be possible with the aforementioned types of group interventions (Gardiner et al., 2018).

Many technology-based interventions have emerged more recently and involve a range of activities and levels of intervention. Some focus on the individual and may involve training on the use of computers or interaction with companion robots. (Cohen-Mansfield, Marx, Dakheel-Ali, & Thein, 2015; Poscia et al., 2018), while others are delivered in group formats, such as engagement in peer support through social media-based "virtual communities" (NASEM, 2020). Results are fairly promising thus far on the effectiveness of technology-based interventions, but research findings suggest practitioners should be cautious in implementing these interventions, as they may not be well suited for or may even cause harm to some older adults (Cohen-Mansfield et al., 2015; NASEM, 2020; Poscia et al., 2018; Waycott et al., 2016).

As different intervention strategies are considered, it is critical that recommendations are highly tailored to the consumer and that follow-up assessments are conducted to ensure the

intervention is meeting the individual's needs. Each intervention strategy, although well intentioned, holds the potential for harm. This may be especially important to consider regarding technology-based interventions. In their study of an intervention that used an I-Pad-based social media application, Waycott et al., (2016) conducted a follow-up with study dropouts, and found that many experienced considerable distress by participating in the intervention. Inability to use the technology, challenges balancing technology use and learning with self-care, and reliance on caregivers or family to use the technology contributed to diminished self-esteem, embarrassment, relationship tension, and guilt (Waycott et al., 2016). These findings present important considerations for counselors working with consumers to identify intervention strategies, and emphasize the need for follow-up to determine whether the individual is participating in and benefiting from the intervention, and to determine any unintended consequences.

Environmental Scan

Overall, the environmental scan results indicate that issues of social disconnection among older adults have gained recent attention and that increased urgency to find meaningful and sustainable solutions exists among key parters. These efforts are taking shape both domestically and abroad, and are spearheaded by a number of foundations, as well as social service and health care organizations. While there is considerable activity in this area, the scan revealed that few aging and disability-serving organizations in the United States have adopted evidence-based measurement tools to assess social connection at present. It is possible that, like Georgia, many of these entities are in the formative stages of this process. While information regarding evidence-based efforts among agencies is scant, many of the federally supported initiatives led by agencies like the Administration for Community Living, as well as foundations, namely the AARP Foundation, aim to incorporate evidence-informed assessment and intervention in practice.

National Initiatives

In the United States, the AARP Foundation is both leading and sponsoring considerable work to address social disconnection. According to the foundation, social isolation represents one of their key mission areas, and they have invested in a number of efforts to develop effective strategies to address isolation, particularly among vulnerable subpopulations of older adults (Elder & Retrum, 2012). Recently, the foundation sponsored a relevant initiative to characterize the current evidence base with respect to loneliness and social isolation among older adults, and formulate recommendations for addressing these issues within health care settings (NASEM, 2020). This initiative resulted in the formation of committee by the National Academies for Science, Engineering, and Medicine, which conducted a comprehensive literature review and produced a detailed report, *Social Isolation and Loneliness in Older Adults: Opportunities for the Health Care System* (2020). This report has important implications for future research, as well as efforts to translate evidence to practice settings. The AARP Foundation also recently released a broad request for proposals, which sought to support direct service, research, education, outreach, and field-building projects related to improving social connectedness among older adults (AARP, 2019). Notably, both of these activities predate the onset of the coronavirus crisis, which suggests this work is likely to continue if not grow given the rise in attention to these issues, as well as need among older

adults due to the crisis.

In addition to supporting research, the AARP Foundation has partnered with the Gerontological Society of America, Give an Hour, n4a, and UnitedHealthcare to launch the *Connect2Affect* campaign. The foundation states the goal of the campaign is to create an innovative, evidence-informed network of resources for lonely or isolated older adults (AARP, 2016). Among its offerings, the campaign has an interactive platform that offers visitors an opportunity to complete a risk assessment for loneliness and social isolation. The assessment is described to assess social isolation, and includes eight items that gauge participation in social activities or organized groups; contact with family and friends; caregiving; transportation access; hearing impairment; feeling isolated ("Do you often feel isolated from others?"); and occurrence of a major life event within the past six months (AARP, 2020). At the end of the assessment, respondents can provide a ZIP code, which, once the assessment is submitted, provides links to local resources. Additionally, the assessment scores respondents as low, moderate, or high risk, and provides recommendations for each risk level (e.g., for low risk, it recommends individual-level prevention strategies, such as learning about risk factors).

Another foundation, the Juanita C. Grant Foundation, is also aiming to mitigate social disconnection among older adults through a phone-based program called the Village Connection Experience. The foundation provides 16 hours of training to volunteer "ambassadors" who call older adults who register one to three times a week with the aim of motivating members to take steps to reduce isolation (Juanita C. Grant Foundation, 2020). Ambassadors coach members to engage in activities such as gardening or reaching out to their children, and also host virtual events, including tea times and story readings. Individuals who register may also elect to have greeting cards, letters, or surprise packages sent to them (Juanita C. Grant Foundation, 2020).

In addition to foundation-supported efforts, several insurance companies are currently engaged in activities at the national level related to social connection. Cigna has focused on loneliness in adults for several years, and recently published the results of its second national survey on loneliness among adults in the United States (Cigna, 2020b). The company used a version of the 20-item UCLA Loneliness Scale, which it developed in partnership with the tool's creator, Dr. Daniel Russell. Both the 2018 and 2020 surveys were administered online to approximately 20,000 and 10,400 U.S.-based adults, respectively (Cigna, 2020b). The 2018 study found that nearly 50 percent of Americans experience loneliness, with respondents ages 18-22 representing the largest proportion of lonely respondents, while the 2020 study found an increase in reported loneliness, with three in five respondents scoring as "lonely" on the UCLA Loneliness Scale (Cigna, 2020b). Cigna has also included the tool on its website, as well as resources for health care providers regarding clinical administration of the tool and reimbursement processes (Cigna, 2020a).

CareMore, a subsidiary of Anthem, has also been engaged in social connection work, but has specifically focused on older adults served in their clinical settings. CareMore launched its Togetherness Program in 2017, and incorporated a screening tool into its electronic health

record system, which is administered as part of a battery of assessments during patients' annual visits, called "Healthy Start" appointments (Caruso, 2019). The specific tool was not identified in the scan, but the organization states that patients who screen positive for loneliness are referred to the program, and outreach staff, termed "Togetherness Connectors," contact the patients to identify gaps and link them to community resources. The program also offers a "phone pal" to patient participants, which involves a staff member conducting a weekly, "friendly" call. Additionally, the organization has created "Connection Corners" in two of its clinics, which are staffed by Togetherness Connectors to provide on-site linkage for patients who screen positive for loneliness (Caruso, 2019).

A third insurance company, UnitedHealthcare, is also involved in social connection-focused efforts through a partnership with AARP. The organization states the partnership, in which it has invested $5 million, aims to address social isolation and food insecurity among older adults during the pandemic (UnitedHealthcare, 2020). The funds are intended to support the development of innovative programs that connect older adults to groceries and emergency food boxes, as well as expand the previously mentioned Connect2Affect platform (AARP, 2020).

The National Council on Aging (NCOA) has also taken steps to promote social connection among older adults, as well as support community-based aging and disability-serving organizations through new funding. The council partnered with Airbnb to offer free "online experiences," including gentle yoga, slow life coaching, a family baking experience, and meditation (Trull, 2020b). NCOA reports information about these opportunities has been disseminated through its network of senior centers, as well as through outreach to groups that target underserved populations, such as LGBT, rural, and low-income older adults (Trull, 2020b). NCOA also recently established the NCOA Community Response Fund, which seeks to bolster funding to hard-hit community-based organizations that serve older adults (Trull, 2020b). The council has awarded three grants thus far to support a number of services, including the provision of free legal services, increased meal services, and a peer-to-peer calling program (Trull, 2020a).

Advancing States, the membership organization for state and territorial agencies on aging and disabilities and long-term services and supports directors, has also sought to provide information and resources regarding social isolation related to the pandemic. The organization released and then updated a resource titled *Addressing Social Isolation for Older Adults During the COVID-19 Crisis*, which details state-level response activities with the intent of assisting states in formulating innovative response strategies (Advancing States, 2020).

In addition to the CARES Act funding tied to this report, the Administration for Community Living has supported other opportunities for sharing best practices, as well as building capacity to address social isolation. Among the agency's recent activity in this area, the "ACL Mental Health Innovation Challenge" is notable. The challenge offers $750,000 in prizes for the development of a user-friendly online system that matches the needs, interests, and abilities of socially isolated individuals with resources that promote community engagement (Administration for Community Living, 2020). The agency remains a key resource and, along

with AARP and other aforementioned organizations, may represent a source of opportunity to build on assessment and intervention strategies for social disconnection within the state.

State-Level Activities

Virtually all State Units on Aging, as well as various other aging and disability-serving organizations within states, are engaged in efforts to mitigate issues of social disconnection. In a recently-updated survey of state aging and disability agencies and community-based organizations regarding their responses to address these issues, Advancing States found that many states are providing telephone reassurance and wellness checks, expanded meal delivery, and telephonic and virtual socialization opportunities and support groups (Advancing States, 2020). Many are also leveraging assistive technology and other innovative approaches to connect to older adults while physically distancing.

Of note, several states report utilizing tools to assess elements of social connection with specific populations. New York partnered with the company Ageless Innovation prior to the pandemic to offer Joy For All robotic pets to older adults in an attempt to decrease loneliness (Cattaraugus County, 2019). To participate in the pilot, which was offered to existing clients, individuals completed the De Jong Gierveld Loneliness Scale and were selected based on their results and interest in the program (New York City Department of Aging, 2019). The tool was administered as part of a battery of assessments, which also included the Generalized Anxiety Disorder Screening Tool and the Wong-Baker Faces Pain Scale (Cattaraugus County, 2019). Participants were then reassessed over the course of a year to measure change over time. New York now reports the program has been extended to 1,100 individuals statewide (Advancing States, 2020). Alabama more recently embarked on a similar initiative, and is piloting the program, also in conjunction with the De Jong Gierveld Loneliness Scale, with 130 older adults in the state (Advancing States, 2020). Participants complete the tool as a self-assessment, or with the help of a caregiver or AAA staff member, to receive the pet, and are then reassessed at three, six, and 12 months (Advancing States, 2020). Pennsylvania and Florida have also adopted robotic pet programs to mitigate social disconnection among older adults in their respective states, but it is unclear whether the programs are currently using a measurement tool to identify risk or measure change due to the intervention.

Maryland is also using a measurement tool to assess for social disconnection, but has taken a unique approach compared to other states. Leigh Ann Eagle and Sue Lachenmayr of Maintaining Active Citizens and the Maryland Living Well Center of Excellence recently partnered with Dr. Matthew Smith of Texas A&M University to develop and implement a social isolation screening tool called the Upstream Social Isolation Risk Screener (U-SIRS). The tool was designed to assess physical, emotional, and social support aspects of social isolation, and was constructed using parts of validated scales paired with sociodemographic items (Eagle, Lachenmayr, & Smith, 2019; Smith, Lachenmayr, & Eagle, 2020). Smith et al. (2019) describe the tool as a combination of objective and subjective measures of three dimensions: 1) physical (an objective dimension; e.g., including network structure, network strength); 2) emotional (a subjective dimension; e.g., perceptions about network quality,

loneliness, depression); and 3) social support (a subjective and objective dimension; e.g., sources of support, perceptions about meeting needs, perceptions about accessing resources) (Eagle et al., 2019).

The authors indicate the intent of the tool is to serve as an actionable measure of early isolation risk among noninstitutionalized older adults in clinical and community settings (Eagle et al., 2019). They also state that they plan to make the tool widely available to community organizations and online, and that the tool can be completed by the older adult alone or with a professional. Smith et al. (2020) describe the tool as existing on an interactive, online platform, which allows the use of a computer, tablet, or smartphone for completion and provides real-time results displayed using a "stoplight analogy" (i.e., green for low risk, yellow for medium risk, and red for high risk). Available information on the tool suggests a 29-item version and a 13-item version have been developed. The 29-item version has been piloted in an online survey of 4,101 adults age 60 and older, which the authors note is part of a series of national surveys (Smith et al., 2020; Eagle et al., 2019). The tool has also undergone testing for face validity with professionals in clinical and community settings in five states (Eagle et al., 2019). The authors have not yet published information about their work to test the tool, thus it is unclear whether it is valid and reliable across settings, modes of delivery, and subpopulations of older adults.

Area Agencies on Aging across Maryland integrated the 13-item U-SIRS into their telephone reassurance and engagement efforts (Smith et al., 2020). As part of their outreach activities, care coordinators and volunteers are conducting a structured battery of assessments that includes the U-SIRS, with members of local senior centers and older adults referred for services by community partners. Once completed, care navigators review the U-SIRS results and use them to prioritize program and service recommendations based on need and availability (Smith et al., 2020). The navigator then assists with linking the older adult to their program or service of choice and follows up to reassess risk and needs, as well as capture service uptake.

Nevada is another state that is mounting a robust response. While not reporting the use of a measurement tool, the state recently launched its COVID-19 Aging Network Rapid Response (CAN), which seeks to address older adults' needs statewide during the pandemic ("Combating social isolation and loneliness during the Covid-19 pandemic," 2020). The effort is led by Dr. Peter Reed, director of the Sanford Center for Aging and professor at the University of Nevada, Reno School of Medicine and implemented under the direction of Dena Schmidt, the administrator of Nevada's Aging and Disability Services Division. The initiative has three priority focus areas: 1) essentials of daily life (e.g., food and medicine); 2) telehealth services; and 3) social support, and each area is supported by an action team. The action teams are engaged in a number of activities to build the state's capacity in their respective areas. The Food and Medication Action Team has built a network of county and community-based organizations to provide doorstep delivery of food, medicine, and other essentials. The Telehealth Action Team has mobilized a network of existing healthcare and social service providers to offer geriatric and primary care, social work, and other services, and also provides training to primary care providers to increase the availability of telemedicine. The Social Support Action Team has established the Nevada Ensures Support

Together (NEST) Collaborative, which uses trained volunteers, many of which are college students, to provide services including calls twice a week for friendly conversation and to monitor needs; convening virtual peer groups for discussions; offering technical assistance to help older adults access telehealth or connect with family and friends via technology; and offering technical assistance to help groups of existing friends come together using technology ("Combating social isolation and loneliness during the Covid-19 pandemic," 2020). The NEST Collaborative is now working to extend social support services to skilled nursing and assisted living facilities.

CAN activates its network response through the state's No Wrong Door services. Older adults who contact the Aging and Disability Resource Center by phone or through the new website, which is connected to the state's 2-1-1 service, are connected to the appropriate action team through a case manager, and the action team works to link them to resources. Nevada's response has demonstrated success thus far, and may provide helpful learnings moving forward.

In addition to its robotic pet program, Pennsylvania is offering an innovative program through a public-private partnership to promote social connection and physical activity for individuals throughout the state, with a particular focus on older adults. The Keystone Senior Games, which hosts an annual competition for seniors in the state, partnered with Keystone Athletics, Recreation, and eSports, which is a national online network, to offer a series of virtual fitness opportunities through Facebook ("Keystone Games 5K Run/Walk & Esports Challenge," 2020). The organization stated it aims to support the whole-person health of all who participate, but emphasizes its hopes to keep older adults connected and battle social isolation while physically distancing ("Keystone Games 5K Run/Walk & Esports Challenge," 2020).

Relevant International Efforts

Another major effort taking place outside of the United States, the Campaign to End Loneliness, is making substantial headway in building the evidence base for policy and practice. The Campaign is based in the United Kingdom, and describes itself as a "network of national, regional, and local organizations and people working together through community action, good practice, research, and policy to create the right conditions to reduce loneliness in later life" (Campaign to End Loneliness, 2020). The initiative was established in 2011 and is funded through three foundations, the Calouste Gulbenkian Foundation, the Tudor Trust, and the Esmée Fairbairn Foundation, and donations from the general public. The Campaign is focused largely on sharing information broadly to disseminate research, evidence, and knowledge, and has published briefs and toolkits on a number of topics, including strategies for measuring loneliness in practice settings and promising practices for loneliness intervention. Largely inspired by the Campaign to End Loneliness, other international efforts have emerged in other countries, including Australia, New Zealand, the Netherlands, and Ireland (Fakoya, McCorry, & Donnelly, 2020).

DISCUSSION

While the evidence base regarding effective assessment and intervention approaches for aspects of social disconnection is still emerging, the review yielded considerable support for the use of validated tools and person-centered assessment. The LSNS-6 is validated, reliable, and appropriate for screening. It also has a validated clinical cut-off point, which can be used to identify at-risk individuals and recommend further assessment. Additionally, the screening is brief, easy to administer, and simple to score, and would require minimal training for implementation. As a second step, individuals who screen at-risk could be referred to person-centered counseling services, where a second tool, such as the Three-Item UCLA Loneliness Scale, could be used to provide a more holistic assessment and inform person-centered planning. During person-centered planning, ideally a menu of options for intervention would be available for discussion and selection by the consumer, whom the counselor would follow-up with routinely to assess uptake, measure change, and ensure continued benefit from participation.

As indicated with regard to intervention, it is also essential to ensure the assessment process itself is not having harmful effects on consumers. Researchers and practitioners have asserted that the level of distress experienced by socially disconnected individuals outweighs the risk of harm due to assessment and intervention, thus risk of harm should not prevent action. However, early monitoring of the process may reveal areas for refinement to minimize any negative effects and improve the quality of results. Often, piloting new assessment processes with a sample of individuals can be an efficient way to identify elements to modify and address potential challenges. For this particular assessment, a pilot may also be helpful to gain an understanding of any difficulties counselors may experience linking individuals to resources. As resources vary across the state, piloting the assessment in a relatively well-resourced region may be most advantageous, as it should allow for monitoring of the full process, including linkage to resources, and may inform considerations for regions with fewer resources and challenges with sustainability.

With regard to sustainability and serving individuals in areas with fewer resources, it may be helpful to consider targeting at-risk populations. As described early in the report, individuals of advanced age, low income, sensory impairments, those with a recent major life change, and several other subgroups, are at increased risk for social disconnection. It may be possible to target these individuals using information that is typically already collected, rather than burden staff and clients with an additional assessment. Targeting may or may not be appropriate or necessary in all areas, but could be a pragmatic strategy to use where resources are limited.

As the assessment process is implemented and individuals are linked to interventions and resources, opportunities to build the evidence base regarding effective intervention seem likely to arise. Foundations, such as AARP, and federal agencies like Administration for Community Living, appear to be very focused on developing the evidence for interventions that target social disconnection, and have already funded several research and implementation projects. The consistent collection of these assessment data would render the state well-positioned to act on opportunities of this nature. It also may be possible that

existing evidence-based programs and other services offered by the state could promote social connection, although it may not be the primary program focus. Interventions, such as group-based physical activity, have been attempted by many in the research setting to reduce social disconnection. Although the effectiveness of these programs is not well-established, consistent assessment and reassessment of participants could contribute to the knowledge base and possibly reveal secondary benefits of these programs related to social isolation.

Irrespective of how the assessment data are used, it will be imperative to consistently collect data over several time points with individuals served. Data collection and interpretation can promote service delivery that is responsive to the needs of the individual, contribute to the refinement of services, and can be used to assess the impact of referral and intervention processes. The development of an efficient, sustainable approach to assessment, as well as building out effective intervention resources, can enable DAS to meaningfully address the long-standing issue of social disconnection among older adults, both during and beyond the pandemic.

APPENDIX A. BERKMAN-SYME SOCIAL NETWORK INDEX

Berkman-Syme Social Network Index (Full Version)

Instructions: The following two-page questionnaire asks about your social support. Please read the following questions and circle the response that most closely describes your current situation.

1. How many close friends do you have, people that you feel at ease with, can talk to about private matters?

0 [ ] None
1 [ ] 1 or 2
2 [ ] 3 to 5
3 [ ] 6 to 9
4 [ ] 10 or more
9 [ ] Unknown

2. How many of these close friends do you see at least once a month?

0 [ ] None
1 [ ] 1 or 2
2 [ ] 3 to 5
3 [ ] 6 to 9
4 [ ] 10 or more
9 [ ] Unknown

3. How many *relatives* do you have, people that you feel at ease with, can talk to about private matters?

0 [ ] None
1 [ ] 1 or 2
2 [ ] 3 to 5
3 [ ] 6 to 9
4 [ ] 10 or more
9 [ ] Unknown

4. How many of these *relatives* do you see at least once a month?

0 [ ] None
1 [ ] 1 or 2
2 [ ] 3 to 5
3 [ ] 6 to 9
4 [ ] 10 or more
9 [ ] Unknown

5. Do you participate in any groups, such as a senior center, social or work group, religious-connected group, self-help group, or charity, public service, or community group?

0 [ ] No
1 [ ] Yes
9 [ ] Unknown

6. About how often do you go to religious meetings or services?

0 [ ] Never or almost never
1 [ ] Once or twice a year
2 [ ] Every few months
3 [ ] Once or twice a month
4 [ ] Once a week
5 [ ] More than once a week
9 [ ] Unknown

7. Is there someone available to you whom you can count on to listen to you when you need to talk?

0 [ ] None
1 [ ] 1 or 2
2 [ ] 3 to 5
3 [ ] 6 to 9
4 [ ] 10 or more
9 [ ] Unknown

8. Is there someone available to give you good advice about a problem?

0 [ ] None
1 [ ] 1 or 2
2 [ ] 3 to 5
3 [ ] 6 to 9
4 [ ] 10 or more
9 [ ] Unknown

9. Is there someone available to you who shows you love and affection?

0 [ ] None
1 [ ] 1 or 2
2 [ ] 3 to 5
3 [ ] 6 to 9
4 [ ] 10 or more
9 [ ] Unknown

10. Can you count on anyone to provide you with emotional support (talking over problems or helping you make a difficult decision)?

0 [ ] None
1 [ ] 1 or 2
2 [ ] 3 to 5
3 [ ] 6 to 9
4 [ ] 10 or more
9 [ ] Unknown

11. Do you have as much contact as you would like with someone you feel close to, someone in whom you can trust and confide?

0 [ ] None
1 [ ] 1 or 2
2 [ ] 3 to 5
3 [ ] 6 to 9
4 [ ] 10 or more
9 [ ] Unknown

Scoring Instructions: Married (no = 0; yes = 1); close friends and relatives (0–2 friends and 0–2 relatives = 0; all other scores = 1); group participation (no = 0; yes = 1); participation in religious meetings or services (less than or equal to every few months = 0; greater than or equal to once or twice a month = 1). The latter two categories were mutually exclusive from each other. Scores were summed: 0 or 1 being the most isolated category; and 2, 3, or 4 formed the other three categories of increasing social connectedness.

Berkman-Syme Social Network Index (4-Item Short Version)

1. In a typical week, how many times do you talk on the telephone with family, friends, or neighbors?
(1) Every day
(2) At least once a week
(3) A few times a month
(4) At least once a month
(5) A few times a year
(6) Hardly ever or never?"

2. How often do you get together with friends or relatives?
(1) Every day
(2) At least once a week
(3) A few times a month
(4) At least once a month
(5) A few times a year
(6) Hardly ever or never?"

3. How often do you attend church or religious services?
(1) Every day
(2) At least once a week
(3) A few times a month
(4) At least once a month
(5) A few times a year
(6) Hardly ever or never?"

4. How often do you attend meetings of the clubs or organizations you belong to?
(1) Every day
(2) At least once a week
(3) A few times a month
(4) At least once a month
(5) A few times a year
(6) Hardly ever or never?"

NOTE: Marital status is assessed separately and included in scoring.

Scoring instructions: Questions are recoded by combining the response categories: (1) nearly every day, at least once a week, a few times a month vs. (2) at least once a month, a few times a year, hardly ever or never. This results in two binary variables: objectively isolated from family (Yes/No) and objectively isolated from friends (Yes/No). These variables are then combined into a single four-category pattern variable reflecting the respondents who were (1) objectively isolated from both family and friends, (2) objectively isolated from family only, (3) objectively isolated from friends only, or (4) not objectively isolated from family (Chatters et al., 2017)

APPENDIX B. DE JONG GIERVELD LONELINESS SCALE (6-ITEM SHORT VERSION)

Script: We would like to ask you a few questions to enable us to measure how helpful our services are.

You can choose to answer all or none of the questions, and choosing not to answer will not affect your access to any of our services in any way. When answering the questions, you could take account of the following:

• There are no right or wrong answers
• We would like you to be completely honest
• In answering the questions it is best to think of your life as it generally is now (we all have some good or bad days)

Questions

1. I experience a general sense of emptiness

Yes	More or Less	No
1	1	0

2. There are plenty of people I can rely on when I have problems

Yes	More or Less	No
1	1	0

3. There are many people I can trust completely

Yes	More or Less	No
1	1	0

4. I miss having people around me

Yes	More or Less	No
1	1	0

5. There are enough people I feel close to

Yes	More or Less	No
1	1	0

6. I often feel rejected

Yes	More or Less	No
1	1	0

Appendix C. Three-Item UCLA Loneliness Scale

Lead-in and questions are read to respondent.

The next questions are about how you feel about different aspects of your life. For each one, tell me how often you feel that way.

1. First, how often do you feel that you lack companionship: Hardly ever, some of the time, or often?
   1 [ ] Hardly Ever
   2 [ ] Some of the Time
   3 [ ] Often

2. How often do you feel left out: Hardly ever, some of the time, or often?
   1 [ ] Hardly Ever
   2 [ ] Some of the Time
   3 [ ] Often

3. How often do you feel isolated from others? (Is it hardly ever, some of the time, or often?)
   1 [ ] Hardly Ever
   2 [ ] Some of the Time
   3 [ ] Often

Scoring instructions: Sum the total of all items. Higher scores indicate greater degrees of loneliness.

Appendix D. Lubben Social Network Scale (LSNS-6)

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

Scoring: LSNS-6 total score is an equally weighted sum of these six items. Scores range from 0 to 30, and higher scores indicate more social engagement.

Cut point: 12 = "at risk for social isolation"

REFERENCES

AARP. (2016). AARP Foundation draws attention to social isolation with the launch of Connect2Affect [Press release]. Retrieved from https://press.aarp.org/2016-12-07-AARP-Foundation-Draws-Attention-to-Social-Isolation-with-the-Launch-of-Connect2Affect

AARP. (2019). Improving social connectedness among older adults—AARP Foundation seeks evidence-based projects. Retrieved from https://www.aarp.org/content/dam/aarp/aarp_foundation/2019-pdf/aarp-foundation-improving-senior-social-connectedness-request-for-proposals-sept-2019.pdf

AARP. (2020). How connected are you? Retrieved from https://connect2affect.org/assessment/isolation/

Abdellaoui, A., Nivard, M. G., Hottenga, J.-J., Fedko, I., Verweij, K. J. H., Baselmans, B. M. L., . . . Cacioppo, J. T. (2018). Predicting loneliness with polygenic scores of social, psychological and psychiatric traits. *Genes, Brain and Behavior*, 17(6), e12472. doi:10.1111/gbb.12472

Administration for Community Living. (2020). *Expand your circles: Prevent isolation and loneliness as you age*. Retrieved from https://www.n4a.org/Files/Isolation%20BrochureFINAL.pdf

Advancing States. (2020). *Addressing social isolation for older adults during the COVID-19 crisis*. Retrieved from http://www.advancingstates.org/sites/nasuad/files/u24453/Social%20Isolation%20Response_04092020.pdf

Ajayi, D., Fabiyi, G., & Bello, S. (2019). Prevalence of social isolation and psychometric properties of lubben social network scale among older diabetic patients in Abeokuta, Nigeria. *Journal of Biometrics & Biostatistics*, 10.

Berkman, L. F., & Breslow, L. (1983). *Health and ways of living: The Alameda County Study New York*: Oxford University Press.

Berkman, L. F., & Syme, S. L. (1979). Social networks, host resistance, and mortality: A nine-year follow-up study of Alameda County residents. *American Journal of Epidemiology*, 109(2), 186-204. doi:10.1093/oxfordjournals.aje.a112674

Boulos, C., Salameh, P., & Barberger-Gateau, P. (2017). Social isolation and risk for malnutrition among older people. *Geriatrics & Gerontology International*, 17(2), 286-294. doi:10.1111/ggi.12711

Cacioppo, J. T., & Cacioppo, S. (2014). Social relationships and health: The toxic effects of perceived social isolation. *Social and Personality Psychology Compass*, 8(2), 58-72. doi:10.1111/spc3.12087

Campaign to End Loneliness. (2020). *Measuring your impact on loneliness in later life*. Retrieved from https://www.campaigntoendloneliness.org/wp-content/uploads/Loneliness-Measurement-Guidance1-1.pdf

Caruso, R. (2019). CareMore Health: Addressing loneliness leads to lower rates of ED, hospital use. Retrieved from https://www.hfma.org/topics/operations-management/article/caremore-health--addressing-loneliness-leads-to-lower-rates-of-e.html

Cattaraugus County. (2019). Aging celebrated national puppy day with some ageless pets [Press release]. Retrieved from https://www.cattco.org/news/20198094-aging-celebrated-national-puppy-day-some-ageless-pets

Centers for Disease Control and Prevention. (2020). Older Adults. Retrieved from https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/older-adults.html

Cigna. (2020a). The body and mind connection. Retrieved from https://www.cigna.com/health-care-providers/resources/body-mind

Cigna. (2020b). Cigna takes action to combat the rise of loneliness and improve mental wellness in America. Retrieved from https://www.cigna.com/newsroom/news-releases/2020/cigna-takes-action-to-combat-the-rise-of-loneliness-and-improve-mental-wellness-in-america

Coelho, G. L. d. H., da Fonseca, P. N., Gouveia, V. V., Wolf, L. J., & Vilar, R. (2018). De Jong Gierveld Loneliness Scale - Short Version: Validation for the Brazilian Context. *Paidéia (Ribeirão Preto)*, 28. Retrieved from http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0103-863X2018000100604&nrm=iso

Cohen-Mansfield, J., Marx, M. S., Dakheel-Ali, M., & Thein, K. (2015). The use and utility of specific nonpharmacological interventions for behavioral symptoms in dementia: an exploratory study. *The American Journal of Geriatric Psychiatry*, 23(2), 160-170. doi:10.1016/j.jagp.2014.06.006

Combating social isolation and loneliness during the Covid-19 pandemic. (2020). In *Hearing before the United States Special Committee on Aging*.

Cornwell, E. Y., & Waite, L. J. (2009). Measuring social isolation among older adults using multiple indicators from the NSHAP study. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, 64 Suppl 1(Suppl 1), i38-i46. doi:10.1093/geronb/gbp037

Crooks, V. C., Lubben, J., Petitti, D. B., Little, D., & Chiu, V. (2008). Social network, cognitive function, and dementia incidence among elderly women. *American Journal of Public Health*, 98(7), 1221-1227. doi:10.2105/AJPH.2007.115923

de Jong Gierveld, J. (1987). Developing and testing a model of loneliness. *Journal of Personality and Social Psychology*, 53(1), 119-128. doi:10.1037/0022-3514.53.1.119

de Jong Gierveld, J., & Havens, B. (2004). Cross-national comparisons of social isolation and loneliness: Introduction and overview. *Canadian Journal on Aging*, 23, 109-113. doi:10.1353/cja.2004.0021

de Jong Gierveld, J., & van Tilburg, T. (2006). A 6-item scale for overall, emotional, and social loneliness: Confirmatory tests on survey data. *Research on Aging,* 28(5), 582-598. doi:10.1177/0164027506289723

de Jong Gierveld, J., & Van Tilburg, T. (2010). The De Jong Gierveld short scales for emotional and social loneliness: Tested on data from 7 countries in the UN generations and gender surveys. *European Journal of Ageing*, 7(2), 121-130. doi:10.1007/s10433-010-0144-6

Dickens, A. P., Richards, S. H., Greaves, C. J., & Campbell, J. L. (2011). Interventions targeting social isolation in older people: A systematic review. *BMC Public Health*, 11(1), 647. doi:10.1186/1471-2458-11-647

DiMatteo, M. R. (2004). Social support and patient adherence to medical treatment: A meta-analysis. *Health Psychology*, 23(2), 207-218. doi:10.1037/0278-6133.23.2.207

Eagle, L. A., Lachenmayr, S., & Smith, M. (2019). Steps to assessing and addressing social isolation in community-dwelling older adults [PowerPoint Slides].

Eisenberger, N. I., & Cole, S. W. (2012). Social neuroscience and health: Neurophysiological mechanisms linking social ties with physical health. *Nature Neuroscience*, 15(5), 669-674. doi:10.1038/nn.3086

Elder, K., & Retrum, J. (2012). *Framework for isolation in adults over 50.* Retrieved from https://www.aarp.org/content/dam/aarp/aarp_foundation/2012_PDFs/AARP-Foundation-Isolation-Framework-Report.pdf

Eng, P. M., Rimm, E. B., Fitzmaurice, G., & Kawachi, I. (2002). Social ties and change in social ties in relation to subsequent total and cause-specific mortality and coronary heart disease incidence in men. *American Journal of Epidemiology*, 155(8), 700-709. doi:10.1093/aje/155.8.700

Fakoya, O. A., McCorry, N. K., & Donnelly, M. (2020). Loneliness and social isolation interventions for older adults: A scoping review of reviews. *BMC Public Health,* 20(1), 129. doi:10.1186/s12889-020-8251-6

Findlay, R. A. (2003). Interventions to reduce social isolation amongst older people: Where is the evidence? *Ageing and Society*, 23(5), 647-658. doi:10.1017/S0144686X03001296

Franck, L., Molyneux, N., & Parkinson, L. (2016). Systematic review of interventions addressing social isolation and depression in aged care clients. *Quality of Life Research,* 25(6), 1395-1407. doi:10.1007/s11136-015-1197-y

Freedman, A., & Nicolle, J. (2020). Social isolation and loneliness: the new geriatric giants: Approach for primary care. *Canadian Family Physician*, 66(3), 176-182.

Gardiner, C., Geldenhuys, G., & Gott, M. (2018). Interventions to reduce social isolation and loneliness among older people: An integrative review. *Health & Social Care in the Community*, 26(2), 147-157. doi:10.1111/hsc.12367

Hawkley, L. C., & Cacioppo, J. T. (2007). Aging and loneliness: Downhill quickly? *Current Directions in Psychological Science*, 16(4), 187-191. doi:10.1111/j.1467-8721.2007.00501.x

Hawkley, L. C., Hughes, M. E., Waite, L. J., Masi, C. M., Thisted, R. A., & Cacioppo, J. T. (2008). From social structural factors to perceptions of relationship quality and loneliness: The Chicago health, aging, and social relations study. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, 63(6), S375-S384. doi:10.1093/geronb/63.6.s375

Hawkley, L. C., & Kocherginsky, M. (2018). Transitions in loneliness among older adults: A 5-year follow-up in the national social life, health, and aging project. *Research on Aging*, 40(4), 365-387. doi:10.1177/0164027517698965

Holt-Lunstad, J. (2018). Why social relationships are important for physical health: A systems approach to understanding and modifying risk and protection. *Annual Review of Psychology*, 69(1), 437-458. doi:10.1146/annurev-psych-122216-011902

Holt-Lunstad, J., Robles, T. F., & Sbarra, D. A. (2017). Advancing social connection as a public health priority in the United States. *The American Psychologist,* 72(6), 517-530. doi:10.1037/amp0000103

Holt-Lunstad, J., Smith, T. B., Baker, M., Harris, T., & Stephenson, D. (2015). Loneliness and social isolation as risk factors for mortality: A meta-analytic review. P*erspectives on Psychological Science*, 10(2), 227-237. doi:10.1177/1745691614568352

Holt-Lunstad, J., Smith, T. B., & Layton, J. B. (2010). Social relationships and mortality risk: A meta-analytic review. *PLOS Medicine*, 7(7), e1000316. doi:10.1371/journal.pmed.1000316

Hughes, M. E., Waite, L. J., Hawkley, L. C., & Cacioppo, J. T. (2004). A short scale for measuring loneliness in large surveys: Results from two population-based studies. *Research on Aging,* 26(6), 655-672. doi:10.1177/0164027504268574

Igarashi, T. (2019). Development of the Japanese version of the three-item loneliness scale. *BMC Psychology*, 7(1), 20. doi:10.1186/s40359-019-0285-0

Institute of Medicine. (2014). *Capturing social and behavioral domains and measures in electronic health records: Phase 2.* Washington, DC: The National Academies Press.

Irwin, M. R., & Cole, S. W. (2011). Reciprocal regulation of the neural and innate immune systems. *Nature Reviews Immunology,* 11(9), 625-632. doi:10.1038/nri3042

Jaafar, M. H., Villiers-Tuthill, A., Lim, M. A., Ragunathan, D., & Morgan, K. (2020). Validation of the Malay version of the De Jong Gierveld Loneliness Scale. *Australasian Journal on Ageing*, 39(1), e9-e15. doi:10.1111/ajag.12672

Juanita C. Grant Foundation. (2020). What is the Village Connector Experience? Retrieved from https://www.jcgfdn.org/village-connector-register#comefrom-home

Kent de Grey, R., Uchino, B., Trettevik, R., Cronan, S., & Hogan, J. (2018). Social support and sleep: A meta-analysis. *Health Psychology*, 37. doi:10.1037/hea0000628

Keystone Games 5K Run/Walk & Esports Challenge. (2020). Retrieved from https://runsignup.com/Race/PA/Anywhere/KeystoneGames5KandEsportsChallenge

Kuiper, J. S., Zuidersma, M., Oude Voshaar, R. C., Zuidema, S. U., van den Heuvel, E. R., Stolk, R. P., & Smidt, N. (2015). Social relationships and risk of dementia: A systematic review and meta-analysis of longitudinal cohort studies. *Ageing Research Reviews*, 22, 39-57. doi:10.1016/j.arr.2015.04.006

Kurimoto, A., Awata, S., Ohkubo, T., Tsubota-Utsugi, M., Asayama, K., Takahashi, K., . . . Imai, Y. (2011). Reliability and validity of the Japanese version of the abbreviated Lubben Social Network Scale. Nihon Ronen Igakkai Zasshi (Japanese Journal of Geriatrics), 48(2), 149-157. doi:10.3143/geriatrics.48.149

Leung, G. T., de Jong Gierveld, J., & Lam, L. C. (2008). Validation of the Chinese translation of the 6-item De Jong Gierveld Loneliness Scale in elderly Chinese. *International Psychogeriatrics*, 20(6), 1262-1272. doi:10.1017/s1041610208007552

Liu, T., Wong, G. H. Y., Tang, J. Y. M., Lu, S., Leung, D., Sze, L., . . . Lum, T. (2019). Detection of depression using the UCLA three-item loneliness scale in older chinese. *Innovation in Aging*, *3*(Supplement_1), S530-S531. doi:10.1093/geroni/igz038.1951

Lubben, J., Blozik, E., Gillmann, G., Iliffe, S., von Renteln Kruse, W., Beck, J. C., & Stuck, A. E. (2006). Performance of an abbreviated version of the Lubben Social Network Scale among three European community-dwelling older adult populations. *The Gerontologist,* 46(4), 503-513. doi:10.1093/geront/46.4.503

Lubben, J., & Gironda, M. (2003). Centrality of social ties to the health and well-being of older adults. In *Social Work And Health Care in an Aging World* (pp. 319-350). New York, NY: Springer.

Machielse, A. (2015). The heterogeneity of socially isolated older adults: A social isolation typology. *Journal of Gerontological Social Work*, 58. doi:10.1080/01634372.2015.1007258

MacLeod, S., Musich, S., Parikh, R., Hawkins, K., Keown, K., & Yeh, C. (2018). Examining approaches to address loneliness and social isolation among older adults. *Journal of Aging and Geriatric Medicine, 2*. doi:10.4172/2576-3946.1000115

Masi, C. M., Chen, H.-Y., Hawkley, L. C., & Cacioppo, J. T. (2011). A meta-analysis of interventions to reduce loneliness. *Personality and Social Psychology Review*, 15(3), 219-266. doi:10.1177/1088868310377394

Mead, N., Lester, H., Chew-Graham, C., Gask, L., & Bower, P. (2010). Effects of befriending on depressive symptoms and distress: Systematic review and meta-analysis. *The British Journal of Psychiatry*, 196(2), 96-101. doi:10.1192/bjp.bp.109.064089

NASEM. (2020). *Social isolation and loneliness in older adults: Opportunities for the health care system.* Washington, DC: The National Academies Press.

New York City Department of Aging. (2019). DFTA joins state robotic pet trial to combat loneliness in older adults [Press release]. Retrieved from https://www1.nyc.gov/site/dfta/about/pr-DFTA-joins-state-robotic-pet-trial-to-combat-loneliness-in-older-adults.page

Nicholson Jr, N. R. (2009). Social isolation in older adults: An evolutionary concept analysis. *Journal of Advanced Nursing*, 65(6), 1342-1352. doi:10.1111/j.1365-2648.2008.04959.x

Ong, A. D., Uchino, B. N., & Wethington, E. (2016). Loneliness and health in older adults: A mini-review and synthesis. *Gerontology*, 62(4), 443-449. doi:10.1159/000441651

Pantell, M., Rehkopf, D., Jutte, D., Syme, S. L., Balmes, J., & Adler, N. (2013). Social isolation: A predictor of mortality comparable to traditional clinical risk factors. *American Journal of Public Health*, 103(11), 2056-2062. doi:10.2105/AJPH.2013.301261

Penning, M., Liu, G., & Chou, P. (2014). Measuring loneliness among middle-aged and older adults: The UCLA and De Jong Gierveld loneliness scales. *Social Indicators Research, 118*, 1147-1166. doi:10.1007/s11205-013-0461-1

Penninkilampi, R., Casey, A. N., Singh, M. F., & Brodaty, H. (2018). The association between social engagement, loneliness, and risk of dementia: A systematic review and meta-analysis. *Journal of Alzheimer's Disease*, 66(4), 1619-1633. doi:10.3233/jad-180439

Perissinotto, C., Holt-Lunstad, J., Periyakoil, V. S., & Covinsky, K. (2019). A practical approach to assessing and mitigating loneliness and isolation in older adults. *Journal of the American Geriatrics Society, 67*(4), 657-662. doi:10.1111/jgs.15746

Petersen, J., Kaye, J., Jacobs, P. G., Quinones, A., Dodge, H., Arnold, A., & Thielke, S. (2015). Longitudinal relationship between loneliness and social isolation in older adults: Results from the cardiovascular health study. *Journal of Aging and Health, 28*(5), 775-795. doi:10.1177/0898264315611664

Pinquart, M., & Sörensen, S. (2001). Influences on loneliness in older adults: A meta-analysis. *Basic and Applied Social Psychology*, 23, 245-266. doi:10.1207/153248301753225702

Pohl, J. S., Cochrane, B. B., Schepp, K. G., & Woods, N. F. (2017). Measuring social isolation in the National Health and Aging Trends Study. *Research on Gerontological Nursing, 10*(6), 277-287. doi:10.3928/19404921-20171002-01

Poscia, A., Stojanovic, J., La Milia, D. I., Duplaga, M., Grysztar, M., Moscato, U., . . . Magnavita, N. (2018). Interventions targeting loneliness and social isolation among the older people: An update systematic review. Experimental Gerontoloty, 102, 133-144. doi:10.1016/j.exger.2017.11.017

Retrum, J. (2017). A review of interventions addressing social isolation in older adults [PowerPoint Slides].

Robinson-Whelen, S., Taylor, H. B., Feltz, M., & Whelen, M. (2016). Loneliness among people with spinal cord injury: Exploring the psychometric properties of the 3-item loneliness scale. *Archives of Physical Medicine and Rehabilitation*, 97(10), 1728-1734. doi:10.1016/j.apmr.2016.04.008

Sbarra, D. A. (2009). Marriage protects men from clinically meaningful elevations in c-reactive protein: Results from the National Social Life, Health, and Aging Project (NSHAP). *Psychosomatic Medicine*, 71(8), 828-835. doi:10.1097/PSY.0b013e3181b4c4f2

Seeman, T. E., Kaplan, G. A., Knudsen, L., Cohen, R., & Guralnik, J. (1987). Social network ties and mortality among tile elderly in the Alameda Sounty study. *American Journal of Epidemiology*, 126(4), 714-723. doi:10.1093/oxfordjournals.aje.a114711

Shankar, A., Hamer, M., McMunn, A., & Steptoe, A. (2013). Social isolation and loneliness: Relationships with cognitive function during 4 years of follow-up in the English Longitudinal Study of Ageing. *Psychosomatic Medicine*, 75(2), 161-170. doi:10.1097/PSY.0b013e31827f09cd

Shvedko, A. V., Thompson, J. L., Greig, C. A., & Whittaker, A. C. (2018). Physical Activity Intervention for Loneliness (PAIL) in community-dwelling older adults: Protocol for a feasibility study. *Pilot and Feasibility Studies, 4*, 187-187. doi:10.1186/s40814-018-0379-0

Smith, M., Lachenmayr, S., & Eagle, L. A. (2020). *Assessing feelings of social isolation among community-dwelling older adults*. Paper presented at the American Academy of Health Behavior, Napa Valley, CA.

Trull, A. (2020a). NCOA announces initial grants to bolster local groups serving older adults in need during pandemic [Press release]. Retrieved from https://www.ncoa.org/news/press-releases/ncoa-announces-initial-grants-to-bolster-local-groups-serving-older-adults-in-need-during-pandemic/

Trull, A. (2020b). NCOA teams with Airbnb to address social isolation among older adults [Press release]. Retrieved from https://www.ncoa.org/news/press-releases/ncoa-teams-with-airbnb-to-address-social-isolation-among-older-adults/

Uchino, B. N. (2006). Social support and health: A review of physiological processes potentially underlying links to disease outcomes. *Journal of Behavioral Medicine, 29*(4), 377-387. doi:10.1007/s10865-006-9056-5

UnitedHealthcare. (2020). United Health Foundation and AARP Foundation Launch $5 Million Partnership to Support Seniors During the COVID-19 Crisis [Press release]. Retrieved from https://www.unitedhealthgroup.com/newsroom/posts/2020-04-22-uhf-aarp-partnership-seniors.html?cid=SM%3AFacebook%3AOA%3A4.22.20%3Astandard%3ANAT%3AAARPFoundation3

Valtorta, N. K., Kanaan, M., Gilbody, S., Ronzi, S., & Hanratty, B. (2016). Loneliness and social isolation as risk factors for coronary heart disease and stroke: Systematic review and meta-analysis of longitudinal observational studies. *Heart, 102*(13), 1009-1016. doi:10.1136/heartjnl-2015-308790

Veazie, S., Gilbert, J., Winchell, K., Paynter, R., & Guise, J. (2019). *Addressing social isolation to improve the health of older adults: A rapid review.* Retrieved from Rockville, MD: https://www.ncbi.nlm.nih.gov/books/NBK537909/

Waycott, J., Vetere, F., Pedell, S., Morgans, A., Ozanne, E., & Kulik, L. (2016). *Not for me: Older adults choosing not to participate in a social isolation intervention.*

Weiss, R. S. (1973). *Loneliness: The experience of emotional and social isolation.* Cambridge, MA, US: The MIT Press.

Williams, N. J., Grandner, M. A., Wallace, D. M., Cuffee, Y., Airhihenbuwa, C., Okuyemi, K., . . . Jean-Louis, G. (2016). Social and behavioral predictors of insufficient sleep among African Americans and Caucasians. *Sleep Medicine*, 18, 103-107. doi:10.1016/j.sleep.2015.02.533

Wrzus, C., Hänel, M., Wagner, J., & Neyer, F. (2012). Social network changes and life events across the life span: A meta-analysis. *Psychological Bulletin*, 139. doi:10.1037/a0028601